

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Boone County Regional Sewer District
BCRSD Highfield Acres WWTF
1314 North 7th Street
Columbia, MO 65201

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.

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.

February 4, 2026
Effective Date

February 3, 2028
Expiration Date

A handwritten signature in black ink, appearing to read 'Heather S. Peters', is written over a horizontal line.

Heather S. Peters, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

This project consists of constructing a new sanitary sewer main to the southwest of the Boone County Regional Sewer District (BCRSD) Highfield Acres Wastewater Treatment Facility (WWTF). This new sewer main will consist of approximately 1,700 feet of 8-inch sewer pipe, 5 concrete manholes, and a concrete doghouse manhole, and will connect to the City of Columbia's existing 15-inch diameter sanitary sewer main. Both of the single-cell lagoons covered under the existing permit for this facility (MO-0053376) will be abandoned and closed according to Missouri Department of Natural Resources regulations. This project will serve approximately 104 homes.

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 system. This project site is located on the eastern boundary of the city, approximately 0.5 miles west of the intersection of Western Lane and Eastern Lane, connecting into sewer lines serving the city.

II. 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 Cochran Engineering on July 29, 2024, and signed and sealed by William R. Johanning, P.E. on July 18, 2024, and approved by the department on February 4, 2026.
3. Regulation 10 CSR 20-4.040(18)(B)1 requires that projects be publicly advertised, allowing sufficient time for bids to be prepared and submitted. Projects should be advertised at least 30 days prior to bid opening.
4. 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(11).
5. As per 10 CSR 20-4.040, all changes in contract price or time within the approved scope of work must be by change order in accordance with Section 19 of this rule.
6. Manholes shall be located with the top access at or above grade level.

7. 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 electronic Sanitary Sewer Overflow/Bypass Reporting system at <https://dnr.mo.gov/mogem/> or Northeast Regional Office per 10 CSR 20-7.015(9)(G).
8. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(5), which includes by reference the provisions of 10 CSR 23-3.010. Separation distance requirements between water mains and sanitary sewers in 10 CSR 60-10.010 are also applicable.
9. 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 <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.
10. A United States Army Corps of Engineers (USACE) Section 404 Department of Army permit (§404) along with the department's Section 401 Water Quality Certification or waiver (§401) 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 likely be required. Since the USACE makes determinations on what is jurisdictional, you must contact the USACE to determine permitting requirements. See <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality> for more information or you may contact the department's Water Protection Program at 573-522-4502 or wpsc401cert@dnr.mo.gov.
11. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements.
12. In accordance with 10 CSR 20-6.010(12), a full closure plan was submitted and approved by the department's Northeast Regional Office for permitted wastewater treatment system MO-0053376. The closure activities must meet conditions in the approved closure plan and the requirements in Standard Conditions Part III of the Missouri State Operating Permit No. MO-0053376. 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.

13. Upon completion of construction:

- A. The Boone County Commission will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as-builts if the project was not constructed in accordance with previously submitted plans and specifications; and
- C. Submit the Statement of Work Completed form (<https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155>) to the department in accordance with 10 CSR 20-6.010(5)(N).

Joshua Brown, P.E.
Financial Assistance Center
Clean Water Section, Engineering Unit
joshua.brown@dnr.mo.gov

APPENDICES

Appendix A - Summary of Design
Appendix B - Project Map
Appendix C - Collection System Design Calculations
Appendix D - Closure Plan Approval

APPENDIX A – SUMMARY OF DESIGN



Architecture • Civil Engineering • Land Surveying • Site Development • Geotechnical Engineering • Inspection & Materials Testing

July 29, 2024

Ms. Ginny Bretzke, P.E.
Missouri Department of Natural Resources
Financial Assistance Center
PO Box 176
Jefferson City, MO 65102

SENT VIA: Email
(ginny.bretzke@dnr.mo.gov)

RE: Summary of Design
Highfield Acres Sewer Interconnection & Lagoon Abandonment
Project No. C295375-29

The Highfield Acres Subdivision's wastewater system is maintained by the Boone County Regional Sewer District. The Highfield Acres Subdivision's existing wastewater system consists of 2 single-cell aerated lagoons; Outfall No. 1 is designed to treat 20,000 gallons per day and Outfall No. 2 is designed to treat 9,000 gallons per day. A gravity sewer collection system services Highfield Acres Subdivision.

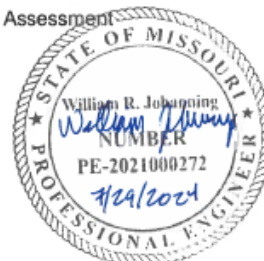
The two lagoons at Highfield Acres Subdivision are expecting future permit requirements for disinfection and ammonia. The two lagoons are unable to meet current ammonia limits and provide no disinfection. The Highfield Acres Sewer Interconnection and Lagoon Abandonment project is expected to address both current and future requirements for disinfection and ammonia.

The proposed project will interconnect the Highfield Acres Subdivision with the City of Columbia's Regional Wastewater Treatment Plant via a gravity sewer. Approximately 1,700 lineal feet of gravity sewer will be constructed at the existing Highfield Acres wastewater treatment lagoons and convey the wastewater to the existing City of Columbia's gravity sewer that conveys wastewater to the Columbia Regional Wastewater Treatment Plant. The Columbia Regional Wastewater Treatment Plant has permitted capacity for the increased flow. The two single-cell lagoons will then be closed. This closure shall follow MODNR requirements and as outlined in Section 02558 of the specifications.

Two additional alternatives were considered; (1) upgrading the existing two single-cell lagoons to a new treatment plant with a subsurface disposal field and (2) taking no action to improve the lagoons. The sewer interconnection and lagoon closure was determined to be the most practical, economical and feasible to meet future permit demands for disinfection and ammonia.

ATTACHMENTS

Financial Assistance Center Finding of No Significant Impact/Environmental Assessment





Architecture • Civil Engineering • Land Surveying • Site Development • Geotechnical Engineering • Inspection & Materials Testing

July 29, 2024

Mr. Troy LaLond
Missouri Department of Natural Resources
Water Protection Program
1709 Prospect Drive
Macon, MO 63552

Re: Boone County Regional Sewer District – Highfield Acres WWTF (MO#0053376)
Cochran Project No. LOR15-062

Mr. LaLond,

The Boone County Regional Sewer District intends to close the Highfield Acres WWTF (MO#0053376) in late 2024 or early 2025. The Boone County Regional Sewer District plans to construct approximately 1,700 lineal feet of gravity sewer at the existing Highfield Acres wastewater treatment lagoons and convey the wastewater to the existing City of Columbia's gravity sewer that conveys wastewater to the Columbia Regional Wastewater Treatment Plant.

The Highfield Acres wastewater treatment lagoons will remain in operation during the construction of the gravity sewer system. Once the new gravity sewer main is constructed, inspected, and completely operational, the raw sewage will be diverted to the City of Columbia treatment plant. The lagoon cells shall be allowed to settle for a minimum of seven (7) days. After this period the liquid in the existing lagoon cells shall be pumped down to a point 2-3 inches above the existing sludge. There is approximately 118,365 gallons of liquid to be siphoned from the North Lagoon and 201,635 gallons of liquid to be siphoned from the South Lagoon. Wastewater in the lagoons shall be removed by one of the following: (1) pump to a different wastewater with permission and the receiving system is not overloaded; (2) pump into the new sanitary sewer and to the City of Columbia wastewater treatment plant with permission and the plant will not be overloaded; (3) pump to the receiving stream if lagoons are allowed to stabilize and no additional inflow for a period no less than the design detention time, max discharge rate does not exceed the design flow, and effluent is measured and meets permit requirements. Following the procedure, the remaining liquid will be removed through evaporation.

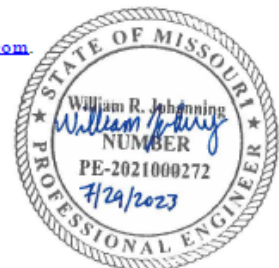
Once the water level has been lowered in each cell, remediation for sludge shall be completed per the Specification 02558 – Lagoon Closure Plan, all existing piping and structures in the lagoon area demolished and removed offsite, and the site shall be graded per the plans. During remediation of the lagoon, the berm may be cut between the cells to allow rainwater to flow to the lower cell and be discharged at the allowed rate. Once all construction activities have been completed, Boone County Regional Sewer District will submit the required Request for Termination of Operating Permit, Form – MO 780-2814 to MoDNR for review, approval, and termination of MO-0053376 State Operating Permit.

If you have any questions, please contact me at 636-584-0540 or rjohanning@cochraneng.com.

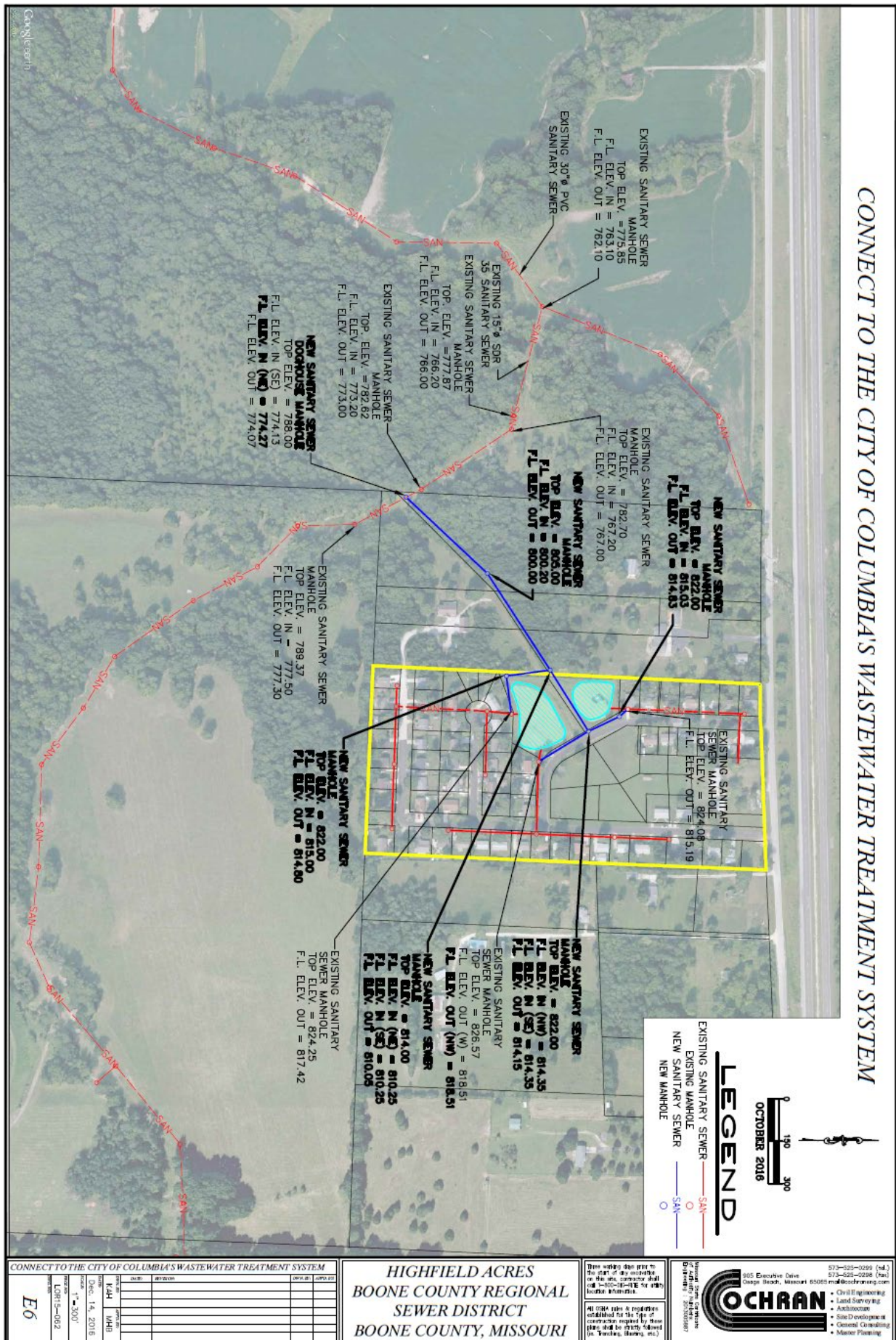
Sincerely,

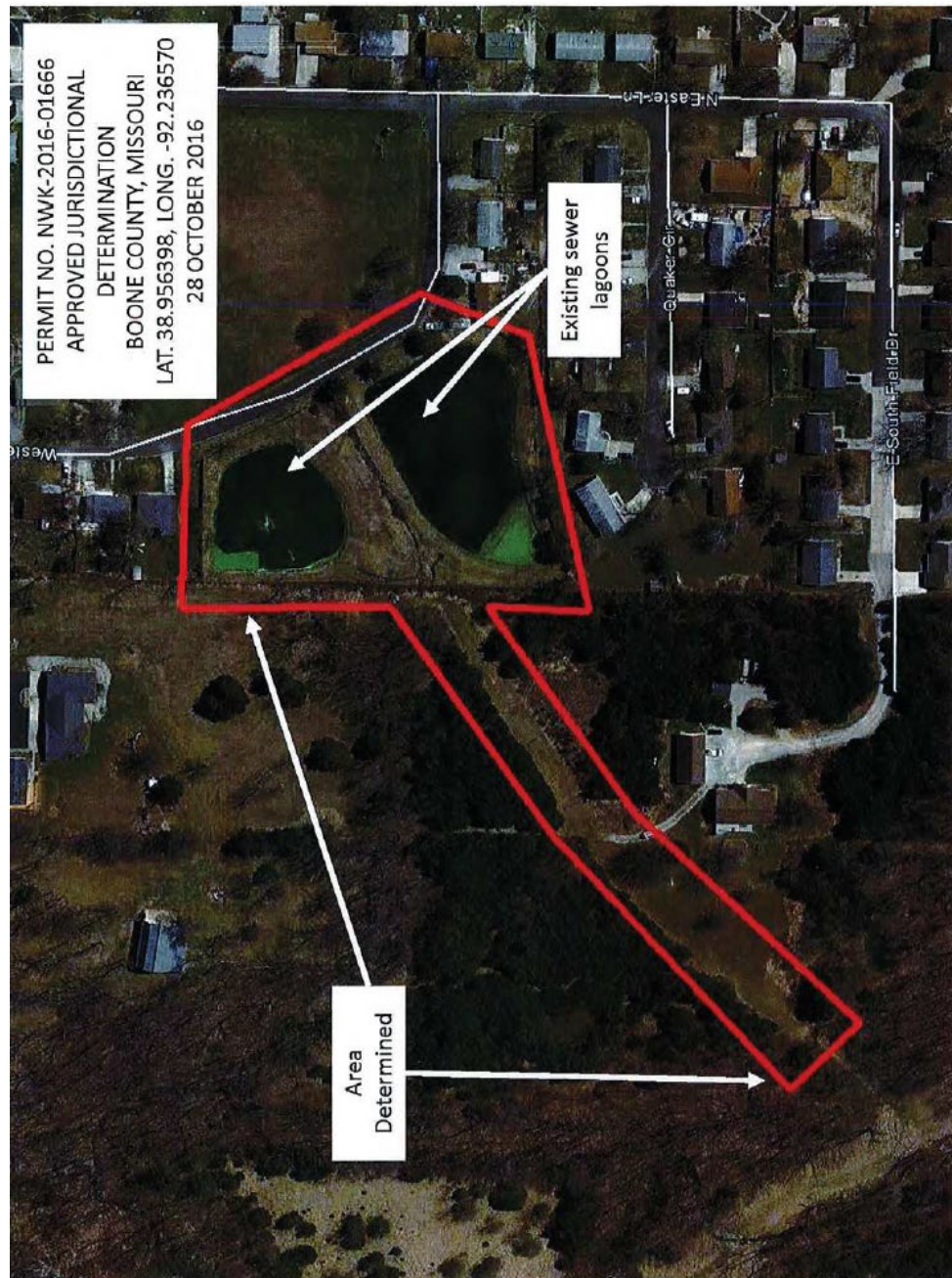
A handwritten signature in blue ink that reads 'William Johanning'.

William R. Johanning, P.E.
Cochran



APPENDIX B - PROJECT MAP





APPENDIX C - COLLECTION SYSTEM DESIGN CALCULATIONS

New Sanitary Sewer Main Capacity Calculation

Given:

Combined Design Flow for Highfield Acres Wastewater Treatment Facility
per Missouri DNR Operating Permit = 29,000 Gallons per Day
New 8-inch Sanitary Sewer Main
Flattest Grade of 8-Inch Sanitary Sewer Main = 0.77%

Calculate Flow Capacity of 8-Inch Sanitary Sewer Main

Area of 8" Diameter PVC pipe = 0.349 ft²

Slope = 0.77% = 0.0077 ft/ft

n = 0.010

R_h = D/4 = 0.6667/4 = 0.1667 ft

$$\text{Velocity} = \frac{1.49(0.1667^{0.66})(0.0077^{0.5})}{0.01} = 4.01 \text{ ft/s}$$

$$Q = VA = (4.01 \text{ ft/s})(0.349 \text{ ft}^2) = \underline{1.40 \text{ ft}^3/\text{s}}$$

$$\text{Convert Flow to Gallons per Minute (gpm)} = (1.40 \text{ ft}^3/\text{s})(7.48 \text{ gallons/ft}^3)(60 \text{ sec./min.}) = \underline{628.32 \text{ gpm}}$$

Average Daily Flow of System

Flow = 29,000 gallons per day (gpd)

Flow per minute = 29,000 gpd/1,440 minutes per day = 20.14 gpm

Peak Flow = 4 (Average Daily Flow) = 4(20.14 gpm) = 80.56 gpm

Flow Capacity of 8-Inch Sanitary Sewer Main = 628.32 gpm

Peak Flow of Existing System = 80.56 gpm

Therefore, an 8-inch sanitary sewer main has the capacity to handle the existing sanitary sewer system's flow.

APPENDIX D - CLOSURE PLAN APPROVAL



Michael L. Parson
Governor

Dru Buntin
Director

§.100 BCRSD Highfield Acres WWTF
Boone County
#MO-0053376

August 19, 2024

Virgil Farnen Operations Manager
1314 North 7th Street
Columbia, MO 65201

CLOSURE PLAN APPROVAL

Dear Virgil Farnen:

A closure plan review was conducted by a Missouri Department of Natural Resources' team member pursuant to the Missouri Clean Water Law regarding the submittals received by the Northeast Regional Office on July 30, 2024. The closure plan was submitted for the wastewater treatment plant associated with the Boone County Regional Sewer District (BCRSD) Highfield Acres Wastewater Treatment Facility (WWTF), located 0.05 miles west of the Western Lane and Eastern Lane intersection, in Boone County. The entity operates under the authority of Missouri State Operating Permit #MO-0053376.

Please see the attached closure plan review document for the approval.

Your cooperation in achieving and maintaining environmental compliance is appreciated. Fact sheets are available on the department's website to assist entities with understanding and following environmental requirements.

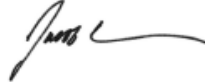


BCRSD Highfield Acres WWTF
August 19, 2024
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If you have any questions or would like to schedule a time to meet with a department team member to discuss compliance requirements, please contact Troy LaLond at 660-385-8000 in the Northeast Regional Office, 1709 Prospect Drive, Macon, MO 63552 or by email at NERO@dnr.mo.gov.

Sincerely,

NORTHEAST REGIONAL OFFICE



Jacob Cross
Regional Director

Enclosure: Closure Plan Review

c: Ryan Johanning P.E. Cochran Engineering
Ginny Bretzke, P.E. Water Protection Program, Financial Assistance Center

**Missouri Department of Natural Resources
Northeast Regional Office
Closure Plan Review
BCRSD Highfield Acres WWTF
0.05 miles west of Western Lane and Eastern Lane intersection, Columbia, Missouri 65201
Boone County
#MO-0053376
August 19, 2024**

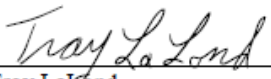
On July 30, 2024, the Missouri Department of Natural Resources' Northeast Regional Office received a closure plan for the Boone County Regional Sewer District (BCRSD) Highfield Acres Wastewater Treatment Facility (WWTF). Revisions to the closure plan were submitted on July 31, 2024, and August 14, 2024.

The closure plan was reviewed in accordance with Clean Water Commission Regulation 10 CSR 20-6.010(12), "Closure of Treatment Facilities," and Standard Conditions Parts I and III of Missouri State Operating Permit #MO-0053376 for the disposal of wastewater treatment facility residues. The department approves the submitted closure plan with the following conditions:

- A disturbance of one acre or greater during closure activities requires a land disturbance permit.
- All reports and fees required by Missouri State Operating Permit #MO-0053376 must be submitted as required until termination of the operating permit.

Please remember to coordinate with the Department's Water Pollution Control Branch to ensure proper termination or modification of Missouri State Operating Permit #MO-0053376 is completed to reflect the closure of this wastewater treatment facility.

SUBMITTED BY:


Troy LaLond
Environmental Program Specialist
Northeast Regional Office

REVIEWED BY:


Stephen Moss
Engineering Program Supervisor
Northeast Regional Office