

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 Brunswick
The Honorable Diane Rice
Mayor
115 West Broadway Street
Brunswick, MO 65236

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 2, 2024
Effective Date

July 1, 2026
Expiration Date



John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Construction includes improving the existing four pump stations in the collection system of the City of Brunswick; extending the existing force main at the Brunswick wastewater treatment facility (WWTF) to new lagoon influent structure at Lagoon Cell #1; installing an influent structure with influent pipe into Lagoon Cell #1; adding baffle curtains in Lagoon Cell #1 and Cell #2; installing floating cover over Lagoon Cell #3; improving the existing chlorination and de-chlorination systems; and installing a new effluent flow measurement.

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 Ellen E. Woltjen, P.E., with McClure Engineering Co. 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 Northeast Regional Office per 10 CSR 20-7.015(9)(G).
5. 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 <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>. See <https://dnr.mo.gov/data-e-services/water/electronic-permitting-epermitting> for more information.
6. A United States Army Corps of Engineers (USACE) Clean Water Act Section 404 Department of the Army permit and a Section 401 Water Quality Certification issued by the department may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied or notification is provided that no Section 404 permit is required by the USACE. You must contact your local USACE district since they determine what waters are jurisdictional and which permitting requirements may apply. You may call the department's Water Protection Program, Operating Permits Section at 573-522-4502 for more information. See <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality> for more information.
7. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
 - Flood protection shall apply to new construction and to existing facilities undergoing major modification. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the 100-year flood elevation. 10 CSR 20-8.140(2)(B). 10 CSR 20-8.130(2)(A)
 - Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140(2)(D). 10 CSR 20-8.130(2)(B)
 - Alarm systems with an uninterrupted power source shall be provided for pumping stations. 10 CSR 20-8.130(6)
 - Lagoon berms shall be constructed of relatively impervious material and compacted to at least 95 percent maximum dry density test method to form a stable structure. 10 CSR 20-8.200(4)(A)1.
 - Unlined corrugated metal pipe shall not be used for influent lines due to corrosion problems. 10 CSR 20-8.200(4)(D)1.
 - A manhole shall be installed with its invert at least six inches above the maximum operating level of the lagoon, prior to the entrance into the primary cell, and provide sufficient hydraulic head without surcharging the manhole. 10 CSR 20-8.200(4)(D)2.

- The influent line(s) shall be located along the bottom of the lagoon so that the top of the pipe is just below the average elevation of the lagoon seal; however, there shall be an adequate seal below the pipe. 10 CSR 20-8.200(4)(D)3.
 - Lagoon covers shall be constructed with a minimum thickness of two mil or meet the manufacturer's recommendations, and be ultraviolet and weather resistant. 10 CSR 20-8.200(5)(A)
 - The lagoon cover shall include a stormwater removal system that conveys collected precipitation to sumps or includes drainage areas in the membrane within the acceptable leakage rate to allow stormwater to drain into the lagoon. 10 CSR 20-8.200(5)(C).
8. 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 Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N) (<https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155>) and request the operating permit modification be issued. No modification fee is required.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

This project is to improve the city pump stations for better operability and make improvements to the existing treatment facility for better effluent quality.

2. FACILITY DESCRIPTION

The City of Brunswick owns and operates Brunswick WWTF and its associated collection system. The WWTF consists of a three-cell lagoon with chlorination and de-chlorination systems. The WWTF is located near the intersection of Meyer Road and Small Street in Brunswick, Chariton County, Missouri. The WWTF has a design average flow of 104,000 gallons per day (gpd) and serves a population equivalent of approximately 1,245 people.

Construction includes improving the existing four pump stations; extending the existing force main at the wastewater treatment facility (WWTF) to new lagoon influent structure at Cell #1; installing an influent structure with influent pipe into Cell #1; adding baffle curtains in Cell #1 and Cell #2; installing floating cover over Cell #3; improving the existing chlorination and de-chlorination systems; and installing a new effluent flow meter.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits as established in Operating Permit MO-0032557.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

Construction will cover the following items:

- **Pump Station Improvements** – The improvements include installing a new auto dialer system at each of the four existing pump stations (Pump Stations #1, #2, #3, and #4); extending the wet wells and valve vaults of the Pump Station #1 and Pump Station #3 to an elevation above the 100-year flood elevation; removing the existing wet well buildings at the Pump Stations #1 and #3; adding safety and accessibility improvements at Pump Station #4; and installing other necessary appurtenances to provide complete and functioning pump stations.
- **Influent Structure** – The existing 8-inch forcemain from Pump Station #3 will be extended approximately 900 linear feet of 10-inch SDR 21 PVC pipe to a new pre-cast concrete influent structure located in the northeast corner of Lagoon Cell #1. A new 20-inch ductile-iron influent pipe will be installed in Cell #1. The influent pipe will discharge over a concrete pad. The existing influent structure and influent pipe will be capped and abandoned in place.
- **Baffles** – A new floating baffle system is added to Lagoon Cell #1 and Cell #2 to redirect and slow the flow of water through the lagoon, allowing suspended solids time to settle and improving treatment. The baffles will also reduce short-circuiting in the lagoon. The baffle system includes a polyester reinforced ethylene interpolymer alloy baffle curtain with a flow-through window, tensioning system, flotation collar, and an anchoring system. The baffle in the Lagoon Cell #1 will be approximately 549 foot long. The baffle in the Lagoon Cell #2 will be approximately 562 foot long.
- **Cover System** – A modular insulated floating cover system is added to Lagoon Cell #3 to block sunlight and reduce algae growth and the amount of total suspended solids in the lagoon effluent. Components of the cover include insulated casings, cable and perimeter anchors, fasteners, and sand tubes. The casings are the main cover component. The casings will be fabricated from two sheets of 40 mil High Density Polyethylene geomembrane, which provides a thermal barrier and flotation. The casings are attached to the perimeter with the cable and anchors. The casings are connected to each other by factory welded seams or fasteners. Sand tubes provide ballast to resist uplift due to wind forces.
- **Lagoon Cell #3 Effluent Structure** – The existing shear gate valves in the Lagoon Cell #3 effluent structure will be replaced with new resilient wedge gate valves to provide greater operational flexibility and improved flow control.

- Disinfection System Improvements – Improvements to the chlorination/de-chlorination building primarily involve the replacement of existing equipment that has been corroded by improper ventilation of chlorine gases. Items that will be replaced include the wall-mounted unit heater, thermostat, two disconnect switches, exhaust fan, and existing non-PVC conduit. The peristaltic pumps for the chlorination and de-chlorination chemical feed system will be replaced like for like. The pumps will be connected to a battery backup system to ensure disinfection is maintained during power outages. To improve mixing in the chlorine contact basin, a small, compressed air tube will be installed at the dosing point. Additionally, the chamber will be covered with aluminum plates to block sunlight that promotes the regrowth of algae in the effluent.
- Effluent Flow Measurement – An open channel level transmitter flow measurement system consisting of ultrasonic transducer, controller, and interconnection cable will be installed at the existing V-notch weir for effluent flow measurement.

5. OPERATING PERMIT

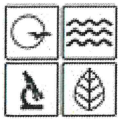
These construction activities do not change the effluent limits or conditions of the current operating permit. The department will conduct an internal modification to reflect the current facility description upon receipt of the Statement of Work Completed form.

V. NOTICE OF RIGHT TO APPEAL

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

Administrative Hearing Commission
U.S. Post Office Building, Third Floor
131 West High Street, P.O. Box 1557
Jefferson City, MO 65102-1557
Phone: 573-751-2422
Fax: 573-751-5018
Website: <https://ahc.mo.gov>

Sieu T. Dang, P.E.
Engineering Section
sieu.dang@dnr.mo.gov



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

FOR DEPARTMENT USE ONLY

APP NO.

CP NO.

FEE RECEIVED

CHECK NO.

DATE RECEIVED

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? ☒ YES ☐ N/A Funding Agency: DNR-ARPA Project #: _____
- 1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☐ YES Date of Approval: _____ ☒ N/A
- 1.3 Has the department approved the proposed project's facility plan*?
☒ YES Date of Approval: 8-30-23 ☐ NO (If No, complete No. 1.4.)
- 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?
☐ YES ☐ NO ☐ Exempt because _____
- 1.5 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
- 1.6 Is a summary of design* included with this application? ☒ YES ☐ NO
- 1.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?
☐ YES Date of submittal: _____
☒ Enclosed is the appropriate operating permit application and fee submittal. Denote which form: ☐ A ☐ B ☒ B2
☐ N/A: However, In the event the department believes that my operating permit requires revision to permit limitation such as changing equivalent to secondary limits to secondary limits or adding total residual chlorine limits, please share a draft copy prior to public notice? ☒ YES ☐ NO
- 1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☒ NO
- 1.9 Is the appropriate fee or JetPay confirmation included with this application? ☐ YES ☒ NO
See Section 7.0

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

2.0 PROJECT INFORMATION

2.1 NAME OF PROJECT

Brunswick Wastewater Treatment Facility and Pump Station Improvements

2.2 ESTIMATED PROJECT CONSTRUCTION COST

\$ 1.55 million

2.3 PROJECT DESCRIPTION

Rehabilitation of four existing pump stations and improvements to the existing lagoon WWTF including relocating the lagoon influent pipe, the addition of baffles and a floating cover and rehabilitation of the existing chlorine disinfection system.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

Sludge is stored in the lagoon cells. Sludge removal is not included as part of this project.

2.5 DESIGN INFORMATION

A. Current population: 801; Design population: 1,245

B. Actual Flow: 77,000 gpd; Design Average Flow: 104,000 gpd;
Actual Peak Daily Flow: 730,000 gpd; Design Maximum Daily Flow: 388,960 gpd; Design Wet Weather Event: _____

2.6 ADDITIONAL INFORMATION

A. Is a topographic map attached? ☒ YES ☐ NO

B. Is a process flow diagram attached? ☒ YES ☐ NO

3.0 WASTEWATER TREATMENT FACILITY

NAME Brunswick Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE 660-548-3028		E-MAIL ADDRESS cityofbrunswick@yahoo.com	
ADDRESS (PHYSICAL) Meyer Rd. and Small St. intersection	CITY Brunswick	STATE MO	ZIP CODE 65236	COUNTY Chariton	
Wastewater Treatment Facility: Mo- 0032557 (Outfall 001 Of 001)					
3.1 Legal Description: _____ 1/4, _____ 1/4, _____ 1/4, Sec. 11, T 53N, R 20W (Use additional pages if construction of more than one outfall is proposed.)					
3.2 UTM Coordinates Easting (X): 489916 Northing (Y): 4362972 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)					
3.3 Name of receiving streams: <u>Grand River</u>					

4.0 PROJECT OWNER

NAME City of Brunswick		TELEPHONE NUMBER WITH AREA CODE 660-548-3028		E-MAIL ADDRESS brunswick.mo.mayor@gmail.com	
ADDRESS 115 West Broadway St.	CITY Brunswick	STATE MO	ZIP CODE 65236		

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 City of Brunswick		TELEPHONE NUMBER WITH AREA CODE 660-548-3028		E-MAIL ADDRESS brunswick.mo.mayor@gmail.com	
ADDRESS 115 West Broadway St.	CITY Brunswick	STATE MO	ZIP CODE 65236		

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

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME Ellen Woltjen, P.E. / McClure		TELEPHONE NUMBER WITH AREA CODE 573-234-2641		E-MAIL ADDRESS ewoltjen@mcclurevision.com	
ADDRESS 2001 W Broadway	CITY Columbia	STATE MO	ZIP CODE 65203		

7.0 APPLICATION FEE☐ CHECK NUMBER☐ 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

DATE

TITLE OR CORPORATE POSITION

TELEPHONE NUMBER WITH AREA CODE

E-MAIL ADDRESS

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.**