Permit No. CP0002177

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 Excelsior Springs
201 E Broadway
Excelsior Springs, MO 64024

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.

January 4, 2021
Effective Date

Edward B. Galbraith

Edward B. Galbraith, Director, Division of Environmental Quality

January 3, 2023
Expiration Date

Chris Wieberg

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

This is an existing facility that will install and construct a new aerobic digester at the wastewater treatment plant-MO0028843 located in Excelsior Springs, Missouri. The new aerobic sludge digester will have a similar capacity to the existing sludge digester. The new digester will have a diameter of 90 ft and a side water depth of 20 ft. The floor of the new cylindrical digester will have a slope to the center dropping 1 foot, whereas, the existing digester has a flat floor with the same diameter and side water depth. The new digester will be located close to the existing digester. The new digester will improve the residual solids disposal and maintenance operations. A new blower will be added to the two existing blowers.

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 consistent with plans and specifications signed and sealed by Lamp Rynearson Inc. on September 6, 2020.

3. The Department must be contacted in writing prior to making any changes to the 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 Kansas City Regional Office per 10 CSR 20-7.015(9) (G).

5. The new digester shall be located above the twenty-five (25)-year flood level.

6. The new digester, 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 storm water. 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. See 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/ for more information.

9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

    - 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)

- Water supplies using indirect connections shall comply with 10 CSR 20-8.140(7)(D). 10 CSR 20-8.170 (4) (D)
  - No piping or other connections shall exist in any part of the wastewater treatment facility that might cause the contamination of a potable water supply. 10 CSR 20-8.140 (7) (D) 1.
  - Hot water for any direct connections shall not be taken directly from a boiler used for supplying hot water to a digester heating unit or heat exchanger. 10 CSR 20-8.140 (7) (D) 2.
  - Where a potable water supply is to be used for any purpose in a wastewater treatment facility other than direct connections, a break tank, pressure pump, and pressure tank or a reduced pressure backflow preventer consistent with the department's Public Drinking Water Branch shall be provided. 10 CSR 20-8.140 (7) (D) 3. A.
  - For indirect connections, a sign shall be permanently posted at every hose bib, faucet, hydrant, or sill cock located on the water system beyond the break tank or backflow preventer to indicate that the water is not safe for drinking. 10 CSR 20-8.140 (7) (D) 3. B.
  - Where a separate non-potable water supply is to be provided, a break tank will not be necessary, but all system outlets shall be posted with a permanent sign indicating the water is not safe for drinking. 10 CSR 20-8.140 (7) (D) 4.

- Aerobic Solids Digestion High Level Emergency Overflow. An unvalved emergency overflow shall be provided that will convey digester overflow to the treatment plant headworks, the aeration process, or to another liquid sludge storage facility and that has an alarm for high level conditions. 10 CSR 20-8.170 (5)

- For solids pumping systems, audio-visual alarms shall be provided in accordance with 10 CSR 20-8.140(7)(C) for:
  - Pump failure; 10 CSR 20-8.170 (6) (A)
  - Pressure loss; 10 CSR 20-8.170 (6) (B) and
  - High pressure. 10 CSR 20-8.170 (6) (C)

10. Upon completion of construction:

A. The City of Excelsior Springs 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 enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N); and

D. When the facility applies for their next operating permit renewal, they will be expected to include an updated facility description on their application.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The purpose of the proposed construction at City of Excelsior Springs WWTF-MO-0028843 is to improve residual solid disposal operations by adding another concrete aerobic digester with a new blower to the existing digester system. The new digester will have approximately the same size and capacity as the existing digester. The improvements are intended to provide digestion capacity for the twenty-year design period. The improvements will provide better means of maintaining the digester in terms of draining the digester, both for cleaning and for diffuser replacement, while keep the facility in operation.

2. FACILITY DESCRIPTION

The City of Excelsior Springs WWTF-MO0028843 is an existing facility that includes: Bypass of plant to lagoon system, fine screen with manually cleaned bypass, grit removal chamber with grit classifier, influent & RAS pump station, aeration basin splitter, two deep oxidation ditches, two 90' diameter center clarifier, UV system, cascade step reaeration prior to the effluent discharge, generator, one digester, dewatering, and dewatered sludge storage building. The discharge location remains the same with the receiving waterbody being a tributary to the Fishing River.

The facility is proposing to install a new concrete digester in addition to the existing digester, with approximately the same size and capacity, to improve residual solids disposal operations.

This project is not a State Revolving Fund (SRF) funded project based on a confirmation email recived from the engineer dated December 7, 2020.

The City of Excelsior Springs WWTF is located in the vicinity of the intersection of N McKee Rd, 116th Street and MO-H in the City of Excelsior Springs, in Clay County, Missouri. The facility will keep with the same design average flow of 3.5 MGD and serves a hydraulic population equivalent of approximately 35,000 people.

3. COMPLIANCE PARAMETERS

There are no changes in permitted effluent limits or permit requirements as a result of this project.

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

- There are two existing cylindrical aeration basins. The outer diameter is 162.5 ft, the inner diameter is 92.5 ft with 20 ft sidewater depth. Each basin has a capacity of

280,387 ft^3, or **2,097,440** gallons. The total volume for the two aeration basins is 4,194,880 gallons.

Construction will cover the following items:

- Components are designed for a Population Equivalent of 35,000 (3,500,000/100 gallons per person), based on hydraulic loading to the system. The Population Equivalent based on organic loading is 42,929 (7,298 ppd BOD/0.17 lb BOD per person). The total design average flow to the facility is 3.5 MGD.

- Blowers- Installation of one positive displacement rotary lobe blower for aerobic sludge digestion which is manufactured by Aerzen and capable of 1,750 scfm at 10.5 pounds per square inch (psi) with a 125-HP motor. This new blower will be in addition to two existing blowers, each with a 125-HP motor. The air flow will be supplied to 158 duplex fine bubble diffuser assemblies. One blower per aerobic digestion basin with a back-up.

- Aerobic Digester – Construction of one cylindrical sludge aerobic digestion basin with a 90 ft diameter, a 20 ft sidewater depth, and a sloped floor to a depth of 1 ft at the center, and a volume of 967,643 gallons. The new digester has similar dimensions to the existing digester, but with a sloped floor that will provide additional volume. The total available volume of the two digesters (existing and new) will be 256,590 ft^3, or 1,919,427 gallons. The design basis of the digester is an influent concentration of 250 mg/L with a flowrate to the new digester of 111,847 gpd. Installation of fine bubble diffusers will provide aeration and mixing of the sludge to prevent anaerobic conditions. One new blower with a 125 HP motor is capable of providing a maximum air rate of 1,750 standard cubic feet per minute (scfm) at 10.5 psig to treat 65,293 lbs. of solids. The aerobic digester is followed by the Rotary Fan Press thickener prior to the sludge holding basin. The facility must ensure compliance with any applicable 503(b) requirements for vector attraction reduction and pathogen reduction depending on the proposed use(s) of the biosolids. The mean cell residence time (MCRT) used in the calculation is 20 days and expected VSS reduction is 44%. c.

- One new sludge pump will be installed to two other existing sludge pumps with a flow design of 140 gpm and total head of 19 ft. The sludge pump will be able to supply 125% of the specified maximum capacity of sludge flow rate at a maximum speed not exceed 400 rpm.

- Audiovisual alarm- New alarms will be added to the new blower and new concrete aerobic digester. They will be connected to the plant control panel system.

5. OPERATING PERMIT

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

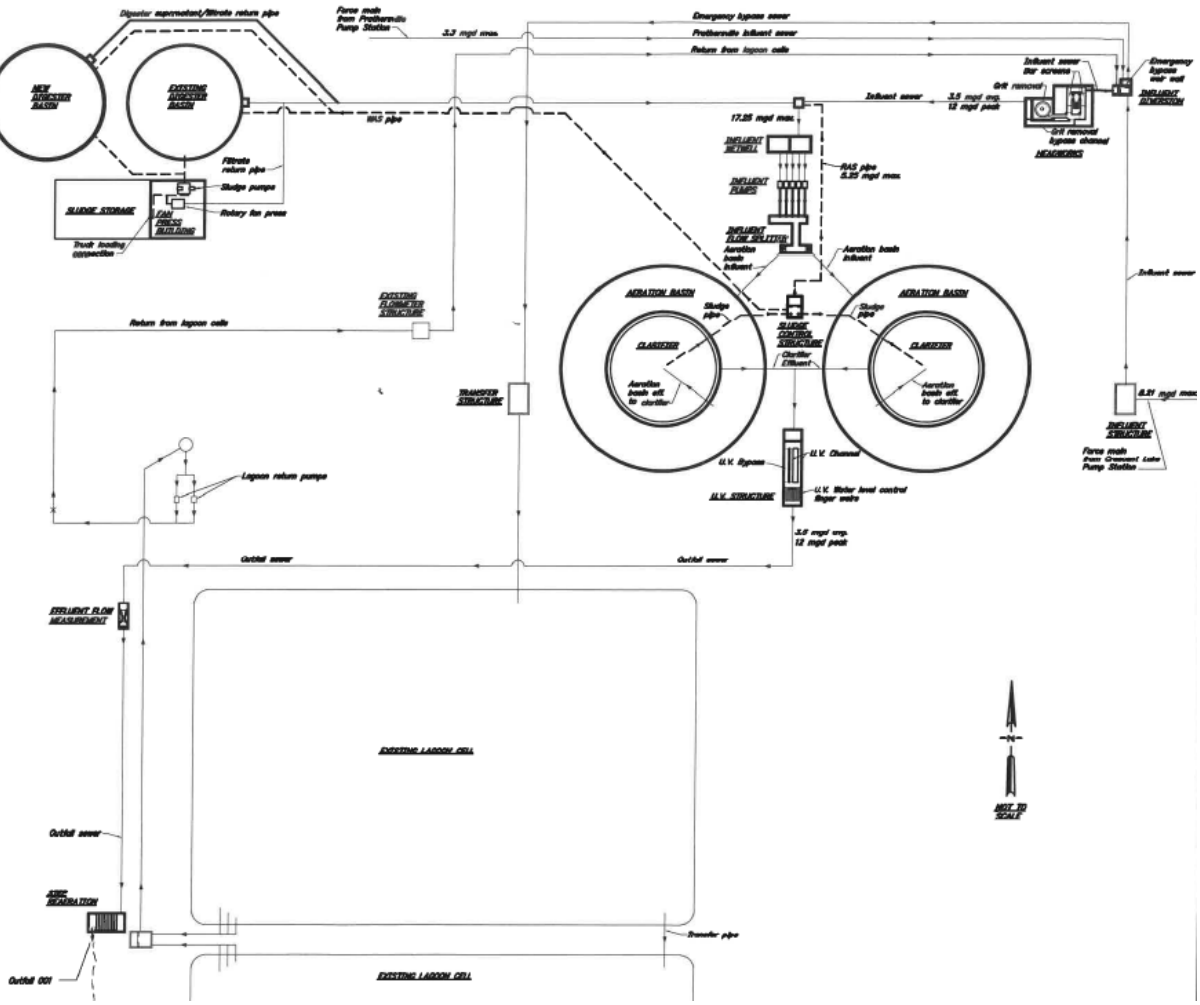
flow diagram in their next operating permit renewal application to reflect the installation of a new aerobic digester.

Mohammed Mohammed, M.S.
Engineering Section
Mohammed.Mohammed@dnr.mo.gov

Cailie Carlile, P.E., Unit Chief
Construction Permit Unit
Cailie.Carlile@dnr.mo.gov

APPENDIX

- **Process Flow Diagram**



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITY

RECEIVED
SEP 21 2020
Water Protection Program

FOR DEPARTMENT USE ONLY	
APP NO.	CP NO.
FEE RECEIVED $3000.00	CHECK NO. 100027
DATE RECEIVED 9-21-20	SB

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: CDBG Project #: 2019-PF-05

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: 10-18-18 ☐ 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: New Digester

2.2 ESTIMATED PROJECT CONSTRUCTION COST: $ 1,394,000

2.3 PROJECT DESCRIPTION: New aerobic digester

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION: Digestion (one existing, one new digester), dewatering with existing rotary fan press, land application

2.5 DESIGN INFORMATION

A. Current population: 13000; Design population: 35000

B. Actual Flow: 2.6 ~~gpd~~ mgd; Design Average Flow: 3.5 ~~gpd~~ mgd
Actual Peak Daily Flow: _____ ~~gpd~~; Design Maximum Daily Flow: 12.,7 ~~gpd~~ mgd; Design Wet Weather Event: 12.7 mgd

2.6 ADDITIONAL INFORMATION

A. Is a topographic map attached? ☑ YES ☐ NO

B. Is a process flow diagram attached? ☑ YES ☐ NO

3.0 WASTEWATER TREATMENT FACILITY

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
City of Excelsior Springs	816 630-3192	wwplant@excelsiorsprings.gov

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
11800 McKee Rd	Excelsior Springs	Mo	64024	Clay

Wastewater Treatment Facility: Mo-0028843 (Outfall 1 Of 1)

3.1 Legal Description: ____ ¼, NW ¼, NE ¼, Sec. 22, T 52, R 30W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 391345 Northing (Y): 4351340
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Tributary to Fishing River

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Same as above	816 630-0755 #423	cbirdsong@excelsiorsprings.gov

ADDRESS	CITY	STATE	ZIP CODE
201 E. Broadway	Excelsior Springs	Mo	64024

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	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Same as above		

ADDRESS	CITY	STATE	ZIP CODE

5.1 A letter from the continuing authority, if different than the owner, is included with this application. ☐ YES ☐ NO ☑ 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? ☐ YES ☐ 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? ☐ YES ☐ 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? ☐ YES ☐ 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? ☐ YES ☐ NO

D. Is a copy of the Missouri Secretary of State's nonprofit corporation certificate included with this application? ☐ YES ☐ NO

6.0 ENGINEER

ENGINEER NAME / COMPANY NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Lamp Rynearson	816 361-0440	greg.kendall@lamprynearson.com

ADDRESS	CITY	STATE	ZIP CODE
9001 State Line Rd Ste 200	Kansas City	Mo	64114

7.0 APPLICATION FEE

☐ CHECK NUMBER ☐ 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	DATE
Chad Birdsong	9-18-2020

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Director of Public Works	816 630 0755	cbirdsong@excelsiorsprings.gov

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.