



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

July 25, 2024

Jeff Shook
Executive Director
Little Blue Valley Sewer District
21208 East Old Atherton Road
Independence, MO 64058

RE: C295439-05 Little Blue Valley Sewer District
Middle Big Creek Phase 2 Interceptor Project, MO-0058629
Construction Permit No. CPSE01111, Cass County

Dear Jeff Shook:

The Missouri Department of Natural Resources' Financial Assistance Center has reviewed and approved the plans and specifications submitted by Burns & McDonnell for the Little Blue Valley Sewer District (LBVSD). Please find enclosed Construction Permit No. CPSE01111. You must maintain the construction permit along with the associated plans and specifications with your official project file for a minimum of 4 years following completion of the project.

This permit will terminate 24 months from the date of issuance. In accordance with 10 CSR 20-6.010(5)(J), the department may grant an extension. If you believe that an extension is necessary, you must submit a request and a justification in writing for the extension at least 30 days prior to the permit expiration date.

This construction permit does not supersede any requirements of the operating permit or enforcement actions. Nothing in this permit removes any obligations to comply with county or other local ordinances or restrictions.

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. Contact information for the AHC is: Administrative Hearing Commission, United States Post Office Building, Third Floor, 131 West High Street, P.O. Box 1557, Jefferson City, MO 65102, Phone: 573-751-2422, Fax: 573-751-5018, and Website: ahc.mo.gov/.



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Please direct any technical questions regarding the construction permit, or plans and specifications to Refaat Mefrakis, P.E., Review Engineer, at 573-751-6568 or refaat.mefrakis@dnr.mo.gov. Please direct funding questions to Shane Graupman, Project Manager, at 573-522-4894 or shane.graupman@dnr.mo.gov. You may also submit questions or comments in writing to the Missouri Department of Natural Resources, Financial Assistance Center, P.O. Box 176, Jefferson City, MO 65102-0176 or fac@dnr.mo.gov. Thank you.

Sincerely,

FINANCIAL ASSISTANCE CENTER



Ginny Bretzke, P.E.
Clean Water Engineering Unit Chief

GB:rmc

Enclosures

c: Chris Sandie, Little Blue Valley Sewer District
Bill Perkins, Little Blue Valley Sewer District
Rachelle Lowe, P.E., Burns & McDonnell
Kansas City Regional Office
Shane Graupman, Department of Natural Resources, Financial Assistance Center

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

Little Blue Valley Sewer District
21208 East Old Atherton Road
Independence, MO 64058

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.

July 25, 2024
Effective Date

July 24, 2026
Expiration Date



John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The 36-inch Big Creek Interceptor Extension will have a flow capacity of 14.5 MGD to convey predicted flow over a 20-year period and provide gravity conveyance of the Big Creek sewershed to the Middle Big Creek (MBC) Wastewater Treatment Facility. The need for the new interceptor includes that the existing Greenwood Pump Station firm capacity is 6.8 MGD, with no available peak flow storage. The Big Creek sewershed peak wet weather flow is estimated to increase beyond the pump station's capacity in less than 5 years.

The bottom of pipe elevation will be 25-30 feet below grade, and groundwater is encountered on average at a depth of 15 feet. To accommodate depth and groundwater, polyvinyl chloride-SDR 35 (PVC) or centrifugally casted, fiberglass-reinforced polymer mortar (FRP, also known as HOBAS) pipe material will be utilized. The project will include all necessary appurtenances to complete the project.

This project consists of the installation of approximately 17,350 linear feet (lf) of 36-inch diameter gravity interceptor pipe and all associated (28) manholes; a 12.5-foot by 10.5-foot junction box and slide gate diversion structure upstream of the existing Greenwood Pump Station; a tie-in of the 36-inch diameter interceptor to the existing 6-foot diameter manhole; and a 17-foot by 11-foot prefabricated Parshall flume meter structure. The design of the package meter manhole utilizes a nested flume configuration where a smaller 3-inch flume will be installed/nested within the larger 18-inch flume. The Parshall flume sizes are based on a manufacturer acceptable range of flow for each meter site, e.g., a 3-inch Parshall flume is acceptable for flows 13 – 832 gallon per minute (gpm) and an 18-inch Parshall flume is acceptable for flows up to 11,002 gpm. The design will comply with the requirements in 10 CSR 20-8.

Additional construction work includes subgrade improvements for pipe bedding and manholes as indicated or required by site conditions; site restoration of areas impacted by construction, including fencing, agricultural fields, and wetland areas; and construction and upgrading of permanent access paths. The project will also include general site work appropriate to the scope and purpose of the project.

These activities are generally in the area between Greenwood and Pleasant Hill, between State Route BB on the west and State Highway 7 on the east, in Cass County. The project will also include clearing and grubbing along pipeline alignment and restoration of stream banks of all creek crossing. Phase 2 project will extend the existing 36-inch sewer (Phase 1 construction) north to the Greenwood Pump Station, tying into the existing 24-inch interceptor upstream of the pump station. This will direct flow to be treated at the MBC WWTF, Missouri State Operating Permit No. MO-0058629. Jeff Shook, Executive Director of Little Blue Valley Sewer District, signed the construction permit application dated March 5, 2024.

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 submittals by Burns & McDonnell consisting of the design summary and plans received on March 13, 2024, and the updates to the plans and revised specifications received June 14, 2024. These documents were signed and sealed by the professionals listed below and approved by the department on July 25, 2024:
 - John Tsouflias, P.E.
 - Miranda Dee Hamrick, P.E.
 - Michelle R. Carter, P.E.
 - Rachelle Lowe, P.E.
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 project 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 Kansas City 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. Upon completion of construction:
 - A. The Little Blue Valley Sewer District 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 enclosed form Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(N). When the receiving facility applies for their next operating permit renewal, they will be expected to include updated information about the sanitary sewer collection system on their application.

Refaat Mefrakis
On behalf of Financial Assistance Center
Refaat.Mefrakis@dnr.mo.gov

APPENDIX – SUMMARY OF DESIGN



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March 11, 2024

Ginny Bretzke, P.E.
SRF Project Engineering Unit
Missouri Department of Natural Resources
P.O. Box 176
Jefferson City, MO 65102

Re: Little Blue Valley Sewer District - Big Creek Interceptor Extension Phase 2
Project - Design Summary and Construction Permit Submittal

Dear Ms. Bretzke:

Design Summary

The Big Creek Interceptor Extension Phase 2 Project (the Project) consists of extending approximately 3 miles of new 36-inch interceptor for the Little Blue Valley Sewer District (the District) near Greenwood and Pleasant Hill, Missouri. The District constructed a 36-inch interceptor as part of the Phase 1 construction, that extended to the southern extents of the current Project. The Phase 2 project will extend the 36-inch sewer north to the Greenwood Pump Station, tying into the existing 24-inch interceptor upstream of the pump station.

Below is a summary of the design components of the Project.

Pipe Material

Polyvinyl chloride pipe (PVC) SDR-35 or Reinforced Fiberglass Polymer Mortar Pipe (FRP) are both allowable pipe materials. These two pipe materials are specified to ensure a competitive pipe price. Cost of pipe material fluctuates based on the current market. Based on market conditions when the project bids, contractors can bid the project based on current costs and their ability to purchase and install either material most cost effectively. A table is included on Plan Sheet G007 with requirements for each pipe segment and the corresponding required pipe stiffness based on the depths of installation.

Pipe Size

In 2013 the existing 36-inch Big Creek Interceptor was constructed from the WWTP along Big Creek north to a stub-out for future connection as part of the Phase 1



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project. It was anticipated the 36-inch capacity would be exceeded in the future therefore additional easement width was acquired to accommodate a future parallel 36-inch interceptor. Revised existing and future flow considerations were evaluated as part of the Project and detailed in the Middle Big Creek Sewer Subdistrict Phase 2 Improvements Facility Plan (Facility Plan). Based on future flow projections it is anticipated a 36-inch sewer capacity will be exceeded at the downstream connection by 2045. The size of the sewer for the new interceptor was determined to remain a 36-inch interceptor for the entire alignment.

Pipe Alignment

Four alignments were considered in the Facility Plan. Alignment 3 was selected for design due to the shallow topography, avoiding the risk of rock excavation, and comparable costs. Slight modifications of the alignment have been made since the Facility plan to accommodate concerns from property owners and to reduce creek crossings. The total length of the project is 17,326 linear feet. The alignment generally follows the Big Creek. There are five (5) creek crossings. At each creek crossing the stream bank is lined with riprap to protect from erosion and the pipe from exposure.

To prevent the pipe bedding and backfill from acting as a conduit for the flow of groundwater along the pipe, flowable fill ditch checks are located at approximately 300-foot intervals along the alignment. Flowable fill will also be placed at manholes to prevent the movement of groundwater into and around manholes.

The pipe slope is determined by the upstream and downstream tie in points of the existing pipe. These existing connections limit the pipe slope to approximately 0.001 ft/ft. The mean velocities based on pipe full flow are greater than the minimum 2 ft per second required. The District will also conduct regular inspections to check for obstructions and visually confirm flow in the pipe.

Trench Details

A geotechnical investigation was completed along the pipe alignment. A total of thirty-four (34) soil borings were completed. The borings were continued to termination depths ranging from approximately 17.5 feet to 50.6 feet below the existing ground surface. The materials encountered generally consisted of native lean clays with various amounts of organic materials, sand, and gravel. The clay had a potential for swelling and large volume changes, while there was also soft soil that could cause sluffing during excavation and may require additional shoring. Also,



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groundwater was encountered in the borings at depths as shallow as 4 feet. Seasonal variations can cause large fluctuations in water levels and the presence of water in the soils.

Due to the varying material conditions found during field investigations two (2) different trench typical sections have been included in the design, a pipe trench for stable and unstable soils, as shown on Plan Sheet G007. If unstable soils are encountered, the subgrade shall be improved by either in-place ground improvements consisting of 3-inch clean rock, over-excavation, and the use of geogrid and filter fabric.

Soil conditions are highly variable depending on the time of year excavation will take place. Taking that into consideration, an adjustment unit price was included in the bid documents for unstable subgrade remediation. Contractors will include 10,846 linear feet of remediation in their bid price. If the need for trench improvements is not required the contract total will decrease accordingly.

Manholes

There are 27 manholes and a junction box designed as part of the project. Manholes are located at all changes in alignment, grade, and size. Manhole spacing varies between 310 to 1,165 linear feet. The spacing is designed to avoid manholes in the agricultural fields, rock quarries or other areas where they could get damaged or buried. The District uses subcontractors to clean and inspect their interceptors, and they have equipment with the ability to span 1,500 linear feet.

The majority of the manholes are 6-foot diameter pre-cast concrete manholes. The depths of the manholes vary from 20 to 30 feet below ground surface. To avoid constructing the 6-foot manhole to grade, which increased costs significantly, 4-foot riser sections were utilized. The 6-foot section extends to a minimum height of 6 feet above the base elevation for easier entry and access. Above the minimum 6 feet, a reducing slab is specified to construct 4-foot riser sections which will extend to the existing grade with a manhole frame and cover for access.

Manhole steps are to be installed in the manhole. The design includes steps that are to be installed 2 riser sections below the top of the manhole to avoid entry without a safety harness and tripod. The District requested below the 2-riser sections to aid



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entry as people get lowered by a tri-pod to minimize swinging or spinning at these greater depths.

Restoration

Site Restoration is addressed in the design drawings on Plan Sheets C037-C046. There are six (6) restoration types provided in the design to address the varying conditions. Restoration is to take place once contractor has completed final grading.

Project Access

The Project is located in a remote area of Cass County, Missouri. Access is restricted on the east side of the Project by the Union Pacific Railroad and on the west side by agricultural and other property owners. The District has communicated with the railroad and other property owners to gain access at four (4) different points along the alignment. For access to the downstream portion of the Project, access is via an existing public right-of-way. Access from the middle to the downstream is via an access easement, which will stay in place after the Project for the District to gain access for maintenance and operation. The third access point is by county right-of-way at 159th Street. The District has an agreement with the County to maintain the unmaintained right-of-way. There is also a railroad crossing at this access point to gain access to the infrastructure. Union Pacific has issued a permit for the District to use the existing crossing for access during construction and for future operation and maintenance activities. The access to the upstream portion of the project will be via an existing access easement to the Greenwood Pump Station.



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Construction Permit

Attached you will find the construction permit application for sewer extensions for your consideration. The following are attached for your review:

- Application for Construction Permit - Sewer Extension
- Construction Permit Payment Receipt
- Big Creek Interceptor Extension Phase 2 - Drawings
- Big Creek Interceptor Extension Phase 2 - Project Construction Manual

Sincerely,

A handwritten signature in black ink that reads "Miranda Hamrick".

Miranda Hamrick, P.E.
Design Engineer

A handwritten signature in black ink that reads "Rachelle Lowe".

Rachelle Lowe, P.E.
Project Manager

Attachments:

- Attachment 1 - Application for Construction Permit - Sewer Extension
- Attachment 2 - Construction Permit Payment Receipt
- Attachment 3 - Big Creek Interceptor Extension Phase 2 - Drawings
- Attachment 4 - Big Creek Interceptor Extension Phase 2 - Project Construction Manual

cc: Jeff Shook, P.E.
Bill Perkins