

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 Stanberry
130 W. 1st St.
Stanberry, MO 64489

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.

July 6, 2018
Effective Date

May 5, 2020
Modification Date


Edward B. Galbraith, Director, Division of Environmental Quality

January 15, 2021
Expiration Date


Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Construction of an extended aeration treatment plant consisting of an influent pump station; a headworks structure with screening and grit removal; an extended aeration system including aeration reactors, digesters and clarifiers; UV disinfection; aerobic sludge digesters; a sludge holding basin; and sludge drying beds.

A closure plan will need to be submitted to the Kansas City Regional Office for review and approval prior to and closure activities.

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 required to determine “findings of affordability” because the permit applies to a **combined or separate sanitary sewer system for a publically-owned treatment works**.

Cost Analysis for Compliance - The Department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of Department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the Department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See **APPENDIX – COST ANALYSIS FOR COMPLIANCE**.

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 Snyder & Associates on November 28, 2017.
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 Kansas City 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. 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. Wastewater treatment facility shall not be located within one hundred feet (100'), and preferably three hundred feet (300') of any water well or water supply structure.

9. 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.”
10. 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.

11. 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.
12. 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.
13. A full closure plan shall be submitted to the Department's Kansas City 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-0043231. 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.
14. Upon completion of construction:
 - A. The City of Stanberry 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 operating permit modification 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

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

This facility is under enforcement, having received two notice of violations, for failing to meet permit limits including total suspended solids, BOD, fecal coliform, and oil and grease.

2. FACILITY DESCRIPTION

The existing facility is a trickling filter system with rock media bed, two clarifiers, a digester, and sludge drying beds. This system will be demolished. The City of Stanberry WWTF is located near the intersection of Elm St. and Myrtle, Stanberry, in Gentry County, Missouri. The facility has a design average flow of 187,000 gpd and serves a population equivalent of approximately 1,134 people.

3. COMPLIANCE PARAMETERS

The proposed project is expected to help the facility meet the following final effluent limits:

EFFLUENT PARAMETER(S)	UNIT	DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE
Flow	MGD	*		*
Biochemical Oxygen Demand ₅	mg/L		45	30
Total Suspended Solids	mg/L		45	30
<i>E. coli</i>	#/100mL		1030	206
Chlorine, Total Residual	µg/L			
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	3.6 7.9	1.4 2.9	
Oil & Grease	mg/L	*		*
Total Phosphorus	mg/L	*		*
Total Nitrogen	mg/L	*		*
EFFLUENT PARAMETER(S)	UNIT	MINIMUM		MAXIMUM
pH	SU	6.5		9.0
PARAMETER	UNIT	DAILY MINIMUM		MONTHLY AVERAGE
Dissolved Oxygen	mg/L	*		*
BOD ₅ , Percent Removal	%			85
TSS, Percent Removal	%			85

* Monitoring requirement only.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

This system will consist of a headworks building with a mechanical bar screen, grit removal with a perforated spiral screen, an influent pump station, extended aeration process, UV disinfection, aerobic sludge digesters, a sludge holding basin, and sludge drying beds.

A perforated spiral screen will be installed with a hole diameter of ¼ inch that is capable of handling a flow of 488 gpm. Screen basket will be a minimum of 10.75". Influent will have grit removed and will then be lifted to the activated sludge treatment unit. Wet well will be equipped with two pumps each capable of operating at 488 gpm at 47 feet of TDH.

The extended aeration system will include a dual train layout with a selector zone, four aeration reactors, two aerobic digesters, and two clarifiers. The anoxic selector tank will be 16.0 ft. by 5.0 ft. with a depth of 14.0 ft and a volume of 10,472 gal. Retention time will be a minimum of 32 minutes.

Aeration reactors – Two aeration chambers 19.5 ft by 19.25 ft with a depth of 14 feet will be operated in a series by means of a transfer pipe with a total volume of 78,108 gallons. Second stage aeration tanks will be 40.75 ft by 9.0 ft total volume of 76,812 gallons. Aeration tanks will have both coarse and fine bubble diffusers with duplex 32 hp blowers capable of supplying 156 scfm each to 12 fine bubble diffusers per chamber and 142 scfm each to 10 coarse bubble diffusers. The aeration chambers are designed for an average daily loading of 281 lbs BOD₅. Secondary effluent is transferred to the clarifier unit.

Two Aerobic digester tanks with a total volume of 50,976 will be used with wall mounted coarse bubble diffusers sized to supply at least 2 CFM per thousand feet of digester capacity.

An Aeromod Split-clarator (two clarifier cells) will be constructed with a total surface area of 640 sf. Each unit will be 20 ft x 16 ft. The sidewater depth will be 16 ft. The weir loading rate is 3224 gpd which meets the requirements of 10 CSR 20-8.160(4)(D)3 of being less than 15,000 gpd/sf. The solids loading rate is 20.3 lbs/day/sf which meets the requirements of 10 CSR 20-8.160(4)(B)3 of less than 50 lbs/day/sf at peak flow. The clarifier will have a retention time of 3.4 hours with a The clarified effluent will flow by gravity to the disinfection system. An air lift pump will be provided to move settled sludge from the dual hopper bottoms to the sludge beds or return to the aeration chamber as return activated sludge.

The sludge holding basin will have a volume of 69,414 gallons with 90 days of storage. Sludge will be received from three concrete sludge drying beds. Sludge will be landfill disposed or land applied.

UV disinfection will be accomplished with an open channel, quartz sleeve or a non-contact UV disinfection system capable of treating a peak flow of 0.703 mgd. System will be capable of meeting the e. coli limit of 126 colonies per 100 ml. and will deliver a minimum dosage of 30 mJ/cm² with an expected ultraviolet transmissivity of 90%. The open channel UV system will consist of 12 modules with 4 lamps per module. The tube UV reactor will have no fewer than 6 lamps irradiating at all times. The disinfected effluent will flow by gravity through flow measurement equipment and to Outfall No. 001.

5. OPERATING PERMIT MODIFICATION

Operating permit MO-0043231 will require a modification to reflect the construction activities. The modified Stanberry WWTF, MO-0043231, was successfully public noticed from May 25, 2018 to June 24, 2018. One comment was received and changes made to the ammonia limits accordingly.

Upon construction completion, submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit modification be issued.

6. CONSTRUCTION PERMIT MODIFICATION

October 2018- The change order has been reviewed for compliance with 10 CSR 20-8 with regard to sanitary engineering features. The changes modified the plans and specifications with a change in general yard piping, with the specification of a vortex grit removal system, with side slopes on sludge basin flattened to 6:1; and with the addition of a flow equalization pump to the lift station with associated forcemain.

May 2020- This construction permit is being modified upon the request of the facility owner to extend the construction permit schedule. The construction permit will now expire on January 15, 2021.



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

RECEIVED

NOV 28 2017

CP0001952

AP28581

FOR DEPARTMENT USE ONLY

APP NO.	CP NO.
FEE RECEIVED <u>1000⁰⁰</u>	CHECK NO. <u>42355</u>
DATE RECEIVED <u>11/28/17</u>	

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 questions in this section are answered NO, this application may be considered incomplete and returned.)

- 1.1 Is this a Federal/State funded project? ☒ YES ☐ N/A Funding Agency: USDA-RD, CDBG 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: (note: need to confirm status with DNR upon assignment of reviewer)
- 1.4 Has the department approved the proposed project's facility plan*?
☒ YES Date of Approval: 2-7-2012 ☐ 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

Stanberry Wastewater Treatment Facility

2.2 PROJECT DESCRIPTION

Construction of an extended aeration treatment plant consisting of an influent pump station, headworks building with screening and grit removal, extended aeration process, UV disinfection, aerobic sludge digesters, sludge holding basin, and three sludge drying beds

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Sludge to be dried in drying beds and landfill disposed or land applied (as Class B biosolids)

2.4 DESIGN INFORMATION

A. Current population: 1134; Design population: 1134
B. Actual Flow: 187,000* gpd; Design Average Flow: 187,000 gpd;
Actual Peak Daily Flow: 666,600** gpd; Design Maximum Daily Flow: 700,000 gpd;
Design Wet Weather Event: 700,000 gpd

*187,000 GPD is wet season actual and used as basis for design

**666,600 GPD is actual peak taken from a year of City flow data

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

\$ 4,991,661.25

3.0 WASTEWATER TREATMENT FACILITY

NAME Stanberry Wastewater Treatment Facility	TELEPHONE NUMBER WITH AREA CODE (660) 783-2622	EMAIL ADDRESS stanberryadmin@jagtec.net		
ADDRESS (PHYSICAL) Elm Street	CITY Stanberry	STATE MO	ZIP CODE 64489	COUNTY Gentry

Wastewater Treatment Facility: Mo- 0043231 (Outfall 1 Of 1)

3.1 Legal Description: NW ¼, SW ¼, NW ¼, Sec. 05 , T 62N , R 32W
(Use additional pages if construction of more than one outfall is proposed.)3.2 UTM Coordinates Easting (X): 369275.1 Northing (Y): 4452135.3
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Unnamed tributary to Wildcat Creek (U)

4.0 PROJECT OWNER

NAME City of Stanberry	TELEPHONE NUMBER WITH AREA CODE (660) 783-2622	EMAIL ADDRESS stanberryadmin@jagtec.net	
ADDRESS 130 W 1st Street	CITY Stanberry	STATE MO	ZIP CODE 64489

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 City of Stanberry	TELEPHONE NUMBER WITH AREA CODE (660) 783-2622	EMAIL ADDRESS stanberryadmin@jagtec.net	
ADDRESS 130 W 1st Street	CITY Stanberry	STATE MO	ZIP CODE 64489

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

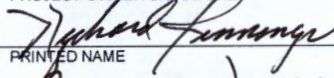
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHORITY IS A PROPERTY OWNERS ASSOCIATION.

A. Is a copy of the as-filed restrictions and covenants included with this application? ☐ YES ☐ NOB. 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 ☐ NOC. 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 ☐ NOD. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☐ NO**6.0 ENGINEER**

ENGINEER NAME / COMPANY NAME Emily Wicoff / Snyder & Associates	TELEPHONE NUMBER WITH AREA CODE (816) 364-5222	EMAIL ADDRESS ewicoff@snyder-associates.com	
ADDRESS 802 Francis St	CITY St. Joseph	STATE MO	ZIP CODE 64501

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 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 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
RICHARD JENNINGS

DATE

11-17-17

TITLE OR CORPORATE POSITION

Mayor

TELEPHONE NUMBER WITH AREA CODE

(660) 783-2622

EMAIL ADDRESS

stanberryadmin@jagtec.net

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.**