

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Paul J. Dodson
North Wood R-IV School District
3734 North Highway 19
Salem, MO 65560

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.

January 16, 2019
Effective Date


Edward B. Galbraith, Director, Division of Environmental Quality

January 15, 2021
Expiration Date


Chris Wieberg, Director, Water Protection Program

I. CONSTRUCTION DESCRIPTION

X=631506, Y=4171347

The Department is not required to make a “finding of affordability”. Per Section 644.145.3, a “finding of affordability” is a statement as to whether or not an individual or household would be required to make unreasonable sacrifices in order to make the projected monthly payments for sewer services. While this facility is a publically-owned treatment works, the permittee accomplishes capital improvements through an established budget for operation and maintenance and not through the issuance of utility bills to customers for sewer services. Because of this, the Department cannot determine the “affordability” of the new permit requirements.

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 Total Environmental Services on July 23, 2018.
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 Southeast Regional Office per 10 CSR 20-7.015(9)(E)2.
5. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or occupied structure.
6. Wastewater treatment facility shall not be located within (300') of any water well not located on the property.
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. Upon completion of construction:
 - A. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications; and
 - 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.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The current wastewater treatment facility has exceeded BOD limitations in the past and it has been shown by monitoring that future ammonia limitations have not been consistently met. The proposed upgrade will eliminate the discharge.

2. FACILITY DESCRIPTION

The existing treatment facility consists of septic tanks, a recirculating sand filter and UV. Proposed upgrades will remove the UV system and add a subsurface absorption system having a pumping tank and LPP (low pressure pipe) distribution. The LPP system will have multiple zones and use timed dosing. The upgraded facility will not discharge.

The North Wood R-IV School District Wastewater Treatment Facility is located at 3734 North Highway 19, Salem, in Dent County, Missouri. The facility has a design average flow of 6875 and serves a design population equivalent of 113.

3. COMPLIANCE PARAMETERS

The proposed project is no discharge. The facility will be prohibited from discharging. There are no effluent reporting requirements for this type of system. Maintenance records are required to be kept.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

The design flow is based on serving the existing school and retains the design flow of the existing system, 6875 gpd. Based on historic water use the current actual flow is approximately 4000 gpd.

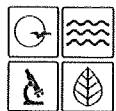
The existing recirculating sand filter will be kept in use; the ultraviolet disinfection unit will be removed. Effluent from the sand filter will be intercepted and directed to the new dosing chamber. The dosing chamber will consist of six tanks with a nominal size of 1500 gallons each. Alternatively four tanks with a nominal size of 2000 gallons each may be used. The dosing chamber will be fitted with four effluent pumps Orenco Model PF501012, each pump with a capacity of approximately 51 gpm at a TDH of 59 feet. A separate force main from each pump, either 140 feet or 240 feet, of 2.0-inch pvc force main connected to a 6-outlet distribution valve. Pumps will sit inside an Orenco pump vault that has a 3mm mesh screen, Model PVU57-1819L.

Absorption field will be 36,000 sq. ft. with 4 cells, each cell will have 6 zones; all zones to have 3 laterals, 100 feet in length, spaced five feet on center; the irrigation pipe will be 1.25 inch pvc with a 5/32-inch hole every five feet, trenches to be 12 inches deep. Dosing to be controlled by timers with a design setting of three doses/zone/day. Detailed soil analysis was performed by Ms. Melissa Bettes, Soil Scientist. The loading rate recommended in the soil report is 0.2 gpd/sq. ft./day. Absorption field size is based on a soil loading rate of 0.20 gallons per square foot per day. At design flow the loading rate is approximately 0.19 due to rounding up of pipe and trench lengths. Since the actual flow is approximately 4000 gpd and the school will not experience normal flows during weekends and summer months the actual loading rate will be significantly less than design rate. A Geohydrologic Evaluation was performed by the Missouri Geological Survey, completed November 13, 2018. Based on the characteristics observed, the site receives an acceptable overall geologic evaluation limitation rating. Set back distance from the nearest absorption field to the existing well located on the property is shown as greater than 300 feet.

5. OPERATING PERMIT

Operating permit MO-0053546 will require a modification to reflect the construction activities. The modified North Wood R-IV School District Wastewater Treatment Facility, MO-0053546, was successfully public noticed from December 7, 2018 to January 7, 2019 with no comments received. 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.

Andrew Appelbaum, P.E.
Engineering Section
andy.appelbaum@dnr.mo.gov



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

**APPLICATION FOR CONSTRUCTION PERMIT -
WASTEWATER FACILITY**

RECEIVED

JUL 23 2018

Water Protection Program

AP 30300
CP 0002013

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

88

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: _____ 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: N/a
- 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

North Wood R-IV School District WWTF - Upgrades

2.2 PROJECT DESCRIPTION

Adding a LPP system for dispersal of the current WWTF's effluent in order to alleviate future issues with nitrogen based limits.

2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Sludge will continue to be disposed of via contract hauler.

2.4 DESIGN INFORMATION

- A. Current population: 113; Design population: 113
- B. Actual Flow: 4000 gpd; Design Average Flow: 6875 gpd;
Actual Peak Daily Flow: 4000 gpd; Design Maximum Daily Flow: 13,750 gpd;
Design Wet Weather Event: N/a

2.5 ADDITIONAL INFORMATION

- A. Is a topographic map attached? ☒ YES ☐ NO See plans.
- B. Is a process flow diagram attached? ☒ YES ☐ NO

2.6 ESTIMATED PROJECT CONSTRUCTION COST

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3.0 WASTEWATER TREATMENT FACILITY				
NAME North Wood R-IV School District WWTF		TELEPHONE NUMBER WITH AREA CODE (573) 729-4607		EMAIL ADDRESS
ADDRESS (PHYSICAL) 3734 North Highway 19	CITY Salem	STATE MO	ZIP CODE 65560	COUNTY Dent
Wastewater Treatment Facility: Mo- 0053546 (Outfall 001 Of 001)				
3.1 Legal Description: $\frac{1}{4}$, NE $\frac{1}{4}$, SW $\frac{1}{4}$, Sec. 05 , T 34N , R 05W (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 631510 Northing (Y): 4171259 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: Tributary to Nelson Branch				
4.0 PROJECT OWNER				
NAME North Wood R-IV School District		TELEPHONE NUMBER WITH AREA CODE (573) 729-4607		EMAIL ADDRESS
ADDRESS 3734 North Highway 19	CITY Salem	STATE MO	ZIP CODE 65560	
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 North Wood R-IV School District		TELEPHONE NUMBER WITH AREA CODE (573) 729-4607		EMAIL ADDRESS
ADDRESS 3734 North Highway 19	CITY Salem	STATE MO	ZIP CODE 65560	
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 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 Seth A. Coggin, P.E., Total Environmental Services		TELEPHONE NUMBER WITH AREA CODE (417) 581-6646		EMAIL ADDRESS sethcoggin@totalenvironmental.com
ADDRESS 515 Old South 5	CITY Camdenton	STATE MO	ZIP CODE 65020	
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 Paul J. Dodson		DATE 7/17/18		
TITLE OR CORPORATE POSITION Board President		TELEPHONE NUMBER WITH AREA CODE (573) 729-4607		EMAIL ADDRESS dodson@northwood.k12.mo.us
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.				

PART B – LAND APPLICATION ONLY**(Submit only if the proposed construction project includes land application of wastewater.)****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: _____ (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 _____ Width _____ Depth _____ Freeboard _____ Depth _____ Safety _____ % Slope _____
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 _____ ft Minimum operating water level _____ ft
Basin #2: Maximum operating water level _____ ft Minimum operating water level _____ ft

9.5 Design depth of sludge in storage basins.

Basin #1: _____ ft Basin #2: _____ ft

9.6 Existing sludge depth, if the basins are currently in operation.

Basin #1: _____ 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 ^{<1} _____ Maximum % field slopes _____
Location: _____ ¼, NE ¼, SW ¼, 05 Sec. 34N T 05W R _____ Dent _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ County _____ Acres
Location: _____ ¼, _____ ¼, _____ ¼, _____ 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 6,875

Seasonal _____ Off-season _____

10.5 Land application rate (design flow including 1-in-10 year storm water flows):

Design: _____ inches/year _____ inches/hour 0.2 inches/day _____ inches/week
Actual: _____ inches/year _____ inches/hour _____ inches/day _____ inches/week

10.6 Total irrigation per year (gallons): Design: 1,460,000 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