

**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 Laddonia  
P.O. Box 70  
Laddonia, MO 63352

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.

June 11, 2018  
Effective Date

  
Edward B. Galbraith, Director, Division of Environmental Quality

June 10, 2020  
Expiration Date

  
Chris Wieberg, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

### **I. CONSTRUCTION DESCRIPTION**

The City of Laddonia proposed to convert the existing wastewater treatment facility consisting of a 3-cell lagoon from a discharging facility to a no-discharge facility with floating pump station and a center pivot irrigation for land application.

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 Klingner & Associates, PC on March 22, 2018.
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(8).

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)(E)2.
5. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or establishment.
6. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
7. Wastewater treatment facility shall not be located within one hundred feet (100'), and preferably three hundred feet (300') of any water well or water supply structure.
8. 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.
9. 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.
10. Upon completion of construction:
  - A. The City of Laddonia will become the continuing authority for operation, maintenance, and modernization 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)(D) and request the operating permit modification be issued.

#### **IV. REVIEW SUMMARY**

##### **1. CONSTRUCTION PURPOSE**

The City of Laddonia currently operates an existing wastewater treatment facility built in 1975. The facility's operating permit contains a Schedule of Compliance to meet final effluent limits of E. coli and Ammonia. Transition of the Laddonia WWTF to a no-discharge facility will prevent future violation of ammonia and E. coli limits in the city's discharge permit, protecting the health of the Middle Lick Creek. The City's wastewater will be reused in a manner beneficial to local farmers without burdening the community with the cost of extensive upgrades to the facility.

##### **2. FACILITY DESCRIPTION**

The City of Laddonia currently operates a 3-cell lagoon wastewater treatment facility built in 1975 that is located west of the town. The treatment process consists of a 1,725,000 gallon aeration 1<sup>st</sup> cell followed by a 5,563,000 gallon 2<sup>nd</sup> settling cell and a 3<sup>rd</sup> final 559,000 gallon settling cell. Two surface aerators, one 5 HP and one 7.5 HP, are held by cables on the lagoon surface of the first cell. The final cell effluent flows to an outfall located on Middle Lick Creek.

The proposed WWTF modifications included plugging the existing outfall to the Middle Lick Creek and utilizing land application of the lagoon effluent on nearby cropland. A 525 GPM (31,500 GPH) floating pump station will pump water from the existing 3<sup>rd</sup> lagoon cell through approximately 3,700 feet of 8" DR 21 PVC force main to the application site.

The Laddonia WWTF is located at 0.15 mile Southwest of Oak and Grand street intersection, Laddonia, in Audrain County, Missouri. The facility has a design average flow of 70,000 GPD and serves a hydraulic population equivalent of approximately 700 people.

##### **3. COMPLIANCE PARAMETERS**

For the storage basin operation, the facility must monitor Storage Basin Freeboard in feet once per week and Precipitation in inches daily.

For land application operation, the facility must monitor the daily irrigation period in hours, volume irrigated in gallons, application area in acres, and application rate in inches.

##### **4. ANTIDegradation**

No degradation proposed and no further antidegradation review necessary since the proposed facility is a no-discharge wastewater treatment system.

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

- Storage lagoon cells: All of the cells are 10 feet deep with 2 feet of freeboard. Sludge storage is 2 feet and sludge production is 14.25 dry tons per year, all of which is retained in the lagoon cells. The existing lagoon can provide up to 112 days of storage at the proposed design flow of 70,000 GPD.
- Floating pump station: A floating pump station will pump effluent from the existing 3<sup>rd</sup> lagoon cell through approximately 3,700 feet of 8" DR 21 PVC force main to the application site. The float frame shall be comprised of a galvanized steel frame with two (2) attached polyethylene floats. The frame shall be capable of floating a maximum of 650 Lb. The proposed 30 HP pump (3RB-CC) is manufactured by Valley Water Management, Cornell Pump Company and Sure-Flo Fittings and capable of operating at 525 gpm at 150 feet of TDH.
- The application site: The 100.4 acres application site is located northeast of the WWTF. The application site is very level with slopes averaging between 0-2 percent. At the site, a 1,100-foot radius center pivot irrigator (Nelson Irrigation Company, SR100 Big Gun) with the aid of a 2 HP end booster pump that extends the application radius 100 feet will disperse effluent across cropland. The drive will use a high efficiency, total enclosed irrigation duty motor that will be 0.6 HP and/or 1.2 HP. A design application rate of 0.10 inches per day is proposed and 272,710 gallons of lagoon effluent will be applied over an 8.7 hour period in one rotation of the pivot once per day. Yearly application rates for the design and average flows are below the 24 inches per year. Corn or soybeans is expected to be grown on the site. Irrigation is being proposed for frost free days between April to November.

## **6. OPERATING PERMIT**

Operating permit MO-0039683 will require a modification to reflect the construction activities. The modified operating permit of the Laddonia WWTF, MO-0039683, was successfully public noticed from April 27, 2018 to May 26, 2018 with no comments received. Submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit modification be issued.