

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 Benton
Benton WWTP
P.O. Box 185
Benton, MO 63736

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.

May 20, 2026
Effective Date

May 19, 2028
Expiration Date



Heather S. Peters, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The Benton wastewater system improvements project is focused on enhancing both the collection system and wastewater treatment facility to ensure long-term reliability and regulatory compliance. The collection system upgrades target the reduction of inflow and infiltration (I&I) through rehabilitation techniques, including cured-in-place pipe (CIPP) lining and point repairs, to decrease excess flow entering the system. These efforts will help alleviate hydraulic stress during wet weather conditions and improve the overall performance of the sewer network.

At the wastewater treatment facility, Lagoon Cell No. 1 will be improved through a series of targeted upgrades. These include repairing and reinforcing the lagoon's berm, installing a floating baffle to optimize hydraulic flow, and adding aeration to Lagoon Cell Nos. 1a and 1b to enhance biological treatment processes. The project also includes installing a new influent screen for debris removal and repairing the damaged electrical service to the ultraviolet (UV) disinfection system to maintain effluent quality.

Notably, all construction activities will take place on previously disturbed earth, minimizing environmental impact and preserving the surrounding natural areas. Together, these improvements will modernize the system and provide a sustainable solution for Benton's wastewater management needs.

The proposed construction covered under this permit for the City of Benton covers rehabilitation work for both the city collection system and treatment plant. The rehabilitation work is as follows:

- Collection system rehabilitation, including new influent screens and lines into the terminal lift station; gravity sewer replacement, repair, and lining; manhole grouting, lining, frame and cover replacement; and closed-circuit television (CCTV) inspection work for any areas that had not been previously inspected.
- Installation of a new influent magnetic flow meter in a new vault prior to entering the lagoon cells.
- Improvements to Lagoon Cell 1, including addition of aeration equipment and baffles to convert the cell into a two-stage cell providing full aeration followed by partial aeration, new riprap for the lagoon cell berms and sludge removal from the lagoon cell.
- New transfer piping, gravity main, manholes, and valves to adjust the existing facility train, connecting Lagoon Cell 1 to the MBBR with new piping and the MBBR to the UV disinfection system, removing Lagoon Cells 2 and 3 from the existing treatment train

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 in accordance with the plans and specifications submitted by Heartland Engineering, LLC on February 24, 2026, and signed and sealed by Michael Montgomery, P.E. on February 19, 2025, and approved by the department on May 20, 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. 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 Southeast Regional Office per 10 CSR 20-7.015(9)(G).
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 <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.

8. 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, you may contact the department's Water Protection Program at 573-522-4502 or wpssc401cert@dnr.mo.gov.
9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements.
10. Upon completion of construction:
 - A. The City of Benton 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;
 - 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) and request the operating permit modification be issued.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The proposed construction will serve to enhance both the existing collection system and wastewater treatment facility to ensure future reliability and regulatory compliance. Improvements to the collection system will alleviate hydraulic stress for associate structures during peak weather conditions, and reduce loading at the treatment plant site. Meanwhile, improvements at the treatment facility will enhance existing treatment processes to improve effluent quality while still ensuring the project is affordable for the community.

2. FACILITY DESCRIPTION

The Benton WWTP is located 0.25 miles north of the intersection of E. Bland Street and Highway E, in the City of Benton, Missouri, in Scott County. The existing facility is a three-cell lagoon with NitrOx treatment for ammonia and UV disinfection, with sludge retained in the lagoon. The facility has a design average flow of 120,000 gallons per day (gpd) and serves a hydraulic population equivalent of approximately 1,200 people.

3. REVIEW OF MAJOR TREATMENT DESIGN CRITERIA

Existing major components that will remain in use include the following:

- Lagoon Cell No. 1 is non-aerated and has a surface area of approximately 5.62 acres and a wastewater volume of 6,762,000 gallons. This cell has approximately 2 ft of freeboard, 3.5 ft of operating depth, and 2 ft of sludge depth, and a clay liner. This provides approximately 56 days of retention at the proposed design flow.
- Triplepoint Water Technologies, LLC NitrOx™ – The treated effluent from Lagoon Cell No. 1 flows by gravity to the NitrOx™ system. The NitrOx™ system is capable of treating a design average flow of 120,000 gpd. The system is composed of two tanks with each approximately 12 ft x 12 ft x 7 ft with a sidewater depth of 7 ft. Total volume of the two tanks is 15,080 gallons. The average flow hydraulic retention time is 3 hours and the peak flow hydraulic retention time is 1.9 hours. A floating insulating cover is installed in each tank. An immersion tank heater is installed to maintain a minimum wastewater temperature of 2.5°C. Each tank is filled approximately 50 percent with high surface area HDPE media. Aeration by means of two tri-lobe positive displacement blowers each capable of supplying 257 scfm with 10 HP motors. The effluent from the Nitrox™ currently flows by gravity to Lagoon Cell No. 2 for further treatment and polishing prior to disinfection and discharge.
- Lagoon Cell Nos. 2 and 3 – Lagoon Cell Nos. 2 and 3 are baffled by a curtain and are non-aerated. Cell No. 2 has a surface area of approximately 2.1 acres and Cell No. 3 has a surface area of approximately 0.7 acres. The two lagoon cells have a combined wastewater volume of 2,877,000 gallons. These two cells have approximately 1.2 ft of freeboard, 3.5 ft of operating depth, and 2 ft of sludge depth, and both have a clay liner. This provides approximately 24 total days of retention at the existing design flow.
- Disinfection – A closed vessel, gravity flow, low-pressure high-intensity UV disinfection system is utilized for this facility, capable of treating a peak flow rate of 120,000 gpd, while delivering a minimum UV intensity of 30 mJ/cm² with an expected ultraviolet transmissivity of 55 percent or greater. The enclosed UV system consists of eight lamps per reactor. Two closed vessel UV reactors are arranged in parallel.

Construction will cover the following items:

- Influent Screening – Installation of a single vertical cylindrical fine screen at the start of the treatment train. The influent screen has a basket diameter of 12 inches for an average design flow of 120,000 gpd and a peak flow of 1,050,000 gpd. The perforation diameter for the screen is ¼ inch. The screw flight for the screen is outfitted with a brush for cleaning the screen to maintain operations.
- Flow Measurement – Installation of accurate flow measurement devices will give the treatment facility a means of improved data analysis.

- Electromagnetic Meter – An influent electromagnetic 4-inch flow meter shall measure the raw influent wastewater following screening.
- Lagoon Cell No. 1 Modifications – Numerous updates to Lagoon Cell No. 1 will allow for improved treatment and resulting effluent quality.
 - Sludge Removal and Berm Improvements – Sludge will be removed from Lagoon Cell No. 1 to improve effluent quality and capacity at the treatment cell. Current estimates are that Lagoon Cell No. 1 has 2 feet of sludge stored in the lagoon, and it is planned to leave approximately 0.5 feet of sludge. This is equivalent to removing approximately 2,717,205 gallons of sludge, which will allow for an increase in wastewater storage. Additionally, the berms will be raised 2 ft to provide additional capacity. At current design flow, the combination of these two improvements is estimated to increase the storage capacity at Lagoon Cell No. 1 to approximately 13,000,000 gallons, increasing the total available detention time to approximately 109 days. For cost savings purposes, the sludge removed from Lagoon Cell No. 1 will be stored in Lagoon Cell No. 2.
 - Splitting Lagoon Cell No. 1 into Lagoon Cells Nos. 1A & 1B – A floating baffle curtain will be installed, effectively splitting the cell into two subcells, approximately equal in size. Aeration will be provided at both subcells, with Lagoon Cell No. 1A being full aeration and Lagoon Cell No. 1B being partial aeration.
 - Lagoon Cell No. 1A Aeration – Utilizing 6 Ares Aeration® aerators to provide full aeration. Each aerator operates with a design horsepower of 10 hp, supplying a standard airflow of 28.8 SCFM, providing a total airflow of approximately 173 scfm. This will allow the lagoon cell to meet an Actual Oxygen Requirement of 313 lb/day.
 - Lagoon Cell No. 1B Aeration – Utilizing 2 Ares Aeration® aerators to provide partial aeration. Each aerator operates with a design horsepower of 10 hp, supplying a standard airflow of 9.3 SCFM, providing a total airflow of approximately 19 scfm. This will allow the lagoon cell to meet an Actual Oxygen Requirement of 40 lb/day.
- Removal of Lagoon Cell Nos. 2 & 3 from the Treatment Train – With the expansions planned for Lagoon Cell No. 1 providing sufficient detention time for the treatment facility, and with the significant amount of sludge build-up in all three lagoon cells affecting the degree of treatment and the high-cost associated with removal of that sludge, it was decided to remove the existing Lagoon Cell Nos. 2 & 3 from the treatment train. Sludge from Lagoon Cell No. 1 will be transferred to Lagoon Cell No. 2, and new transfer piping will be constructed to connect the NitrOx™ unit to the UV disinfection.

- Collection System Improvements – Rehabilitation work will focus on improving the hydraulic capacity and reducing the inflow and infiltration into the collection system. This includes lining approximately 9,700 linear feet of 8-inch diameter polyvinyl chloride (PVC) pipe and replacing approximately 2,680 linear feet of 8-inch diameter PVC pipe, along with associated grouting and new tie-ins. It also will include manhole improvements, like lining, grouting, frame and cover replacement, raising of manholes and new manhole construction. While the proposed collection system work is ongoing, CCTV inspection will also be performed on uninspected sewer mains to allow for planning beyond this project.

4. OPERATING PERMIT

Missouri State Operating Permit MO-0055182 will require a modification to reflect the construction activities, which was successfully public noticed from December 12, 2025, to January 12, 2026, with no comments received. After construction is complete, submit the Statement of Work Completed to the department in accordance with 10 CSR 20-6.010(5)(N) and request the operating permit modification be issued.

Joshua Brown, P.E.
Financial Assistance Center
Joshua.brown@dnr.mo.gov

APPENDICES

- Process Flow Diagram
- Summary of Design

APPENDIX A: PROCESS FLOW DIAGRAM

APPENDIX B: SUMMARY OF DESIGN



Ares Aeration® Basis of Design

Date: 11-07-2023

Project Name: Benton, MO

Project Number: 6582

The Aeration Process

Biological Oxygen (BOD) Calculations

Removal of BOD (and CBOD) takes place naturally in an aerated lagoon. The Characteristic Equation for treatment efficiency of 5-Day Biological Oxygen Demand is given in Equations 1 through 3, at the bottom of this report. These calculations are used to size the lagoons. They are independent of the aeration calculations and assume that sufficient dissolved oxygen levels are maintained in the water. The equation is dependent on time and temperature. For lagoons operated in series, the equation is applied separately to each cell and the results are combined.

Aeration Requirement Calculations

Aeration calculations are more complicated than biological calculations as they depend on several factors. These include:

- ❖ Site conditions, such as treatment depth, elevation, and temperature.
- ❖ Design parameters, such as minimum dissolved oxygen (DO) level and oxygen supply rate.
- ❖ Actual Oxygen Requirement (AOR), which is based on the nutrient loading rates (these can include BOD/CBOD and TKN/NH₃-N and are based on the product of nutrient concentrations and the wastewater flowrate).
- ❖ Type of aerator.
- ❖ Oxygen transfer efficiency (OTE) of the aerator, which should be measured by an independent lab.
- ❖ Field condition adjustments (see Equation 2, below).
- ❖ Mixing requirements, such as complete or partial mix. The former is generally only required for activated sludge basins (ASB) or other high strength processes with short detention times.

Aerated Lagoons—Long Treatment Times

Aerated lagoons are typified by their comparatively large size and long treatment times (usually greater than 10 days). Influent concentrations are low to moderate (usually less than 300 mg/L of BOD). The bulk of the treatment takes place aerobically with additional anaerobic respiration taking place on the lagoon floor. Aerated lagoons do not generally have a mixed liquor suspended solids (MLSS) or return activated sludge (RAS) component. Partial mixing is required to prevent stratification and eliminate dead zones; however, complete mix is not necessary.

Aerated lagoons are typically designed to operate at a minimum DO level of 2 mg/L. Oxygen is usually supplied at a rate of 1.5 times the BOD demand. If nitrification/denitrification takes place, the oxygen supply rate is designed for 4.6 times the nitrogenous oxygen demand (NBOD).

Activated Sludge Basins (ASB)

Activated sludge basins (ASB) and other related wastewater tanks and lagoons are characterized by short treatment times (usually from 1 to 5 days), high wastewater strengths, and an active biomass that must be maintained in suspension to prevent rapid sludge accumulation. A high strength (greater than 2,000 mg/L) return activated sludge (RAS) component is usually fed back into the basin from a downstream clarifier. Biological nutrient removal is much faster in these basins.

ASBs are typically designed to operate at a minimum DO level of 1 to 2 mg/L. Oxygen is supplied at a rate of 1.0 to 1.5 times the BOD demand. If nitrification/denitrification takes place, the oxygen supply rate is designed for 4.0 to 4.6 times the nitrogenous oxygen demand (NBOD). An aeration system is based on both oxygenation requirements and complete mix requirements, whichever is greater.

TRIPLEPOINT ENVIRONMENTAL
 Detailed Design Calculations: Aerated Lagoons

SUMMARY - General Design Parameters			
v4.3 D	Design Scenario Name		Aeration W baffle
1	Influent Flowrate	MGD	0.120
2	Influent Concentration	mg/L	225.0
3	Effluent Conc. (Summer)	mg/L	1.2
4	Effluent Conc. (Winter)	mg/L	4.1
5	Actual Oxygen Supplied	lb/day	352.3
6	Air included for nitrification?		No
7	Number of Aerators		8
8	Estimated Tubing Length	ft	1500
9	Standard Airflow	SCFM	191.20
10	Inlet Airflow	ICFM	221.00
11	Design Pressure (w/cushion)	psig	5.80
12	Projected Brake Hp	bhp	6.83
13	Estimated Design Hp	hp	10.0

1. $FTE = \alpha (SOTE) \theta^{(T-20)} (\beta C^*_{\infty T} - DO) \div C^*_{\infty 20}$ *field transfer efficiency*

Where,

- α contaminant factor {contaminants, depth, bubble size} (range: 0.40–0.70)
- β TDS factor {total dissolved solids} (range: 0.90–1.00)
- $\theta = 1.024$ temperature factor
- DO target dissolved oxygen level (mg/L)
- $C^*_{\infty T}$ saturation oxygen concentration at site—adjusted for water depth
- $C^*_{\infty 20}$ sat. oxygen concentration at STP conditions—adjusted for water depth
- T water temperature (Celsius)

2. $Airflow = AOR / (25.056 * FTE)$

3. $E = 2.3 * k * t / (1 + 2.3 * k * t)$ *biological treatment efficiency*

Where,

- k = varies kinetic coefficient {related to temperature} (range: 0.06 to 0.12)
- t = time treatment time in days

SUMMARY - Biological Treatment Calculations				
Item	Description	Units	Aeration W baffle	
1	Number of Treatment Cells		1	
2	Flow Regime		Series	
3	Site Elevation - HWL	ft	436	
Cell 1A				
4	Wastewater Flowrate	MGD	0.1	
5	Treatment Volume	M-Gal	5.5	
6	Treatment Time	days	45.4	
7	Treatment Type	-	Partial Mix	
8	Std Reaction Rate, k_{20}	days ⁻¹	0.28	
Summer	9	Design Water Temp	°C	20
	10	Design Reaction Rate, k_T	days ⁻¹	0.122
	11	Biological Treatment Eff.	%	92.7%
	12	Influent BOD Loading	lb/day	225
	13	Influent BOD Concentration	mg/L	225.0
	14	BOD Removed	lb/day	208
	15	Effluent BOD Loading	lb/day	16
16	Effluent BOD Concentration	mg/L	16.4	
Winter	17	Design Water Temp	°C	0.5
	18	Biological Treatment Eff.	%	86.5%
	19	BOD Removed	lb/day	194.4
	20	Effluent BOD Concentration	mg/L	30.5
N1	Influent NBOD Loading	lb/day	25	
N2	Influent NBOD Conc.	mg/L	25.0	
N3	Assumed NBOD Removed	lb/day	-	
N4	Effluent NBOD Loading*	lb/day	25	
N5	Assumed Eff. NBOD Conc.	mg/L	25	
Cell 1B				
21	Wastewater Flowrate	MGD	0.1	
22	Treatment Volume	M-Gal	5.5	
23	Treatment Time	days	45.4	
24	Treatment Type	-	Partial Mix	
25	Std Reaction Rate, k_{20}	days ⁻¹	0.28	
Summer	26	Design Water Temp	°C	20
	27	Design Reaction Rate, k_T	days ⁻¹	0.122
	28	Biological Treatment Eff.	%	92.7%
	29	Influent BOD Loading	lb/day	16
	30	Influent BOD Concentration	mg/L	16.4
	31	BOD Removed	lb/day	15
	32	Effluent BOD Loading	lb/day	1
33	Effluent BOD Concentration	mg/L	1.2	
Winter	34	Design Water Temp	°C	0.5
	35	Biological Treatment Eff.	%	86.5%
	36	BOD Removed	lb/day	26.3
	37	Effluent BOD Concentration	mg/L	4.1
N6	Influent NBOD Loading	lb/day	25	
N7	Influent NBOD Conc.	mg/L	25.0	
N8	Assumed NBOD Removed	lb/day	-	
N9	Effluent NBOD Loading*	lb/day	25	
N10	Assumed Eff. NBOD Conc.	mg/L	25	

SUMMARY - Aeration Calculations			
Item	Description	Units	Aeration W baffle
1	Site Elevation	ft	436
2	O ₂ Loading Factor (BOD ₅)	o2/BOD	1.5
3	Alpha-value, α		0.60
4	Beta-value, β		0.95
5	Theta-value, θ		1.02
Cell 1A			
6	Lagoon Side Water Depth	ft	8.50
7	Air Release Depth	ft	7.75
8	AOR - Total	lb/day	313
9	SOTE/ft	%/ft	2.16%
10	SOTE	%	16.72%
11	Design DO Concentration	mg/L	2.0
12	FTE		7.23%
13	Air requirement	scfm	173
14	Airflow per aeration unit	scfm	28.8
15	Aerator Type		750T
16	Number of aeration units	units	6
17	Water Pressure	psig	3.36
18	Aerator Pressure Loss	psig	0.53
19	Header/Feeder P Loss	psig	0.91
20	Total Operating Pressure	psig	4.80
21	Design Motor Pressure	psig	5.80
Cell 1B			
22	Lagoon Side Water Depth	ft	8.50
23	Air Release Depth	ft	7.75
24	AOR - Total	lb/day	40
25	SOTE/ft	%/ft	2.52%
26	SOTE	%	19.56%
27	Design DO Concentration	mg/L	2.0
28	FTE		8.46%
29	Air requirement	scfm	19
30	Airflow per aeration unit	scfm	9.3
31	Aerator Type		750T
32	Number of aeration units	units	2
33	Water Pressure	psig	3.36
34	Aerator Pressure Loss	psig	0.50
35	Header/Feeder P Loss	psig	0.54
36	Total Operating Pressure	psig	4.39
37	Design Motor Pressure	psig	5.39



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 \$1,000 -	CHECK NO. 2759
DATE RECEIVED 02/24/26	

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: SRF Project #: C295925-01
- 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: _____ 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 Benton Wastewater Improvements	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$ 3,743,017.50
2.3 PROJECT DESCRIPTION Wastewater treatment improvements; new influent mechanical screen with bypass, existing lagoon cell modifications, and process piping modifications. Wastewater collection improvements; various I&I reduction measures. See the plans for full details.	
2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION Sludge is retained in the lagoon.	
2.5 DESIGN INFORMATION A. Current population: <u>866</u> ; Design population: <u>1,200</u> B. Actual Flow: <u>83,000</u> gpd; Design Average Flow: <u>120,000</u> gpd; Actual Peak Daily Flow: <u>1,500,000</u> gpd; Design Maximum Daily Flow: <u>240,000</u> gpd; Design Wet Weather Event: _____	
2.6 ADDITIONAL INFORMATION A. Is a topographic map attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO B. Is a process flow diagram attached? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	

3.0 WASTEWATER TREATMENT FACILITY				
NAME Benton Wastewater Treatment Facility		TELEPHONE NUMBER WITH AREA CODE 573-545-3558		E-MAIL ADDRESS bentonmissouri@yahoo.com
ADDRESS (PHYSICAL) 0.25 miles north of E. Bland St and Hwy E intersection	CITY Benton	STATE MO	ZIP CODE 63736	COUNTY Scott
Wastewater Treatment Facility: Mo- 0055182 (Outfall 001 Of 001)				
3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. <u>7</u> , T <u>28N</u> , R <u>14E</u> (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): <u>806013</u> Northing (Y): <u>4111924</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: <u>Tributary to Caney Creek</u>				
4.0 PROJECT OWNER				
NAME City of Benton		TELEPHONE NUMBER WITH AREA CODE 573-545-3558		E-MAIL ADDRESS bentonmissouri@yahoo.com
ADDRESS P.O. Box 185	CITY Benton	STATE MO	ZIP CODE 63736	
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 Benton		TELEPHONE NUMBER WITH AREA CODE 573-545-3558		E-MAIL ADDRESS bentonmissouri@yahoo.com
ADDRESS P.O. Box 185	CITY Benton	STATE MO	ZIP CODE 63736	
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 Michael Montgomery, PE / Heartland Engineering		TELEPHONE NUMBER WITH AREA CODE (573) 275-9261		E-MAIL ADDRESS mmontgomery@heartlandengineers.com
ADDRESS 891 Mockingbird Ln	CITY Poplar Bluff	STATE MO	ZIP CODE 63901	
7.0 APPLICATION FEE				
<input checked="" type="checkbox"/> CHECK NUMBER 2759 <input type="checkbox"/> 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 James Simmons			DATE 2-16-2026	
TITLE OR CORPORATE POSITION Mayor		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.				

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.
 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 three 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 _____
Basin #3: 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
Basin #3: 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 Basin #3: _____ ft

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

Basin #1: _____ ft Basin #2: _____ ft Basin #3: _____ ft

9.7 Total design sludge storage: _____ dry tons and _____ cubic feet

10.0 LAND APPLICATION SYSTEM

10.1 Number of irrigation sites _____ Total Acres _____ Maximum % field slopes _____

Location: _____ ¼, _____ ¼, _____ ¼, _____ Sec. _____ T _____ R _____ 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.)

10.2 Type of vegetation: Grass hay Pasture Timber Row crops

Other (describe) _____

10.3 Wastewater flow (dry weather) gallons per day: Average annual _____ Seasonal _____ Off-season _____

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

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

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

10.5 Total irrigation per year (gallons): Design: _____ gal Actual: _____ gal

10.6 Actual months used for irrigation (check all that apply):

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec

10.7 Land application rate is based on:

Hydraulic Loading Other (describe) _____

Nutrient Management Plan (N&P) If N&P is selected, is the plan included? YES NO