

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Coyote Hill Christian Children's Home
ATTN: Larry McDaniel, Executive Director
PO Box 1
Harrisburg, MO 65256

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

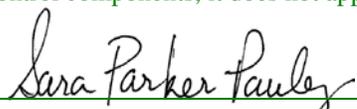
Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

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.

June 3, 2016
Effective Date


Sara Parker Pauley, Director, Department of Natural Resources

June 2, 2018
Expiration Date


John Madras, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Wastewater treatment system modifications to replace existing recirculating textile filter system with an no-discharge system consisting of: 1,500-gallon septic tanks- each with a 0.5 horsepower effluent pump; 2,921 linear feet of 3-inch PVC pressure pipe; storage lagoon with bottom dimension of 122 feet by 142 feet and a maximum operating depth of seven feet; installation of two – 1.5 horsepower GOULDS GT-20 irrigation pumps – each designed for 35 gallons per minute at a maximum of 112 feet of total dynamic head; 2,100 linear feet of two-inch pressure PVC pipe; 1,200 linear feet of one-inch pressure PVC pipe; 4 zones of 8 Rainbird 20ADJB sprinkler heads – each head designed for 3 gallons per minute at 40 psi at a maximum wetted radius of 40 feet; 3.7 effective acres of grass for irrigation; and all the necessary appurtenances to make the facilities complete and usable. This wastewater treatment facility is to serve Coyote Hill Christian Children's Home. The design flow is 5,530 gallons per day with a population equivalent (PE) of 70 and a total flow with 1 in 10 year rainfall-evaporation flow of 6,620 gallons per day.

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 in accordance with the plans and specifications submitted by THHinc McClure Engineering Company on May 12, 2016.

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 Northeast 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. Manholes shall be located with the top access at or above grade level.
 - D. 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. A full closure plan shall be submitted to the department's Northeast Regional Office for review and approval of any permitted wastewater treatment system being replaced. In accordance with 10 CSR 20-6.010(12), the closure plan must meet the requirements outlined in Standard Conditions Part III of the Missouri State Operating Permit No. MO- 0126373. Closure shall not commence until the submitted closure plan is approved by the department. Form J – Request for Termination of a State Operating Permit, shall be submitted to the Water Protection Program for termination of any existing Missouri state operating permit, once closure is completed in accordance with the approved closure plan.
11. Upon completion of construction;
 - A. The Coyote Hill Christian Children's Home will become the continuing authority for operation, maintenance, and modernization of these facilities;
 - B. Submit the enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(D) and request the general operating permit be issued;
 - C. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications; and
 - D. Submit a Form J - Request for Termination of a State Operating Permit, Form— MO 780-1576.

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.pdf>.

The proposed facility is no-discharge with irrigation; effluent limitations for ammonia are not applicable.

2. CONSTRUCTION PURPOSE

Due to the potential compliance issues with the Ammonia effluent limitations that become effective on August 1, 2016, facility is proposing to convert the system to land application.

3. FACILITY DESCRIPTION

The existing system consists of septic tanks with an effluent pump at each home with a recirculating textile filter system followed by ultraviolet disinfection. The facility is proposing to replace the textile filter pod system and ultraviolet disinfection with a no-discharge lagoon with land application.

4. COMPLIANCE PARAMETERS

Facility has regularly reported high ammonia effluent concentrations for the past five plus years. Facility is modifying to no-discharge instead of adding additional treatment to the existing recirculating textile filter system as Ammonia as N limitations become effective on August 1, 2016 as required by the current Missouri State Operating Permit MO-0126373.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The storage lagoon has approximately 130 days storage between the minimum operating level of 2 feet and the maximum operating depth of 7 feet. The land application area has a maximum slope of less than 5 percent.

6. OPERATING PERMIT

The facility has proposed to obtain a MOG823 permit to replace operating permit MO-0126373. This general permit will reflect the construction activities. Upon construction completion, submit a Statement of Work Completed.

Keith Forck
Engineering Section
keith.forck@dnr.mo.gov

MO-0126 373 RECEIVED

CP 000 1840

MAY 12 2016

AP 23700

C14212



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
Water Protection Program
APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER FACILITY

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
\$1000.00	13883
DATE RECEIVED	
5-12-16	SB

APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Facility form is for construction pertaining to domestic wastewater treatment facilities, agrichemical facilities, and components thereof. This 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 following information is missing, 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 Is this an application for an agrichemical? YES (See instructions.) N/A
- 1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
 YES Date of Approval: NA
- 1.4 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: _____ NO N/A (If Not Applicable, complete No. 1.5.)
- 1.5 [Complete only if answered Not Applicable on No. 1.4] Is a copy of the engineering report* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?
 YES NO
- 1.6 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
- 1.7 Is a summary of design* included with this application? YES NO
- 1.8 Is a general operating permit applicable?
 YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.
 NO Enclose the appropriate operating permit application and fee submittal. Denote which form: B B2
- 1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency? YES NO
- 1.10 Is the appropriate fee included with this application? YES NO (See instructions for appropriate fee.)

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

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT
Coyote Hill Wastewater Treatment Facility

2.2 PROJECT DESCRIPTION
Solid set irrigation of treated wastewater, including storage for winter months when irrigation is not possible. A manifold force line will accept flow from STEP pumps and deliver septic tank effluent to the lagoon. The lagoon is sized to provide at least 125 days of storage above the 2 foot level. Irrigation pumps and solid set sprinklers will irrigate a 4.27 acre field.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
Sludge is retained in the septic tanks at the individual homes, and is removed by a contract hauler for legal disposal.

2.4 DESIGN INFORMATION
A. Current population: 45; Design population: 62
B. Actual Flow: 4500 gpd; Design Average Flow: 6560 gpd;
Actual Peak Daily Flow: 4500 gpd; Design Maximum Daily Flow: 6560 gpd;
Design Wet Weather Event: _____

2.5 ADDITIONAL INFORMATION
A. Is a topographic map attached? YES NO
B. Is a process flow diagram attached? YES NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST
\$

3.0 WASTEWATER TREATMENT FACILITY

NAME Coyote Hill Treatment Facility		TELEPHONE NUMBER WITH AREA CODE (573) 874-0179		EMAIL ADDRESS office@coyotehill.org	
ADDRESS (PHYSICAL) 9501 W. Coyote Hill Rd.	CITY Harrisburg	STATE MO	ZIP CODE 65256	COUNTY Howard	
Wastewater Treatment Facility: Mo- (Outfall Of)					
3.1 Legal Description: SE ¼, SE ¼, SW ¼, Sec. 34 , T 51N , R 14W (Use additional pages if construction of more than one outfall is proposed.)					
3.2 UTM Coordinates Easting (X): 545050.81 Northing (Y): 4335195.85 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)					
3.3 Name of receiving streams: NA - Zero discharge					

4.0 PROJECT OWNER

NAME Coyote Hill Christian Children's Home		TELEPHONE NUMBER WITH AREA CODE (573) 874-0179		EMAIL ADDRESS office@coyotehill.org	
ADDRESS P.O. Box 1, 9501 W. Coyote Hill Rd.	CITY Harrisburg	STATE MO	ZIP CODE 65256		

5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.

NAME Coyote Hill Christian Children's Home		TELEPHONE NUMBER WITH AREA CODE (573) 874-0179		EMAIL ADDRESS office@coyotehill.org	
ADDRESS P.O. Box 1, 9501 W. Coyote Hill Rd.	CITY Harrisburg	STATE MO	ZIP CODE 65256		

5.1 A letter from the continuing authority, if different than the owner, is included with this application. YES NO 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? YES 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? YES 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? YES 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? YES NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? YES NO

ENGINEER NAME / COMPANY NAME

ENGINEER NAME / COMPANY NAME Thomas P Wells. PE / THHinc McClure Engineering		TELEPHONE NUMBER WITH AREA CODE (573) 814-1568		EMAIL ADDRESS twells@meresults.com	
ADDRESS 1901 Pennsylvania Dr,	CITY Columbia	STATE MO	ZIP CODE 65202		

7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete and accurate, and I grant, for the period I agree to, that the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.

PROJECT OWNER SIGNATURE

PRINTED NAME Larry McDaniel	DATE 5-5-16
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TITLE OR CORPORATE POSITION Executive Director	TELEPHONE NUMBER WITH AREA CODE (573) 874-0179	EMAIL ADDRESS larry@coyotehill.org
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Mail completed copy to: MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
P.O. BOX 176
JEFFERSON CITY, MO 65102-0176

END OF PART 3
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART 3 NEEDS TO BE COMPLETE.

PART 3 - LAND APPLICATION SYSTEM
(Submit only if the project is a new or expanded project or includes land application of WQTR/DOT)

8.0 FACILITY INFORMATION

8.1 Type of wastewater to be irrigated: Domestic State/National Park Seasonal business
 Municipal Municipal with a pretreatment program or significant industrial users
 Other (explain)

8.2 Months when the business or enterprise will operate or generate wastewater:
 12 months per year Part of the year (list months):

8.3 This system is designed for:
 No-discharge Subsurface
 Partial irrigation when feasible and discharge rest of time
 Irrigation during recreational season, April - October, and discharge during November - March
 Other (explain)

9.0 STORAGE BASINS

9.1 Number of storage basins: ¹_____ (Use additional pages if greater than two basins.)

9.2 Type of basins: Steel Concrete Fiberglass Earthen Earthen with membrane liner

9.3 Storage basin dimensions at inside top of berm (feet). Report freeboard as feet from top of berm to emergency spillway or overflow pipe.
Basin #1: Length 196 Width 176 Depth 9 Freeboard 2 Depth 7 Safety 2 % Slope 3:1
Basin #2: Length _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____

9.4 Storage Basin operating levels (report as feet below emergency overflow level).
Basin #1: Maximum operating water level 2 ft Minimum operating water level 7 ft
Basin #2: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins. Sludge is primarily retained in septic tanks for periodic contract removal
Basin #1: 1 ft Basin #2: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.
Basin #1: NA ft Basin #2: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Type of land application: Fixed Head Sprinklers Center Pivot Traveling Gun Drip Dispersal
 Subsurface Low Pressure Pipe Other (describe) _____

10.2 Number of irrigation sites 1 Total Acres _____ Maximum % field slopes _____
Location: SE 1/4, SE 1/4, SW 1/4, 34 Sec. 51N T 14W R Howard County 4.27 Acres
Location: _____ 1/4, _____ 1/4, _____ 1/4, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ 1/4, _____ 1/4, _____ 1/4, _____ Sec. _____ T _____ R _____ County _____ Acres
(Use additional pages if greater than three irrigation sites.)

10.3 Type of vegetation: Grass hay Pasture Timber Row crops
 Other (describe)

10.4 Wastewater flow (dry weather) gallons per day: Average annual 6560
Seasonal _____ Off-season _____

10.5 Land application rate (design flow including 1-in-10 year storm water flows):
Design: 24 inches/year 0.5 inches/hour 1 inches/day 3 inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.6 Total irrigation per year (gallons): Design: 2,394,400 gal Actual: _____ gal

10.7 Actual months used for irrigation (check all that apply):
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10.8 Land application rate is based on:
 Hydraulic Loading Other (describe) _____
 Nutrient Management Plan (N and P) If N and P is selected, is the plan included? YES NO