

Missouri Department of dnr.mo.gov

**NATURAL RESOURCES**

Michael L. Parson, Governor

Carol S. Comer, Director

5.200 BCRSD Brown Station WWTP  
Boone County  
#MO-0135305

February 10, 2020

Virgil Farnen  
Boone County Regional Sewer District  
1314 North Seventh St.  
Columbia, MO 65201

**LETTER OF WARNING  
RESPONSE REQUIRED**

Dear Virgil Farnen:

Staff from the Missouri Department of Natural Resources conducted an inspection on January 14, 2020, of the Boone County Regional Sewer District (BCRSD) Brown Station Wastewater Treatment Plant (WWTP) located 0.1 miles north of the North Brown Station Road and O'Rear Road intersection, Columbia, in Boone County. The entity operates under the authority of Missouri State Operating Permit (MSOP) #MO-0135305.

Compliance with the Missouri Clean Water Law was evaluated. A Letter of Warning (LOW) is being issued for the violations identified in the enclosed report.

Please direct your attention to the **Compliance Determination and Listing of Violations and Required Actions** in the enclosed report. The report documents the findings and the actions that you must take to address the violations. **A written response documenting actions taken to correct the violations is required by the date specified in the report.**

Failure to address the required actions will result in the issuance of a Notice of Violation. If you have any questions or would like to schedule a time to meet with Department staff to discuss compliance requirements, please contact Josh Hufford at (660) 385-8000 in the Northeast Regional Office, 1709 Prospect Drive, Macon, MO 63552-2602 or by email at [NERO@dnr.mo.gov](mailto:NERO@dnr.mo.gov).

Sincerely,

NORTHEAST REGIONAL OFFICE

Irene Crawford  
Regional Director

**Missouri Department of Natural Resources  
Northeast Regional Office  
Report of Inspection**

**BCRSD Brown Station WWTP**

**0.1 miles north of the N. Brown Station Rd. & O’Rear Rd intersection, Columbia, Missouri**

**#MO-0135305**

**February 10, 2020**

**Introduction**

Pursuant to Section 644.026.1 RSMo of the Missouri Clean Water Law, I, Josh Hufford, conducted a routine inspection of the Boone County Regional Sewer District (BCRSD) Brown Station Wastewater Treatment Plant (WWTP) in Boone County, Missouri, on January 14, 2020. The following people participated in the inspection:

**BCRSD Brown Station WWTP**

Russ Palmer Operator (573) 881-9915

**Missouri Department of Natural Resources**

Josh Hufford Environmental Specialist (660) 385-8000

This inspection was conducted to determine the facility’s compliance with Missouri State Operating Permit #MO-0135305, the Missouri Clean Water Law, and the Missouri Clean Water Commission Regulations. This report presents the findings and observations made during the inspection.

**Entity Description and History**

Missouri State Operating Permit (MSOP) #MO-0135305 was last issued on November 1, 2018, and expires on March 31, 2020. The Department received a Form B Application for Renewal from the facility on January 14, 2017. This permit sets forth effluent limitations, monitoring requirements, and permit conditions, both standard and specific, that the permittee is to follow.

The BCRSD Brown Station WWTP is located 0.1 miles north of the North Brown Station Road and O’Rear Road intersection, Columbia, Missouri. The facility consists of a Septic Tank Effluent Pumping (STEP) system and a recirculating sand filter with sludge hauled to another treatment facility by the owner. The permit lists the design flow as 1,850 gallons per day from a design population equivalent of 19. The permit lists an actual flow of 1,600 gallons per day. The design sludge production is listed as 0.37 dry tons per year.

The UTM Coordinates of the BCRSD Brown Station WWTP are listed on the permit as Easting 0563817 and Northing 4322532, in Boone County. The receiving stream for this facility is a tributary to Clays Fork and it is located in the 10300102 HUC 8 watershed.

Prior to the inspection, I reviewed the files for the BCRSD Brown Station WWTP, including the Permit Conditions of MSOP #MO-0135305, to familiarize myself with the requirements specific to this facility.

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**BCRSD Brown Station WWTP**  
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The regional office last performed a routine compliance inspection on May 13, 2015. At the time of the inspection, the facility was found to be operating in non-compliance for failure to provide sufficient gravel covering for media and distributors. As a result of the inspection, the facility was issued an Unsatisfactory Findings inspection report and was required to respond to the identified violation in the report by July 6, 2015. Samples were collected as part of the inspection, but the results were not available at the time of the report.

On June 26, and August 17, 2015, the Department received responses to the required action in the July 6, 2015, inspection report. The facility's response disputed the citation in the inspection report for failure to provide sufficient gravel covering for media and distributors. On September 3, 2015, the Department sent a letter informing the facility to ensure that enough gravel is in place to cover the distributors. The official laboratory analysis results from the samples collected on May 13, 2015, were also provided to the facility. No additional violations were documented as a result of the sample analysis.

On July 17, 2017, the Department received a letter from the facility proposing decommission of the Brown Station WWTP. The letter proposed routing the wastewater from the Brown Station WWTP to a yet to be constructed pump station north of Route HH approximately 800 feet east of Route B. On July 31, 2017, the Department sent an email to remind the facility to submit any required construction permits for the proposed project described in the July 17, 2017, letter.

On November 6, 2018, a postcard was sent to remind the facility that the 2018 Inflow and Infiltration (I&I) report was due on January 28, 2019. The Department received the 2018 I&I report on January 24, 2019.

On March 6, 2019, a postcard was sent to remind the facility that the Status/Progress report detailing progress made in attaining compliance with the final effluent limits was due on May 1, 2019. The Department received the Status/Progress report on April 25, 2019.

On September 4, 2019, a postcard was sent to remind the facility that the interim progress report detailing progress made in attaining compliance with the final effluent limits was due on November 1, 2019. The Department received the Status/Progress report on October 24, 2019.

On November 5, 2019, a postcard was sent to remind the facility that the 2019 Inflow and Infiltration (I&I) report was due on January 28, 2020. The Department received the 2019 I&I report on January 21, 2020.

**Discussion of Inspection and Observations**

I conducted the inspection during normal business hours. Prior notification of the inspection was provided to ensure timely access to the site. I contacted Tom Ratermann, General Manager, by telephone and I outlined the purpose and scope of the inspection. Tom Ratermann granted me permission to access the site, and made arrangements for Russ Palmer, Wastewater Operator, to

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**BCRSD Brown Station WWTP**  
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meet me at the facility. Upon arrival, I met with Russ Palmer and I outlined the purpose and scope of the inspection. Russ Palmer accompanied me throughout the inspection of the facility.

I first observed an all-weather access road to the facility's entrance gate. The entrance gate was secured with a lock and an appropriate warning sign was posted next to the gate (Photo #1). I observed the perimeter fence around the facility with warning signs posted on each side of the fence (Photo #2).

I then entered the facility and made observations of the treatment system. I observed the recirculation and septic tanks. The lids were secured with screws and no evidence of previous overflows were observed (Photo #3). I then observed the sand filter. The filter media bed was free of vegetation, and the rock media appeared evenly distributed. I was informed by Russ Palmer that the recirculation pumps are set to run every eight minutes, so the pumps were running at the time of the inspection. While the pumps were running, I observed pooling on the surface of the media bed (Photos #4, 5). Wastewater was not leaving the filter bed and the pooling receded after the pumps stopped running. I recommended adding gravel to the media bed to ensure the distribution lines are adequately covered. Russ Palmer then tested the alarm, which was working properly.

On the north side of the sand filter, I observed a concrete vault (Photo #6). Russ Palmer informed me that the concrete structure was built to accommodate an ultraviolet light disinfection system in the future if needed. On the north side of the concrete vault, I observed the facility's sampling location, which follows the final treatment process. Russ Palmer removed the lid and samples of the effluent were collected for analysis (Samples #190502 and #190503). The effluent appeared clear with a slight musty odor associated with wastewater (Photo #7). Following the sample collection, I traveled to the facility's outfall, which is located approximately 75 yards northwest of the sampling structure. The outfall was clearly marked in the field with a sign (Photo #8). The water in the receiving stream was clear with no evidence of previous impacts from the facility.

Following the visual inspection of the facility, I asked Russ Palmer if the facility has developed an Operations and Maintenance (O&M) manual and a program for the maintenance and repair of the collection system. Russ Palmer stated that the facility has a current O&M manual and a program for the maintenance and repair of the collection system at the BCRSD office.

### **Sampling and Monitoring**

The appropriate sampling materials were taken on the inspection, including a copy of the Missouri Department of Natural Resources' Standard Operating Procedures for Sampling. Instruments for field monitoring were taken on the inspection that are capable of testing pH, temperature, conductivity, and dissolved oxygen. Ammonia test strips for water quality monitoring were also taken on the inspection. During the inspection, I observed the effluent from Outfall #001 appeared clear with a slight musty odor associated with wastewater. I did not observe any impacts to the receiving stream.

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<b>Samples #190502 and #190503</b>		
<b>Outfall #001</b>		
<b>Grab</b>		
<b>Parameter</b>	<b>Result</b>	<b>Units</b>
Dissolved Oxygen	7.44	mg/L
pH	7.05	s.u.
Conductivity	972	µS/cm
Temperature	8.7	°C

Sampling was conducted at the following location and submitted for laboratory analysis for the parameters listed below. The Environmental Services Program Results of the Sample Analysis are listed below.

<b>Sample #190502 Outfall #001</b>						
<b>Results of Sample Analyses</b>			<b>Permit Limits</b>			
<b>Parameters</b>	<b>Sample Result</b>	<b>Units</b>	<b>Daily Max</b>	<b>Weekly Average</b>	<b>Monthly Average</b>	<b>Units</b>
Biochemical Oxygen Demand	3.64	mg/L	----	45	30	mg/L
Total Suspended Solids	< 5	mg/L	----	45	30	mg/L
Ammonia as N (October 1 – March 31)	6.82	mg/L	11.9	----	3.0	mg/L

<b>Sample #190503 Outfall #001 (Duplicate)</b>						
<b>Results of Sample Analyses</b>			<b>Permit Limits</b>			
<b>Parameters</b>	<b>Sample Result</b>	<b>Units</b>	<b>Daily Max</b>	<b>Weekly Average</b>	<b>Monthly Average</b>	<b>Units</b>
Biochemical Oxygen Demand	3.07	mg/L	----	45	30	mg/L
Total Suspended Solids	< 5	mg/L	----	45	30	mg/L
Ammonia as N (October 1 – March 31)	6.73	mg/L	11.9	----	3.0	mg/L

**Compliance Determination and Required Actions**

The facility was found to be in **non-compliance** with Missouri State Operating Permit #MO-0135305, the Missouri Clean Water Law, and the Missouri Clean Water Commission Regulations based upon the observations made at the time of the inspection.

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**Letter of Warning**

1. During the monitoring period ending March 31, 2019, and on January 14, 2020, failed to comply with the effluent limits contained in Part "A" of Missouri State Operating Permit (MSOP) #MO-0135305 [Sections 644.051.1(3) and 644.076.1, RSMo].

**REQUIRED ACTION:** The effluent data from Outfall #001 collected during the monitoring period ending March 31, 2019, exceeded the final effluent limitation parameters for Ammonia as N. The reported value for Ammonia as N was 5.3 mg/L whereas MSOP #MO-0135305 sets forth a monthly average of 3.0 mg/L from October 1 – March 31. The effluent data from Outfall #001 collected during the inspection on January 14, 2020, exceeded the effluent limitation parameters for Ammonia as N. The results of sample #190502 show an Ammonia as N concentration of 6.82 mg/L and the results of sample #190503 show an Ammonia as N concentration of 6.73 mg/L. MSOP #MO-0135305 sets forth a monthly average of 3.0 mg/L from October 1 – March 31. The facility shall submit a written statement to the Northeast Regional Office by **March 9, 2020**, explaining what actions will be taken to comply with the final effluent limitations for Ammonia and prevent a reoccurrence in the future.

2. Failed to achieve a removal efficiency of 85% for Total Suspended Solids (TSS), as required in part "A" of MSOP #MO-0135305 [Section 644.076.1, RSMo].

**REQUIRED ACTION:** During the monitoring period ending December 31, 2018, the facility failed to meet the 85% removal efficiency for TSS. A removal efficiency of 82% for TSS was reported. The facility shall submit a written statement to the Northeast Regional Office by **March 9, 2020**, explaining what actions will be taken to comply with the 85% removal efficiency for TSS and prevent a reoccurrence in the future.

**Recommendations**

1. Ensure the distributors have sufficient gravel cover to prevent the pooling of wastewater on the surface of the media bed.
2. Maintain a sufficient spare parts inventory so that effective maintenance may occur in a timely manner.
3. Routinely examine the stormwater collection system to determine if Inflow and Infiltration is allowing stormwater to enter the system.

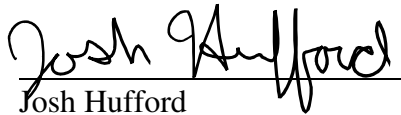
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**Additional Comments/Conclusion**

A copy of the factsheet, "Optimizing Recirculating Media Filters for Ammonia Treatment," has been included with this report. The facility should review the information to determine whether steps can be taken to assist with the current facility meeting the effluent limits for Ammonia as N. For additional information on the care and maintenance of the wastewater treatment system or attaining compliance with the final effluent limitations, contact Troy LaLond, Water Specialist, at (660) 385-8000 in the Northeast Regional Office, 1709 Prospect Drive, Macon, MO 63552-2602 or by email at [NERO@dnr.mo.gov](mailto:NERO@dnr.mo.gov).

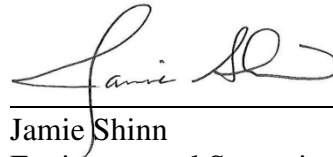
**Signatures**

SUBMITTED BY:



Josh Hufford  
Environmental Specialist  
Northeast Regional Office

REVIEWED BY:



Jamie Shinn  
Environmental Supervisor  
Northeast Regional Office

**Attachments**

**Attachment # 1 - Photos 1-8**

**Attachment # 2 - Sludge Checklist**

**Attachment # 3 - Aerial Photo**

**Attachment # 4 - Environmental Services Program Results of the Sample Analysis/Samples #190502 and #190503**

**Attachment # 5 - Optimizing Recirculating Media Filters for Ammonia Treatment**



Photograph #: 1  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows the entrance gate was secured with a lock. An appropriate warning sign is posted next to the gate. Taken facing east.  
Date Taken: January 14, 2020  
Program: WPC Unit



Photograph #: 2  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows the perimeter fence around the facility with warning signs posted on each side of the fence. Taken facing north.  
Date Taken: January 14, 2020  
Program: WPC Unit



Photograph #: 3  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows the recirculation and septic tanks. Taken facing east.  
Date Taken: January 14, 2020  
Program: WPC Unit

Initial JH





Photograph #: 4  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows pooling on the surface of the media bed. Taken facing south.  
Date Taken: January 14, 2020  
Program: WPC Unit



Photograph #: 5  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows a closer view of the wastewater pooling on the surface of the sand filter.  
Date Taken: January 14, 2020  
Program: WPC Unit



Photograph #: 6  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows the concrete structure built to accommodate an ultraviolet light disinfection system in the future if needed. Taken facing north.  
Date Taken: January 14, 2020  
Program: WPC Unit

Initial JA



Photograph #: 7  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows the facility's sampling location, which follows the final treatment process. The facility is discharging and samples were collected at this location.  
Date Taken: January 14, 2020  
Program: WPC Unit



Photograph #: 8  
Taken by: Josh Hufford  
Entity: BCRSD Brown Station WWTP  
Permit: #MO-0135305  
Location: Boone County  
Description: Photo shows the outfall was clearly marked in the field with a sign. Taken facing west.  
Date Taken: January 14, 2020  
Program: WPC Unit

Initial JA

### Sludge Handling Checklist for Wastewater Treatment Facilities

<b>Facility Name:</b> Brown Station WWTP		<b>MSOP #:</b> MO-0135305	
<b>Issue to be addressed</b>	<b>Options</b>		<b>Not Inspected</b>
What method (land application, incineration, landfill, etc.) is used for sludge management?	The permittee removes sludge and hauls it to another treatment facility.		<input type="checkbox"/>
	<b>Date</b>		
How often is sludge removed from the facility?	As needed		<input type="checkbox"/>
When was the last time sludge was removed?	October 2016		<input type="checkbox"/>
	<b>Yes</b>	<b>No</b>	<b>Not Applicable</b>
Has the Form S annual report been submitted?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Have the applicable additional sections been submitted? <small>(If not, please describe deficiencies below in the comments field)</small>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the form filled out correctly? <small>(If not, please describe deficiencies below in the comments field)</small>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Is the monitoring frequency for metals, pathogens and vectors (WQ 423) being met?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are the requirements for pathogens and vector attraction (WQ 424) being met?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are land applied biosolids below the ceiling concentration for metals (WQ 425)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Are the nitrogen, soil pH and soil phosphorus limitations (WQ426) being met?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<b>Other Comments:</b> According to previously submitted Form S Sludge Reports, the facility removed 7500 gallons of sludge from the system in October 2016.			



Attachment #4  
 BCRSD Brown Station WWTP  
 February 10, 2020  
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Missouri Department of Natural Resources  
 Environmental Services Program  
 PO Box 176 Jefferson City MO 65102-0176

**RESULTS OF SAMPLE ANALYSES**

LDPR/Job Code: FEINS Program, Contact: WPC Chelsey Distler

Chelsey Distler  
 Water Pollution Control Branch

Order ID:  
 200114002



Report Date:  
 1/31/2020

<b>Sample: AD61050</b>		Facility ID: MO0135305	Customer #: 190502	
		Site: BCRSD Brown Station WWTP	County: Boone	
Collect Date: 1/14/2020 10:38:00 AM	Collector: JOSH HUFFORD	Affiliation: NERO		
Comments: Grab sample at Outfall #001.				
Test	Parameter/Method	Result	Units	Qualifier(s)
Ammonia as N	Ammonia as N/L 10-107-06-1-J	6.82	mg/L	
Biochemical Oxygen Demand	Biochemical Oxygen Demand/SM 5210-B	3.64	mg/L	
Field Dissolved Oxygen	Field Dissolved Oxygen/SM 4500-O-G	7.44	mg/L	
Field pH	Field pH/EPA 150.1	7.05	pH Units	
Field Specific Conductivity	Field Specific Conductivity/SM 2510	972 uS/cm		
Field Temperature	Field Temperature/EPA 170.1	8.7 C		
Total Suspended Solids (TSS) / NFR	Total Suspended Solids (TSS) / NFR/SM 2540-D	<5	mg/L	ND
<b>Sample: AD61051</b>		Facility ID: MO0135305	Customer #: 190503	
		Site: BCRSD Brown Station WWTP	County: Boone	
Collect Date: 1/14/2020 10:51:00 AM	Collector: JOSH HUFFORD	Affiliation: NERO		
Comments: Grab sample at Outfall #001. Duplicate sample of #190502.				
Test	Parameter/Method	Result	Units	Qualifier(s)
Ammonia as N	Ammonia as N/L 10-107-06-1-J	6.73	mg/L	
Biochemical Oxygen Demand	Biochemical Oxygen Demand/SM 5210-B	3.07	mg/L	
Field Dissolved Oxygen	Field Dissolved Oxygen/SM 4500-O-G	7.44	mg/L	
Field pH	Field pH/EPA 150.1	7.05	pH Units	
Field Specific Conductivity	Field Specific Conductivity/SM 2510	972 uS/cm		
Field Temperature	Field Temperature/EPA 170.1	8.7 C		
Total Suspended Solids (TSS) / NFR	Total Suspended Solids (TSS) / NFR/SM 2540-D	<5	mg/L	ND

The analysis of this sample was performed in accordance with procedures approved or recognized by the U. S. Environmental Protection Agency.

Kevin Thoenen,  
 Laboratory Manager  
 Environmental Services Program  
 Division of Environmental Quality

Data Qualifier(s)
ND Not detected at reported value