

**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 Shelbina  
Shelbina Wastewater Treatment Facility  
206 West Shelbina Avenue  
Shelbina, MO 63468

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (Department).

As the Department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.


A representative of the Department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the Department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

July 2, 2019  
Effective Date

June 1, 2021  
Expiration Date

  
Edward B. Galbraith, Director, Division of Environmental Quality

  
Chris Wieberg, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

Proposed construction at the facility includes work in the headworks building and new lines to and from the surge basin to allow for blending. An ultrasonic Parshall flume will be installed, along with 2 magnetic flow meters. New screening in the headworks will include a mechanical fine screen capable of passing solid sphere of 0.25 inches and a new manually clean coarse bar screen with 3.4 inch spacing. Following the screening, new grit removal will be installed with a design velocity of 0.3 fps at design average flow and 0.2 fps at peak flows. A new RAS pump station will be constructed to have 3 non-clog pumps. Construction will include new forcemain and other piping lines through the facility to allow for blending from the surge basin to be returned back to the headworks for treatment or to the outfall for blending. The design average flow will remain 0.662 MGD with a peak flow of 4.14 MGD. 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 McClure Engineering on February 11, 2019 and revised on March 08, 2019 and as described in this permit.
3. 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).

4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department's Northeast Regional Office per 10 CSR 20-7.015(9)(G).
5. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
6. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation per 10 CSR 20-8.140(2)(B). The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.
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 [dnr.mo.gov/env/wpp/epermit/help.htm](http://dnr.mo.gov/env/wpp/epermit/help.htm). See [dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm](http://dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm) for more information.
8. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver 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 be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department's Water Protection Program at 573-751-1300 for more information. See [dnr.mo.gov/env/wpp/401/](http://dnr.mo.gov/env/wpp/401/) for more information.
9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
  - All screening devices and screening storage areas shall be protected from freezing. 10 CSR 20-8.150 (4) (A) 1.
  - Provisions shall be made for isolating or removing screening devices from their location for servicing. 10 CSR 20-8.150 (4) (A) 2.
  - Manually cleaned screen channels shall be protected by guard railings and deck gratings with adequate provisions for removal or opening to facilitate raking. 10 CSR 20-8.150 (4) (A) 3. A. (I)
  - Mechanically cleaned screen channels shall be protected by guard railings and deck gratings. 10 CSR 20-8.150 (4) (A) 3. A. (II)

- Mechanical screening equipment shall have adequate removal enclosures to protect facility personnel against accidental contact with moving parts and to prevent dripping in multi-level installations. 10 CSR 20-8.150 (4) (A) 3. B. (I)
- A positive means of locking out each mechanical screening device shall be provided. 10 CSR 20-8.150 (4) (A) 3. B. (II)
- An emergency stop button with an automatic reverse function shall be located in close proximity to the mechanical screening device. 10 CSR 20-8.150 (4) (A) 3. B. (III)
- Electrical systems and components in raw wastewater or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors that are normally present, shall comply with the NFPA 70 *National Electric Code (NEC)* (2017 Edition), as approved and published August 24, 2016, requirements for Class I, Division 1, Group D locations. 10 CSR 20-8.140 (7) (B)
- Where two (2) or more mechanically cleaned bar screens are used, the design shall provide for taking the largest unit out-of-service without sacrificing the capability to handle the average design flow. Where only one mechanically cleaned screen is used, it shall be sized to handle the design peak instantaneous flow. 10 CSR 20-8.150 (4) (B)
- A means of flow measurement shall be provided at all wastewater treatment facilities. 10 CSR 20-8.140 (7) (E)
- Effective flow splitting devices and control appurtenances (*e.g.* gates and splitter boxes) shall be provided to permit proper proportioning of flow and solids loading to each settling unit, throughout the expected range of flows. 10 CSR 20-8.160 (2) (B).
- Flood protection shall apply to new construction and to existing facilities undergoing major modification. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation. CSR 20-8.140(2)(B). 10 CSR 20-8.130 (2) (A)
- Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D). 10 CSR 20-8.130 (2) (B).

10. Upon completion of construction:

- A. The City of Shelbina will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as built; and
- C. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N).

## **IV. REVIEW SUMMARY**

### **1. CONSTRUCTION PURPOSE**

The construction is to improve operations and to eliminate discharges from Outfall #002 as part of the facility's bypass elimination plan. The construction is to improve the headworks operations in the system and to allow the facility the ability to blend wastewater from the surge tank with water from the oxidation ditch prior to discharge.

### **2. FACILITY DESCRIPTION**

The Shelbina WWTF is located at 206 West Shelbina Avenue, Shelbina, in Shelby County, Missouri. The facility has a design average flow of 0.662 MGD and serves a hydraulic population equivalent of approximately 6,620 people. The existing treatment facility includes influent screw pump station/surge basin/surge basin pump station/oxidation ditch/final clarifiers/sludge drying beds/sludge holding tanks. The system is being modified to remove the existing headworks and replace it with a new headworks building including a Parshall flume, grit removal, mechanical bar screen with a manual bar screen back-up and to construct a return activated sludge (RAS) lift station and new sewer lines to allow for blending of wet weather flows with flows from the treatment plant prior to discharge.

Parameter	Units	Monthly average limit	DMRs from 2013-2019
Flow	MGD	*	0.36
BOD <sub>5</sub>	mg/L	30	4.79
Total Suspended Solids	mg/L	30	4.16
Ammonia as N-summer	mg/L	*	0.10
Ammonia as N-winter	mg/L	*	0.16
Oil & Grease	mg/L	10	5.65
pH	SU	6.5-9.0	7.69
Copper, Total Recoverable	µg/L	*	15.7
Zinc, Total Recoverable	µg/L	*	27.5
BOD <sub>5</sub> percent removal	%	85	90.6
TSS percent removal	%	85	96.9

\* monitoring only

### **3. COMPLIANCE PARAMETERS**

There are no change to the final effluent limits at the facility. When the facility is blending, it will be required to meet the final effluent limits established in the operating permit, and listed below. This construction permit does not address the schedule of compliance for *E. Coli* and copper that expires in 2024. When blending, the facility will be required to monitor daily for flow, BOD<sub>5</sub>, TSS, *E. Coli*, and percent removal.

Parameter	Units	Monthly average limit
Flow	MGD	*
Biochemical Oxygen Demand <sub>5</sub>	mg/L	30
Total Suspended Solids	mg/L	30
Ammonia as N	mg/L	*
Nitrate+Nitrite	mg/L	*
Total Kjhedal Nitrogen	mg/L	*
Total Phosphorus	mg/L	*
Oil & Grease	mg/L	10
pH	SU	6.5-9.0
Copper, Total Recoverable	µg/L	*/19.4
<i>E. Coli</i>	#/100mL	206
BOD percent removal	%	85
TSS percent removal	%	85

\* monitoring only

#### 4. **REVIEW of MAJOR TREATMENT DESIGN CRITERIA**

##### **Existing major components which will remain in use include the following:**

- Components are designed for a Population Equivalent of 6,620 based on hydraulic loading to the system. The average design flow will remain at 0.662 MGD with a peak flow of 1.4 MGD.
- Influent Pump Station-The influent pump station has 2 screw pumps that can handle a maximum of 4.14 mgd.
- Surge Basin-The surge basin is a circular concrete tank, 45 ft in diameter with a sidewater depth of 13 ft with a surface area of 1,590 ft<sup>2</sup>, and a volume of 155,000 gallons.
  - The surface settling rate (SSR) at a peak flow of 2,720,000 gpd is 1,711 gpd/ft<sup>2</sup>.
  - The retention time in the basin is 1.4 hours at peak flow.
  - Currently flows are pumped back to the headworks, except when flows are high for a long period of time, and then water is discharged through Outfall #002. Outfall #002 is covered under the facility's Voluntary Compliance Agreement (VCA) to be eliminated.
- Oxidation Ditch –The oxidation ditch is 180 feet long (135 ft plus the 2 ends with 22.5 ft radius), 44 ft wide, and has a 10 ft water depth.
  - The hydraulic retention time is 20.4 hrs at design flow of 0.662 MGD.
  - The ditch is usually operated at 2,500 mg/L MLSS.
  - At 2,500 mg MLSS, the F/M ratio is 0.096 lb BOD<sub>5</sub>/day/MLSS.
  - The 2 rotors are 19 ft long with 27.5 inch diameter with 40 hp motors providing the required 127 lbs per hour of oxygen at design flow.
- Final Clarifiers – There are 2 final clarifiers, each with 30 ft diameter and a side water depth of 12 ft.
  - The surface settling rate (SSR) at design flow is 468 gpd/ft<sup>2</sup>.
  - With 1 clarifier in service at design flow, the SSR is 936 gpd/ft<sup>2</sup>.
  - At peak design flow of 1.4 MGD, the SSR is 990 gpd/ft<sup>2</sup>.
- Sludge Drying Beds – There are 5 cells, with a total area of 5,760 ft<sup>2</sup>.

- Sludge Holding Tank-There are 2 holding tanks, each 35 ft in diameter and 9 ft deep to provide 64,774 gallons of storage per tank or 129,548 gallons of storage in 2 tanks. Using the volume available, there is approximately 60 days of storage provided.

**Construction will cover the following items:**

- Flow Measurement – Installation of accurate flow measurement devices will give the treatment facility a means of improved data analysis.
  - Parshall Flume – A 9-inch throat parshall flume with ultrasonic flow sensor shall measure the influent wastewater following.
    - The head on the Parshall flume at design average flow is 5.86 inches and at design peak flow is 9.64 inches.
- Screening – Installation of screening devices removes nuisance inorganic materials from raw wastewater.
  - Mechanical Coarse Screen – One automatic mechanically cleaned fine screen within the headworks building.
    - The screening device shall be capable of treating a design average flow of 0.662 MGD and a peak flow of 4.14 MGD.
    - Maximum solid sphere diameter passing screen of 0.25 inches.
    - The automatic bar screen will clean and remove debris up to 3 inches in diameter.
    - A manually cleaned coarse bar screen shall be used during maintenance and extreme wet weather events with bar spacing in the channel with a clear bar spacings of  $\frac{3}{4}$  -inch and be positioned at an angle of 45 degrees from the horizontal to allow for manual raking of the screen. The addition of a manually cleaned coarse bar screen provides redundancy and a means of unit isolation for the mechanically cleaned coarse screen. The screening structure is followed by a weir and then on to the grit removal system.
- Grit Removal – Installation of grit removal facilities removes grit and inert inorganics from raw wastewater. Grit removal prevents downstream abrasion and wear on mechanical components and accumulation at the bottom of basins or channels.
  - Grit Collector – Installation of one grit collector, WSG & Solutions C&S Grit Collector or Equivalent, having a design flow rate of 5.0 mgd and affect grit removal of 65 mesh and larger, with a circular inner dimension of 10 ft, a water depth of 3.083 ft and have a minimum of 1.5 ft of freeboard.
  - The addition of a 1 hp variable speed screw conveyor trough to transport grit from the collector to the disposal unit.
  - Velocity through the grit system will be approximately 0.03 fps at design average flow and 0.2 fps at peak flow.
  - The detention time is 7.3 minutes at design average flow and 0.9 minutes at peak flow.
- Flow Splitter- 12 inch DIP flow splitter to send flows to the surge tank or to the oxidation ditch

- 16" DIP from flow splitter to surge basin
- 291 lf of 16 inch DIP with 2 new manholes (C1 and C2) to connect from the surge basin to the discharge pipe
- 2 magnetic flow meters, one on the discharge line from the oxidation ditch and one on the discharge line from the surge basin. The 2 lines converge at new manhole, A1.
- Return Activated Sludge (RAS)- The RAS rate is 95% of the design average flow, 0.597 MGD, which meets the requirements of 10 CSR 20-8.180(4)(D)1.
  - The RAS MLSS is expected to be 4,500 mg/L.
  - The RAS pumps have:
    - 2 non-clog, 10 hp pumps in duplex configuration and VFDs designed for 183 gpm with 21 ft TDH.
    - 1 non-clog, 20 hp pump to operate under high flow conditions with VFD designed for 690 gpm and 30 ft TDH.
  - Installation of approximately 12 lf of 12 inch DIP gravity lines and 37 lf of 6 inch DIP forcemain.
- The discharge outfall pipe will be replaced from Manhole 5 to the Outfall structure with approximately 102 lf of 16 inch DIP gravity sewer, 115 lf of 21-inch PVC and 2 new manholes (A1 and A2).

## **5. OPERATING PERMIT**

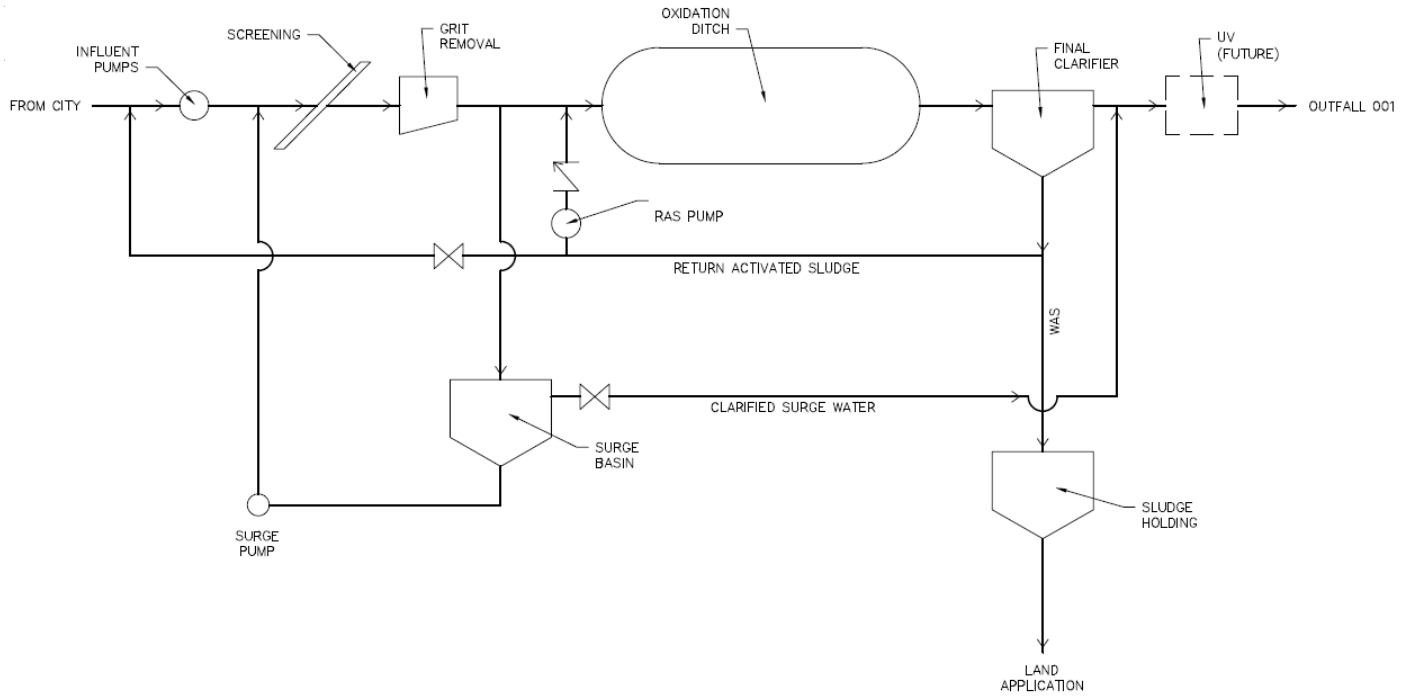
Operating permit MO-0041092 was placed on public notice May 24, 2019 to June 24, 2019 with no comments received. The operating permit renewal includes the condition for blending, which the facility will be able to do once construction is complete. These construction activities do not require a modification to the operating permit. It is expected that the facility owner will include a new facility description and process flow diagram in their next operating permit renewal application in 2023, to include the new headworks being installed. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N).

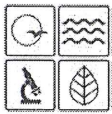
Leasue Meyers, EI  
Engineering Section  
[leasue.meyers@dnr.mo.gov](mailto:leasue.meyers@dnr.mo.gov)

Cindy LePage, P.E.  
Engineering Section  
[cindy.lepage@dnr.mo.gov](mailto:cindy.lepage@dnr.mo.gov)



## APPENDIX A – PROCESS DIAGRAM





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

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED	CHECK NO.
DATE RECEIVED	

#### APPLICATION OVERVIEW

The Application for Construction Permit – Wastewater Facility form is for construction pertaining to domestic wastewater treatment facilities, agrichemical facilities, and components thereof. This 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: \_\_\_\_\_ Project #: \_\_\_\_\_
- 1.2 Is this an application for an agrichemical? ☐ YES (See instructions.) ☒ N/A
- 1.3 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?  
☐ YES Date of Approval: \_\_\_\_\_
- 1.4 Has the department approved the proposed project's facility plan\*?  
☒ YES Date of Approval: January 2016 ☐ NO ☐ N/A (If Not Applicable, complete No. 1.5.)
- 1.5 [Complete only if answered Not Applicable on No. 1.4] Is a copy of the engineering report\* for wastewater treatment facilities with a design flow less than 22,500 gpd included with this application?  
☐ YES ☐ NO
- 1.6 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
- 1.7 Is a summary of design\* included with this application? ☒ YES ☐ NO
- 1.8 Is a general operating permit applicable?  
☐ YES Submit the appropriate operating permit application to the Regional Office at least 60 days prior to operation.  
☒ NO Enclose the appropriate operating permit application and fee submittal. Denote which form: ☐ B ☒ B2
- 1.9 Is the facility currently under enforcement with the department or the Environmental Protection Agency? ☐ YES ☒ NO
- 1.10 Is the appropriate fee included with this application? ☒ YES ☐ NO (See instructions for appropriate fee.)

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

#### 2.0 PROJECT INFORMATION

##### 2.1 NAME OF PROJECT

Shelbina Wastewater Facilities Improvements

##### 2.2 PROJECT DESCRIPTION

Work includes construction of a new headworks building with mechanical screen and grit chamber, new stormwater flow splitter, new sewer between surge basin and Outfall 001, new return activated sludge lift station, and replacement of the existing Outfall 001 sewer with larger diameter pipe.

##### 2.3 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

The only change in sludge handling is the addition of a new return activated sludge pump.

##### 2.4 DESIGN INFORMATION

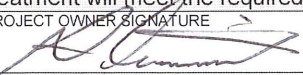
- A. Current population: 1700; Design population: 6,620
- B. Actual Flow: 150,000 gpd; Design Average Flow: 662,000 gpd;  
Actual Peak Daily Flow: \_\_\_\_\_ gpd; Design Maximum Daily Flow: 4,140,000 gpd;  
Design Wet Weather Event: \_\_\_\_\_

##### 2.5 ADDITIONAL INFORMATION

- A. Is a topographic map attached? ☒ YES ☐ NO
- B. Is a process flow diagram attached? ☒ YES ☐ NO

##### 2.6 ESTIMATED PROJECT CONSTRUCTION COST

\$

3.0 WASTEWATER TREATMENT FACILITY				
NAME Shelbina WWTF		TELEPHONE NUMBER WITH AREA CODE (573) 588-4104		EMAIL ADDRESS
ADDRESS (PHYSICAL) 206 West Shelbina Avenue	CITY Shelbina	STATE MO	ZIP CODE 63468	COUNTY Shelby
Wastewater Treatment Facility: Mo- 0041092 (Outfall 1 Of 1 )				
3.1 Legal Description: SE ¼, SE ¼, NW ¼, Sec. 5 , T 56N , R 10W (Use additional pages if construction of more than one outfall is proposed.)				
3.2 UTM Coordinates Easting (X): 581842 Northing (Y): 432964 For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)				
3.3 Name of receiving streams: unnamed tributary to Clear Creek				
4.0 PROJECT OWNER				
NAME City of Shelbina		TELEPHONE NUMBER WITH AREA CODE (573) 588-4104		EMAIL ADDRESS wastewater@cityofshelbina.com
ADDRESS 116 East Walnut	CITY Shelbina	STATE MO	ZIP CODE 63468	
5.0 CONTINUING AUTHORITY: Permanent organization that will serve as the continuing authority for the operation, maintenance and modernization of the wastewater collection system.				
NAME City of Shelbina		TELEPHONE NUMBER WITH AREA CODE (573) 588-4104		EMAIL ADDRESS wastewater@cityofshelbina.com
ADDRESS 116 E. Walnut, PO Box 646	CITY Shelbina	STATE MO	ZIP CODE 63468	
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 Philip R. Wilson, P.E., McClure		TELEPHONE NUMBER WITH AREA CODE (660) 385-6441		EMAIL ADDRESS pwilson@mecresults.com
ADDRESS 107 Butler Street	CITY Macon	STATE MO	ZIP CODE 63552	
7.0 PROJECT OWNER: I hereby certify that I am familiar with the information contained in this application and to the best of my knowledge and belief such information is true, complete, and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders, and decisions, subject to any legitimate appeal available to applicant under Missouri Clean Water Law. I also understand the issuance of the construction permit does not guarantee the proposed wastewater treatment will meet the required effluent limitations of the issued Missouri State Operating Permit for this facility.				
PROJECT OWNER SIGNATURE 				
PRINTED NAME Al Dimmitt			DATE 11/20/18	
TITLE OR CORPORATE POSITION Mayor		TELEPHONE NUMBER WITH AREA CODE (573) 588-4104		EMAIL ADDRESS wastewater@cityofshelbina.com
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 ☐ Subsurface  
☐ 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 two 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 \_\_\_\_\_

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

9.5 Design depth of sludge in storage basins.

Basin #1: \_\_\_\_\_ ft Basin #2: \_\_\_\_\_ ft

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

Basin #1: \_\_\_\_\_ ft Basin #2: \_\_\_\_\_ ft

9.7 Total design sludge storage: \_\_\_\_\_ dry tons and \_\_\_\_\_ cubic feet

**10.0 LAND APPLICATION SYSTEM**

10.1 Type of land application: ☐ Fixed Head Sprinklers ☐ Center Pivot ☐ Traveling Gun ☐ Drip Dispersal  
☐ Subsurface Low Pressure Pipe ☐ Other (describe) \_\_\_\_\_

10.2 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.)

10.3 Type of vegetation: ☐ Grass hay ☐ Pasture ☐ Timber ☐ Row crops  
☐ Other (describe)

10.4 Wastewater flow (dry weather) gallons per day: Average annual \_\_\_\_\_  
Seasonal \_\_\_\_\_ Off-season \_\_\_\_\_

10.5 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

10.6 Total irrigation per year (gallons): Design: \_\_\_\_\_ gal Actual: \_\_\_\_\_ gal

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

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

10.8 Land application rate is based on:

☐ Hydraulic Loading ☐ Other (describe) \_\_\_\_\_  
☐ Nutrient Management Plan (N and P) If N and P is selected, is the plan included? ☐ YES ☐ NO