

**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 Republic  
Republic Wastewater Treatment Plant  
915 North West Avenue  
Republic, MO 65738

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 25, 2024  
Effective Date

June 24, 2026  
Expiration Date

  
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John Hoke, Director, Water Protection Program

## CONSTRUCTION PERMIT

### **I. CONSTRUCTION DESCRIPTION**

Construction is to expand treatment capacity to five million gallons per day (MGD) with a new treatment plant. The City of Republic has experienced significant growth over the last few years and the new treatment plant will provide room for expansion with high level treatment.

Construction will include converting the existing oxidation ditches into wastewater basins to help handle peak wet weather flows, rehabilitation of the existing aerated digestors. Construction of the new treatment plant will include installation of new pumps, grit removal, rotary drum fine screens, chemical phosphorus removal, three biological nutrient removal process basins with anaerobic, anoxic, and aerated zones, three membrane bioreactors, new waste activated sludge and return activated sludge lines, new aeration in the digestors along with a new centrifuge and solids loading conveyors.

A closure plan will need to be submitted to the Southwest Regional Office for review and approval prior to any closure activities of existing equipment.

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 required to determine “findings of affordability” because the permit applies to a combined or separate sanitary sewer system for a publically-owned treatment works.

**Cost Analysis for Compliance** - The department has made a reasonable search for empirical data indicating the permit is affordable. The search consisted of a review of department records that might contain economic data on the community, a review of information provided by the applicant as part of the application, and public comments received in response to public notices of this draft permit. If the empirical cost data was used by the permit writer, this data may consist of median household income, any other ongoing projects that the department has knowledge, and other demographic financial information that the community provided as contemplated by Section 644. 145.3. See operating permit modification for **APPENDIX – COST ANALYSIS FOR COMPLIANCE**.

### **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 Caitlin Prim, P.E., with Burns and McDonnell and as described in this permit.
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 Southwest Regional Office per 10 CSR 20-7.015(9)(G).
5. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of one 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.
6. A United States Army Corps of Engineers (USACE) Clean Water Act Section 404 Department of the Army permit and a Section 401 Water Quality Certification issued by the department may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied or notification is provided that no Section 404 permit is required by the USACE. You must contact your local USACE district since they determine what waters are jurisdictional and which permitting requirements may apply. You may call the department's Water Protection Program, Operating Permits Section at 573-522-4502 for more information. See <https://dnr.mo.gov/water/business-industry-other-entities/permits-certification-engineering-fees/section-401-water-quality> for more information.
7. In accordance with 10 CSR 20-6.010(12), a full closure plan shall be submitted to the department's Southwest Regional Office for review and approval of any permitted wastewater treatment system being replaced. The closure plan must meet the requirements outlined in Standard Conditions Part III of the Missouri State Operating Permit No. MO-0022098. Closure shall not commence until the submitted closure plan is approved by the department.
8. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.
  - 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 100-year flood elevation. 10 CSR 20-8.140 (2) (B)

- Unless another distance is determined by the Missouri Geological Survey or by the department's Public Drinking Water Branch, the minimum distance between wastewater treatment facilities and all potable water sources shall be at least 300 feet. 10 CSR 20-8.140 (2) (C) 1.
- Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D)
- The outfall shall be so constructed and protected against the effects of flood water, ice, or other hazards as to reasonably ensure its structural stability and freedom from stoppage. 10 CSR 20-8.140 (6) (A)
- All sampling points shall be designed so that a representative and discrete 24 hour automatic composite sample or grab sample of the effluent discharge can be obtained at a point after the final treatment process and before discharge to or mixing with the receiving waters. 10 CSR 20-8.140 (6) (B)
- All outfalls shall be posted with a permanent sign indicating the outfall number (i.e., Outfall #001). 10 CSR 20-8.140 (6) (C)
- All wastewater treatment facilities shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures. 10 CSR 20-8.140 (7) (A) 1.
- Disinfection and dechlorination, when used, shall be provided during all power outages. 10 CSR 20-8.140 (7) (A) 2.
- 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)
- An audiovisual alarm or a more advanced alert system, with a self-contained power supply, capable of monitoring the condition of equipment whose failure could result in a violation of the operating permit, shall be provided for all wastewater treatment facilities. 10 CSR 20-8.140 (7) (C)
- 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.
- A means of flow measurement shall be provided at all wastewater treatment facilities. 10 CSR 20-8.140 (7) (E)

- Effluent 24 hour composite automatic sampling equipment shall be provided at all mechanical wastewater treatment facilities and at other facilities where necessary under provisions of the operating permit. 10 CSR 20-8.140 (7) (F)
- Isolate all wastewater treatment components installed in a building where other equipment or offices are located from the rest of the building by an air-tight partition, provide separate outside entrances, and provide separate and independent fresh air supply. 10 CSR 20-8.140 (7) (G)
- Adequate provisions shall be made to effectively protect facility personnel and visitors from hazards. The following shall be provided to fulfill the particular needs of each wastewater treatment facility:
  - Fencing. Enclose the facility site with a fence designed to discourage the entrance of unauthorized persons and animals; 10 CSR 20-8.140 (8) (A)
  - Gratings over appropriate areas of treatment units where access for maintenance is necessary; 10 CSR 20-8.140 (8) (B)
  - First aid equipment; 10 CSR 20-8.140 (8) (C)
  - Posted “No Smoking” signs in hazardous areas; 10 CSR 20-8.140 (8) (D)
  - Appropriate personal protective equipment (PPE); 10 CSR 20-8.140 (8) (E)
  - Portable blower and hose sufficient to ventilate accessed confined spaces; 10 CSR 20-8.140 (8) (F)
  - 10 CSR 20-8.140 (8) (G) Portable lighting equipment complying with NEC requirements. See subsection (7)(B) of this rule;
  - 10 CSR 20-8.140 (8) (H) Gas detectors listed and labeled for use in NEC Class I, Division 1, Group D locations. See subsection (7)(B) of this rule;
  - Appropriately-placed warning signs for slippery areas, non-potable water fixtures (see subparagraph (7)(D)3.B. of this rule), low head clearance areas, open service manholes, hazardous chemical storage areas, flammable fuel storage areas, high noise areas, etc.; 10 CSR 20-8.140 (8) (I)
  - Ventilation shall include the following:
    - Isolate all pumping stations and wastewater treatment components installed in a building where other equipment or offices are located from the rest of the building by an air-tight partition, provide separate outside entrances, and provide separate and independent fresh air supply; 10 CSR 20-8.140 (8) (J) 1.
    - Force fresh air into enclosed screening device areas or open pits more than four feet deep. 10 CSR 20-8.140 (8) (J) 2.
    - Dampers are not to be used on exhaust or fresh air ducts. Avoid the use of fine screens or other obstructions on exhaust or fresh air ducts to prevent clogging; 10 CSR 20-8.140 (8) (J) 3.
    - Where continuous ventilation is needed (e.g., housed facilities), provide at least 12 complete air changes per hour. Where continuous ventilation would cause excessive heat loss, provide intermittent ventilation of at least 30 complete air changes per hour when facility personnel enter the area. Base air change demands on 100 percent fresh air; 10 CSR 20-8.140 (8) (J) 4.
    - Electrical controls. Mark and conveniently locate switches for operation of ventilation equipment outside of the wet well or building. Interconnect all intermittently operated ventilation equipment with the respective wet well, dry well, or building lighting system. The manual lighting/ventilation switch is expected to override the automatic controls. For a two speed ventilation system with automatic switch over where gas detection equipment is

- installed, increase the ventilation rate automatically in response to the detection of hazardous concentrations of gases or vapors; 10 CSR 20-8.140 (8) (J) 5.
- Fabricate the fan wheel from non-sparking material. Provide automatic heating and dehumidification equipment in all dry wells and buildings. 10 CSR 20-8.140 (8) (J) 6.
- Explosion-proof electrical equipment, non-sparking tools, gas detectors, and similar devices, in work areas where hazardous conditions may exist, such as digester vaults and other locations where potentially explosive atmospheres of flammable gas or vapor with air may accumulate. 10 CSR 20-8.140 (8) (K)
- Provisions for local lockout/tagout on stop motor controls and other devices; 10 CSR 20-8.140 (8) (L)
- Provisions for an arc flash hazard analysis and determination of the flash protection boundary distance and type of PPE to reduce exposure to major electrical hazards shall be in accordance with NFPA 70E *Standard for Electrical Safety in the Workplace* (2018 Edition), as approved and published August 21, 2017. 10 CSR 20-8.140 (8) (M)
- The materials utilized for storage, piping, valves, pumping, metering, and splash guards, etc., for chemical handling, shall be specially selected considering the physical and chemical characteristics of each hazardous or corrosive chemical. 10 CSR 20-8.140 (9) (A) 1.
- Secondary containment storage areas contain the stored volume of chemical until it can be safely transferred to alternate storage or released to the wastewater treatment plant at controlled rates that will not damage the facilities, inhibit the treatment processes, or contribute to stream pollution. Secondary containment shall be designed as follows:
  - A minimum volume of 125 percent of the volume of the largest storage container located within the containment area plus the space occupied by any other tanks located within the containment area when not protected from precipitation; 10 CSR 20-8.140 (9) (A) 2. A.
  - A minimum volume of 110 percent of the volume of the largest storage container located within the containment area plus the space occupied by any other tanks located within the containment area when protected from precipitation; 10 CSR 20-8.140 (9) (A) 2. B.
  - Walls and floors of the secondary containment structure constructed of suitable material that is compatible with the specifications of the product being stored. 10 CSR 20-8.140 (9) (A) 2. C.
- All pumps or feeders for hazardous or corrosive chemicals shall have guards that will effectively prevent spray of chemicals into space occupied by facility personnel. 10 CSR 20-8.140 (9) (A) 3.
- All piping containing or transporting corrosive or hazardous chemicals shall be identified with labels every 10 feet and with at least two labels in each room, closet, or pipe chase. 10 CSR 20-8.140 (9) (A) 4. A.
- All connections (flanged or other type), except those adjacent to storage or feeder areas, shall have guards that will direct any chemical leakage away from space occupied by facility personnel. 10 CSR 20-8.140 (9) (A) 4. B.
- Facilities shall be provided for automatic shutdown of pumps and sounding of alarms when failure occurs in a pressurized chemical discharge line. 10 CSR 20-8.140 (9) (A) 5.

- Dust collection equipment shall be provided to protect facility personnel from dusts injurious to the lungs or skin and to prevent polymer dust from settling on walkways that become slick when wet. 10 CSR 20-8.140 (9) (A) 6.
- The following shall be provided to fulfill the particular needs of each chemical housing facility:
  - Provide storage for a minimum of 30 days' supply, unless local suppliers and conditions indicate that such storage can be reduced without limiting the supply; 10 CSR 20-8.140 (9) (B) 1.
  - Construct the chemical storage room of fire and corrosion resistant material; 10 CSR 20-8.140 (9) (B) 2.
  - Equip doors with panic hardware. To prevent unauthorized access, doors lock but do not need a key to exit the locked room using the panic hardware; 10 CSR 20-8.140 (9) (B) 3.
  - Provide chemical storage areas with drains, sumps, finished water plumbing, and the hose bibs and hoses necessary to clean up spills and to wash equipment; 10 CSR 20-8.140 (9) (B) 4.
  - Construct chemical storage area floors and walls of material that is suitable to the chemicals being stored and that is capable of being cleaned; 10 CSR 20-8.140 (9) (B) 5.
  - Install floor surfaces to be smooth, chemical resistant, slip resistant, and well drained with 3 inches per 10 feet minimum slope; 10 CSR 20-8.140 (9) (B) 6.
  - Provide adequate lighting; 10 CSR 20-8.140 (9) (B) 7.
  - Comply with the NEC recommendation for lighting and electrical equipment based on the chemicals stored. 10 CSR 20-8.140 (9) (B) 8.
  - Store chemical containers in a cool, dry, and well-ventilated area; 10 CSR 20-8.140 (9) (B) 9.
  - Design vents from feeders, storage facilities, and equipment exhaust to discharge to the outside atmosphere above grade and remote from air intakes; 10 CSR 20-8.140 (9) (B) 10.
  - Locate storage area for chemical containers out of direct sunlight; 10 CSR 20-8.140 (9) (B) 11.
  - Maintain storage temperatures in accordance with relevant Material Safety Data Sheets (MSDS). 10 CSR 20-8.140 (9) (B) 12.
  - Control humidity as necessary when storing dry chemicals; 10 CSR 20-8.140 (9) (B) 13.
  - Design the storage area with designated areas for "full" and "empty" chemical containers; 10 CSR 20-8.140 (9) (B) 14.
  - Provide storage rooms housing flammable chemicals with an automatic sprinkler system designed for four tenths gallons per minute per square foot (0.4 gpm/ft<sup>2</sup>) and a minimum duration of 20 minutes; 10 CSR 20-8.140 (9) (B) 15.
  - Store incompatible chemicals separately to ensure the safety of facility personnel and the wastewater treatment system. Store any two chemicals that can react to form a toxic gas in separate housing facilities; 10 CSR 20-8.140 (9) (B) 16.
  - Design and isolate areas intended for storage and handling of chlorine and sulfur dioxide and other hazardous gases. 10 CSR 20-8.140 (9) (B) 17.
  - Design an isolated fireproof storage area and explosion proof electrical outlets, lights, and motors for all powdered activated carbon storage and handling areas in accordance with federal, state, and local requirements; 10 CSR 20-8.140 (9) (B) 18.



- Vent acid storage tanks to the outside atmosphere, but not through vents in common with day tanks; 10 CSR 20-8.140 (9) (B) 19.
- Keep concentrated acid solutions or dry powder in closed, acid-resistant shipping containers or storage units; 10 CSR 20-8.140 (9) (B) 20.
- Pump concentrated liquid acids in undiluted form from the original container to the point of treatment or to a covered storage tank. Do not handle in open vessels. 10 CSR 20-8.140 (9) (B) 21.
- The following shall be provided, where applicable, for the design of chemical handling:
  - Make provisions for measuring quantities of chemicals used for treatment or to prepare feed solutions over the range of design application rates; 10 CSR 20-8.140 (9) (C) 1.
  - Select storage tanks, piping, and equipment for liquid chemicals specific to the chemicals; 10 CSR 20-8.140 (9) (C) 2.
  - Install all liquid chemical mixing and feed installations on corrosion resistant pedestals; 10 CSR 20-8.140 (9) (C) 3.
  - Provide sufficient capacity of solution storage or day tanks feeding directly for 24 hour operation at design average flow; 10 CSR 20-8.140 (9) (C) 4.
  - Provide a minimum of two chemical feeders for continuous operability. Provide a standby unit or combination of units of sufficient capacity to replace the largest unit out-of-service; 10 CSR 20-8.140 (9) (C) 5.
  - Chemical feeders shall—
    - Be designed with chemical feed equipment to meet the maximum dosage requirements for the design average flow conditions; 10 CSR 20-8.140 (9) (C) 6. A.
    - Be able to supply, at all times, the necessary amounts of chemicals at an accurate rate throughout the range of feed; 10 CSR 20-8.140 (9) (C) 6. B.
    - Provide proportioning of chemical feed to the rate of flow where the flow rate is not constant; 10 CSR 20-8.140 (9) (C) 6. C.
    - Be designed to be readily accessible for servicing, repair, and observation; 10 CSR 20-8.140 (9) (C) 6. D.
    - Protect the entire feeder system against freezing; 10 CSR 20-8.140 (9) (C) 6. E.
    - Be located adjacent to points of application to minimize length of feed lines; 10 CSR 20-8.140 (9) (C) 6. F.
    - Provide for both automatic and manual operation for chemical feed control systems; 10 CSR 20-8.140 (9) (C) 6. G.
    - Utilize automatic chemical dose or residual analyzers, and where provided, include alarms for critical values and recording charts; 10 CSR 20-8.140 (9) (C) 6. H.
    - Provide screens and valves on the chemical feed pump suction lines; 10 CSR 20-8.140 (9) (C) 6. I.
    - Provide an air break or anti-siphon device where the chemical solution enters the water stream; 10 CSR 20-8.140 (9) (C) 6. J.
    - Dry chemical feed system shall—
      - Be equipped with a dissolver capable of providing a minimum retention period of five minutes at the maximum feed rate; 10 CSR 20-8.140 (9) (C) 7. A.
      - Be equipped with two solution vessels and transfer piping for polyelectrolyte feed installations; 10 CSR 20-8.140 (9) (C) 7. B.



- Have an eductor funnel or other appropriate arrangement for wetting the polymer during the preparation of the stock feed solution on the makeup tanks; 10 CSR 20-8.140 (9) (C) 7. C.
- Provide adequate mixing by means of a large diameter, low-speed mixer; 10 CSR 20-8.140 (9) (C) 7. D.
- Make provisions to measure the dry chemical volumetrically or gravimetrically; 10 CSR 20-8.140 (9) (C) 7. E.
- Completely enclose chemicals and prevent emission of dust; 10 CSR 20-8.140 (9) (C) 7. F.
- Provide for uniform strength of solution consistent with the nature of the chemical solution for solution tank dosing; 10 CSR 20-8.140 (9) (C) 8.
- Use solution feed pumps to feed chemical slurries that are not diaphragm or piston type positive displacement types; 10 CSR 20-8.140 (9) (C) 9.
- Provide continuous agitation to maintain slurries in suspension; 10 CSR 20-8.140 (9) (C) 10.
- Provide a minimum of two flocculation tanks or channels having a combined detention period of 20 – 30 minutes. Provide independent controls for each tank or channel; 10 CSR 20-8.140 (9) (C) 11.
- Insulate pipelines carrying soda ash at concentrations greater than 20 percent solution to prevent crystallization; 10 CSR 20-8.140 (9) (C) 12.
- Prohibit bagging soda ash in a damp or humid place. 10 CSR 20-8.140 (9) (C) 13.
- The following chemical safety items shall be provided in addition to the safety provisions in section (8) of this rule:
  - Appropriate personal protective equipment (PPE). 10 CSR 20-8.140 (9) (D) 1.
  - Eye wash fountains and safety showers utilizing potable water shall be provided in the laboratory and on each level or work location involving hazardous or corrosive chemical storage, mixing (or slaking), pumping, metering, or transportation unloading. The design of eye wash fountains and safety showers shall include the following:
    - Eye wash fountains with water of moderate temperature, 50-90 degrees Fahrenheit (°F), suitable to provide 15–30 minutes of continuous irrigation of the eyes; 10 CSR 20-8.140 (9) (D) 2. A.
    - Emergency showers capable of discharging 20 gallons per minute (gpm) of water of moderate temperature, 50-90 °F and at pressures of 30 to 50 pounds per square inch (psi); 10 CSR 20-8.140 (9) (D) 2. B.
    - Eye wash fountains and emergency showers located no more than 25 feet from points of hazardous chemical exposure; CSR 20-8.140 (9) (D) 2. C.
    - Eye wash fountains and showers that are to be fully operable during all weather conditions; 10 CSR 20-8.140 (9) (D) 2. D.
  - Warning signs requiring use of goggles shall be located near chemical stations, pumps, and other points of frequent hazard. 10 CSR 20-8.140 (9) (D) 3.
- The identification and hazard warning data included on chemical shipping containers, when received, shall appear on all containers (regardless of size or type) used to store, carry, or use a hazardous substance. 10 CSR 20-8.140 (9) (E)
- All wastewater treatment facilities must have a screening device, comminutor, or septic tank for the purpose of removing debris and nuisance materials from the influent wastewater. 10 CSR 20-8.150 (2)
- 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.
- 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 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)
- Grit removal facilities are required for wastewater treatment facilities that utilize membrane bioreactors for secondary treatment; utilize anaerobic digestion; receive wastewater from combined sewers; or receive wastewater from collection systems that receive substantial amounts of grit. 10 CSR 20-8.150 (6)
- 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)
- Safety features shall appropriately include machinery covers, life lines, handrails on all stairways and walkways, and slip resistant surfaces. For additional safety follow the provisions listed in 10 CSR 20-8.140(8). 10 CSR 20-8.160 (5) (A)
- The design shall provide for convenient and safe access to routine maintenance items such as gear boxes, scum removal mechanism, baffles, weirs, inlet stilling baffle areas, and effluent channels. 10 CSR 20-8.160 (5) (B)
- For electrical equipment, fixtures, and controls in enclosed settling basins and scum tanks, where hazardous concentrations of flammable gases or vapors may accumulate, follow the provisions in 10 CSR 20-8.140(7)(B). The fixtures and controls shall be conveniently located and safely accessible for operation and maintenance. 10 CSR 20-8.160 (5) (C)
- 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)

- Belt presses and conveyors shall be provided with emergency shutoff controls along the entire length of the belt presses and conveyors that will:
  - Stop the press in an emergency; 10 CSR 20-8.170 (7) (A) 1. and
  - Trigger an audible alarm. 10 CSR 20-8.170 (7) (A) 2.
- Alarm systems shall be provided for sludge dewatering processes to notify the operator(s) of conditions that could result in process equipment failure or damage, threaten operator safety, or a solids spill or overflow condition. 10 CSR 20-8.170 (7) (B)
- For wastewater treatment one hundred thousand gallons per day 100,000 gpd, the MBR process must be designed with a minimum of 2 membrane trains capable of treating the daily average flow with 1 membrane cassette out of service; 10 CSR 20-8.180 (7) (A) 1.
- Membrane Bioreactor design flux criteria must be satisfied with one membrane module out-of-service (e.g., for external clean in place, recovery cleaning, repair). For purposes of these criteria, a membrane module is the smallest membrane unit capable of separate removal from the tank while maintaining operation of other membrane units in the same tank. 10 CSR 20-8.180 (7) (A) 2.
- Membranes placed in the aeration basin(s) rather than a separate membrane tank shall have—
  - Individual modules and individual diffusers that can be removed separately for maintenance and repair; 10 CSR 20-8.180 (7) (A) 3. A. and
  - Aeration basin(s) volume sized for complete nitrification; 10 CSR 20-8.180 (7) (A) 3. B.
- Membrane Bioreactor preliminary treatment systems shall be consistent with the membrane manufacturer recommendations; 10 CSR 20-8.180 (7) (B) 1.
- Grit removal facilities are required for wastewater treatment facilities that utilize membrane bioreactors for secondary treatment. 10 CSR 20-8.150 (6) and 10 CSR 20-8.180 (7) (B) 2.
- Membrane Bioreactors shall provide oil and grease removal when the levels in the influent may cause damage to the membranes; 10 CSR 20-8.180 (7) (B) 3.
- Membrane Bioreactors shall provide a fine screen and high water alarm, designed to treat peak hourly flow. Coarse screens followed by fine screens may be used in larger facilities to minimize the complications of fine screening; and 10 CSR 20-8.180 (7) (B) 4.
- Membrane Bioreactor preliminary treatment shall comply with 10 CSR 20-8.150(4)(B) for reliability. 10 CSR 20-8.180 (7) (B) 5.
- The Membrane Bioreactor's aeration blowers must provide adequate air for membrane scour and process demands. 10 CSR 20-8.180 (7) (C)
- Redundancy. The Membrane Bioreactor shall have at least one (1) of the following:
  - The ability to run in full programmable logic control (PLC) or standby power mode in case of an automatic control failure; 10 CSR 20-8.180 (7) (D) 1.
  - An operational battery backup PLC if manual control is not possible; or 10 CSR 20-8.180 (7) (D) 2.
  - Sufficient standby power generating capabilities to provide continuous flow through the membranes during a power outage (e.g., preliminary screening, process aeration, recycle/RAS/permeate pumps, air scour, vacuum pumps) or an adequate method to handle flow for an indefinite period (e.g., private control of influent combined with contingency methods). 10 CSR 20-8.180 (7) (D) 3.
- Operations and Maintenance. The MBR design shall—

- Include provisions to monitor membrane integrity; 10 CSR 20-8.180 (7) (E) 1.
  - Provide on-line continuous turbidity monitoring of filtrate or an equivalent for operational control and indirect membrane integrity monitoring for a treatment plant with design average flow greater than or equal to 100,000 gpd; 10 CSR 20-8.180 (7) (E) 2. and
  - Include provisions to remove membrane cassette for cleaning considering the membrane cassette wet weight plus additional weight of the solids accumulated on the membranes. 10 CSR 20-8.180 (7) (E) 3.
9. Upon completion of construction:
- A. The City of Republic 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; and
  - C. Submit the Statement of Work Completed form to the department in accordance with 10 CSR 20-6.010(5)(N) (<https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155>) with a request for the Operating Permit modification to be issued.

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

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

Construction is to expand treatment capacity with a new treatment plant expansion to five MGD. The City of Republic has experienced significant growth over the last few years and the new treatment plant will provide room for expansion with high level treatment. This project is part of multiple projects going on in the City of Republic to help reduce inflow and infiltration within the collection system and removing wet weather discharges.

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

The Republic WWTF is located at 915 North West Avenue, Republic, in Greene County, Missouri. The facility currently has a design average flow of 3.2 MGD and as part of this construction will be expanding to 5.0 MGD. The current treatment system includes oxidation ditch, which is being replaced with biological nutrient removal system and membrane bioreactors.

During high flow events the facility is currently constructing a wet weather train after being split at the screening. The wet weather train will include peak flow pumps, existing peak flow clarifier, transfer pump station, disc filtration, and chlorine disinfection. Following the wet weather train, flows will be blended back with

secondary treated flows prior to discharge. The peak flow wet weather treatment train will have the capacity to treat up to 4 MGD. Thus, after the construction of the new MBR system, the facility will have the capacity to discharge 9 MGD.

### 3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits as established in Antidegradation review dated September 14, 2023. The limits following the completion of construction will be applicable to the facility:

PARAMETER	Unit	Monthly Average
Flow	MGD	*
BOD <sub>5</sub>	mg/L	10
TSS	mg/L	15
<i>Escherichia coli</i> **	#/100mL	126/*
Ammonia as N (January)	mg/L	3.1
(February)		2.7
(March)		3.1
(April)		2.7
(May)		2.2
(June)		1.7
(July)		1.5
(August)		1.5
(September)		1.8
(October)		2.6
(November)		3.1
(December)		3.1
Oil & Grease	mg/L	10
Cyanide, Amenable to Chlorination	µg/L	3.9 (<10)
Copper, Total Recoverable	µg/L	9.2
Selenium, Total Recoverable	µg/L	*
Thallium, Total Recoverable	µg/L	*
Zinc, Total Recoverable	µg/L	*
Total Phosphorus	mg/L	1.0
Total Kjeldahl Nitrogen	mg/L	*
Nitrite + Nitrate	mg/L	*
Total Nitrogen		*
pH	SU	6.5-9.0
PARAMETER	Unit	Monthly Avg. Min
BOD <sub>5</sub> Percent Removal	%	85
TSS Percent Removal	%	85

#### **4. ANTIDegradation**

The department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated August 2023, due to the increase in design average flow to 5.0 MGD from 3.2 MGD.

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

##### **Construction will cover the following items:**

- Submersible pumps- installation of 4 submersible pumps to direct flows to the grit removal or to the peak flow clarifier. Three will be duty pumps with 1 standby pump. There will be the installation of 2 large pumps, each capable of pumping 4,170 gpm (6.0 MGD) and 2 small pumps, each capable of pumping 2,780 gpm (4.0 MGD) at 57 ft of head. The large pumps will be 115 hp pumps, while the smaller pumps will be 60 hp.
  - During dry weather flows, the three pumps will have the capability to pump up to 12.6 MGD to the grit removal system
  - During wet weather flows, the three pumps will still have the ability to pump 12.6 MGD to the grit removal system and the 4.0 MGD to the wet weather treatment train.
- Conversion of the existing oxidation ditches into wastewater holding basins.
  - The former Orbal oxidation ditch with its 3 rings, with a sidewater depth of 9.5 ft
  - The former Krueger oxidation ditch with its sidewater depth of 12.66 ft.
  - Installation of a complete large bubble mixing system to mix raw wastewater during peak wet weather events in the wastewater holding basins. The mixing system will provide intermittently and sequentially inject compressed air through fixed nozzles located on the bason bottom to create large bubble to completely mix the basin wastewater.
  - Air distribution to the peak wet weather basins will maintain suspended solids in the basin between 100 mg/L and 500 mg/L.
- 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.
  - The Grit Removal unit shall be placed in a concrete tank and receive the incoming screened flow.
    - A stacked tray mechanical grit removal system is proposed to remove 95 percent of 106 microns and larger grit (SG 2.65) at specified peak hourly flow (12.6 MGD) and greater than or equal to 75 micron at the average flow (5 MGD).
    - The tray diameter is 12 ft and provides 113 sf per tray, thus requiring 7 trays or 791 sf of surface area.
    - Grit Classifier – Installation of one grit classifier with a design flow of 200 gpm (288,000 gpd) with 27 inches of headloss and a maximum flow of 400 gpm (576,000 gpd) with 106 inches of headloss. The grit classifier will have a 32-inch diameter.

- Grit Conveyor unit- Installation of one grit conveyor unit operating a 1 cycle per hour with a belt width of 6 inches.
    - The Grit Dewatering Conveyor unit clarifier is designed based on a settling rate not to exceed 1.0 gpm/sq ft.
    - The de-gritted effluent from the Grit Removal unit shall be discharged over an integral weir, which is 16 ft long.
- Screening – Installation of screening devices removes nuisance inorganic materials from raw wastewater.
  - Rotary drum screen- Installation of 3 (2 duty/1 standby) fully automatic, self-cleaning, channel mounted rotating perforated plate drum-style screens and
  - one screenings conveyor for removing floating, particulate, and fibrous materials for wastewater applications. This follows the six mm bar screening and grit removal. The addition of a washer/compactor and screenings conveyor will mitigate the increased volume of screenings captured by washing, dewatering, and compacting the screenings prior to disposal.
    - Each screen is designed for an average daily flow of 2.5 MGD (5 MGD with 2 screens in service) and a peak flow of 6.3 MGD (12.6 MGD with 2 screens operating)
    - Screen perforation opening size is 2 mm (0.079 inches).
    - The screens will be at a 35° angle.
    - Screen channel is 6 ft deep and 3 ft wide.
    - The average perforation flow through velocity will be 3.3 ft/sec.
    - The rotating basket shall remove solids from the flow and deposit them into the concentric screw conveyor hopper using a spray bar providing positive cleaning of the screen basket surface. The screenings shall be transported up the screw conveyor, through an integrated screening washing system, a compaction and dewatering zone and then shall be discharged onto a conveyor.
      - The conveyor trough will be 25 feet with a minimum inlet solids capacity of 177 cubic ft/ hour.
    - All open spaces of the screen shall be positively cleaned via a dual alternating spray bar system or single spray bar and cleaning brush system.
- Aluminum Sulfate bulk tank- One High Density Cross-linked Polyethylene (HDXPE). tank for indoor chemical storage and double walled containment, with a minimum capacity of 5,000 gallons. The design feed rate is between 4.1 gph and 6.0 gph of 50 percent aluminum sulfate.
- Process Basins – Construction of 3 process basins with each basin having an anaerobic, anoxic, and aerated zone.
  - Overall aeration supplied to each treatment train is 2,500 scfm (7,500 scfm for all 3 process basins).
  - Anaerobic volume within the 3 basins is 400,000 gallons (133,333 gallons per basin), providing a retention time of 0.64 hours per basin at design average flow of 5 MGD (1.92 hours with all 3 basins) and at a peak flow of 8.1 MGD, a retention time of 0.4 hours per basin (1.19 hours with all 3 basins).
    - Anaerobic zone is 20 ft deep.
    - Solids residence time is 2.0 days.



- Anoxic volume within the 3 basins is 900,000 gallons (300,000 gallons per basin), providing a retention time of 1.44 hours per basin at design average flow of 5 MGD (4.32 hours with all 3 basins) and at a peak flow of 8.1 MGD, a retention time of 0.88 hours per basin (2.66 hours with all 3 basins).
  - Anoxic zone is 20 ft deep.
  - Solids residence time is 4.3 days.
  - In the anoxic zone, there shall be 3 duty submersible propeller pumps, one for each basin and a standby pump. The pump and its appurtenances must be capable of continuous submergence underwater without loss of watertight integrity to a depth of at least 22 ft. Pumps are designed for continuous or intermittent duty.
    - The maximum operating condition is 1,875 gpm (2.7 MGD) at 2.1 ft TDH for each pump. Total pump capacity in all 3 basins is 5,625 gpm (8.1 MGD)
    - The minimum operating condition is 1,157 gpm at 0.8 ft TDH for each pump.
    - The pumps will be controlled with integral VFD and be 3 phase 2 hp.
- In the anaerobic and anoxic zones, installation of large bubble mixing system to mix screened and degrittied wastewater.
  - The mixing system will provide intermittently and sequentially inject compressed air through fixed nozzles located on the bason bottom to create large bubble to completely mix the basin wastewater.
  - Air distribution will maintain suspended solids in the basin between 4,000 mg/L and 12,000 mg/L.
  - Installation of 2 compressor systems (1 duty/1 standby)
  - Installation of 4 aeration blowers (3 duty and 1 standby), each capable of providing 3,300 scfm and operating at a discharge pressure of 9 psig with VFDs included.
- Each Aerobic zone has two cells. Influent flow to each train will typically be split equally, with each basin cell having a 1 MG volume (6 MG total with 3 trains and 2 cells per zone) and sidewater depth of 18.2 ft
  - Installation of fine bubble diffusers in the aerobic zones of the process basins.
  - Air distribution will maintain suspended solids in the aerobic zone between 5,000 mg/L and 14,000 mg/L.
  - Maximum allowable airflow per diffuser is 4scfm.
  - Solids residence time is 11 days.
- Wastewater shall flow by gravity to a pipe which will convey mixed liquor to each concrete membrane tank by the use of gates.
- Membrane Bioreactor (MBR) – The membrane bioreactor system includes the MBR influent trough, tanks, tank covers, and filtrate tanks. Each membrane train in the MBR System shall be capable of operating independently of all other trains including influent water flow, filtrate water flow, backwash cycles, cleaning cycles, and membrane integrity testing. The trains will be synchronized to prevent backwash or cleaning cycles from simultaneously occurring in more than one train. Construction will include 3 membrane reactors in parallel trains, designed to treat the maximum monthly design average flow of 8.1 MGD with one train out of service.

- MBR air scour blowers will be outdoors and all other ancillaries for the MBR system will be housed within the MBR Building. The Membrane tanks will be located exterior to the MBR Building and will be equipped with covers.
- The biological system shall be designed to remove phosphorus, biological oxygen demand, and total nitrogen at a design average flow of 5.0 MGD, maximum month average daily flow of 8.1 MGD, and a peak hourly flow of 12.6 MGD.
  - The membrane is a hollow fiber membrane with a maximum nominal pore size of 0.4 $\mu$ m (microns).
  - The surface area of the membranes is 790,400 ft<sup>2</sup>
  - The design MLSS is 8,000 mg/L
  - The net flux rate at the maximum monthly flow of 8.1 MGD is 15 gpd/ sq ft at 20 °C.
    - The net flux at the peak daily flow of 12.0 MGD is 18.75 gpd/ sq ft at 20 °C.
    - The net flux at peak hourly flow of 12.6 MGD is 22.5 gpd/ sq ft at 20 °C.
  - The minimum design SRT is 11 days
  - The relaxation/backwash interval is designed for a maximum rate of 12 minutes for a maximum duration of 1 minute.
  - Disinfection is not proposed for this system because it utilizes ultrafiltration, with an opening of less than 0.4 microns.
- Filtrate Pumps – Installation of 1 filtrate/permeate rotary lobe positive displacement pump per membrane train for filtrate and backwash for the MBR system (total of 3 pumps). Each pump will be speed controlled with VFDs, each capable of operating at 2,100 gpm (3 MGD).
- Scum Pump Station- Scum shall be conveyed to an adjacent scum pump station. Scum skimming equipment shall be rotating cylindrical trough type, designed to continuously and intermittently remove surface scum and other floating materials from the bioreactor water surface.
  - Installation of 3 scum skimming units with a diameter of 12 inches and a skimmer length of 15 ft
  - Installation of two scum pumps (1 duty/1 standby), capable of operating at 350 gpm at 16 ft of head.
- Waste Activated Sludge (WAS) Pump Station – Construction of a WAS pump station and associated valves. The two WAS pumps will be rotary lobe positive displacement pumps, capable of transferring wasted activated sludge from the process basins to the aerobic digesters (1 duty/1 standby pump).
  - The WAS pump will be speed-controlled with VFDs, but the maximum operating speed on the pump is 355 rpm with a maximum flow of 320 gpm.
- Return Activated Sludge (RAS). Installation of 4 RAS pumps, with 3 duty and 1 standby, with an overall capacity of 22,500 gpm. Design conditions are 3 pumps operating with VFDs at 7,500 gpm at 28 ft of head.

- Aerobic Digester – Four aerobic digesters with a normal sidewater operating depth of 13 ft and an 82 ft diameter, receiving waste activated sludge from the biological nutrient removal, membrane bioreactor process. Rehabilitation of the existing 3 digesters and construction of 1 new digester. WAS will typically be split equally between the 4 digesters.
  - Surface area for each digester is 5280 sq ft (21,120 sq ft for 4 digesters), with a total digester volume of 2,395,000 gallons.
  - The aerobic digesters will provide approximately 56 days of storage at 2 percent solids, meeting the processes to significantly reduce pathogens identified in 40 CFR 503.
  - Installation of medium bubble membrane diffusers and mixing of the sludge to prevent anaerobic conditions. Diffuse is non-clog suitable for intermittent or constant operating in sludge up to 2 percent solids.
    - Maximum allowable airflow per diffuser is 3.5 scfm per sq ft membrane area.
    - Rotary Helical Screw Blowers- Installation of 5 blowers, 4 duty and 1 standby. Each blower is designed to provide 4,100 scfm, with a discharge pressure of 7.5 psig and a max 250 hp on the blower. Each blower will be controlled by VFDs.
  - The aerobic digester follows the waste activated sludge pump station, but prior to the centrifuge.
- Centrifuge – The centrifuge shall intermittently receive, condition, and dewater the feed solids, and discharge the dewatered solids into a conveyor system, capable of dewatering solids intermittently or continuously.
  - Two centrifuge pumps will be rotary lobe positive displacement pumps, capable of transferring aerobically digested sludge to the centrifuge (1 duty/1 standby pump). The digested solids volatile solids content will be between 40-70 percent.
    - The centrifuge pump will be speed-controlled with VFDs, but the max operating speed on the pump is 240 rpm with a maximum flow of 185 gpm.
  - The maximum feed solids hydraulic loading rate into the centrifuge is 185 gpm (266,400 gpd) with a maximum solid loading rate of 1,830 dry lbs/hr (43,920 dry lbs/day or approximately 21.9 dry tons/day).
  - One (1) automatic polymer feed/dilution system used to activate emulsion type polyelectrolyte and feed the activated polymer solutions into the centrifuge, with a dilution water range between 320 and 3200 gph with a polymer feed range between 0.5 gph and 10 gph.
    - The mixer blending device shall be a mechanical mixing device that includes a motor driven impeller.
      - The impeller shall be driven by a 1,750 rpm (minimum), 0.5 HP, 120Vac, washdown duty motor.
    - The polymer metering pump is progressive cavity-type with an output range between 0.5 gph and 15 gph, capable of pumping a 0.1 to 2.0 percent solution of a diluted emulsion polymer with a viscosity range of 200 to 6,000 cps.

- With polymer addition, solids capture expected to be greater than 95 percent TSS.
- Maximum polymer consumption rate is 25 lbs polymer per dry ton solids.
- Inclined sludge screw conveyor and horizontal screw loading conveyor- Installation of 1 inclined and 1 horizontal screw loading conveyor.
  - Conveyor capacity is 1,300 lbs per hour and 200 cubic feet per hour.
  - Cake density is 60-70 lbs/ ft3 with a solids percentage between 15-25 percent by weight. Inclined conveyor will be at a 25 angel with a minimum 11-inch diameter screw. Horizontal loading conveyor will have a minimum 12-inch diameter screw.

The City of Republic also has active construction permit CP0002370, which is expected to be finished prior to the MBR being finished; however, the wet weather treatment train will work in conjunction with the new MBR system and the MBR treatment train and the wet weather treatment train will be blended together as necessary. Below is a summary of the construction covered under CP0002370 that will be used with the new treatment plant being constructed.

### **Construction covered under CP0002370**

- Screening – Installation of screening devices removes nuisance inorganic materials from raw wastewater. Influent screening is provided upstream of the existing peak flow pump station. Three mechanical bar screens are installed in the three existing channels (2 new, 1 existing).
  - Mechanical Coarse Screen – Multi-rake mechanically cleaned coarse screen, with a maximum spacing of ¼ -inch, positioned at an angle of 70 degrees from the horizontal to allow for raking of the screen. Each screening device shall be capable of treating a design flow of 8 MGD, for a total of 24 MGD potential capacity
- Peak Flow Pumps – Two existing 6 MGD peak flows pump deliver to the peak flow clarifier. As part of this construction project, the impellers on each peak flow pump will be replaced to facilitate the ability to pump 12 MGD
- Existing Peak Flow Clarifier – Wet weather flow equalization is utilized during wet weather events where the peak flow is greater than the design peak capacity of the treatment facility. The existing peak flow clarifier has an approximate design volume of 557,328 gallons.
  - The equalization basin is 90.33 ft x 13.77 ft sidewater depth deep, with a 83 ft weir diameter.
  - The detention time in the peak flow clarifier is approximately 3.3 hours at peak flow of 4 MGD.
  - Surface overflow rate is approximately 739 gpd/sq ft, meeting the requirements of 10 CSR 20-8.160(2)(B), Table 160-2.
  - Weir overflow rate is approximately 15,340 gal/day/ft, which meets the requirements of 10 CSR 20-8.160(2)(C)2, Table 160-4.
- Transfer Pump Station – To return flow from the wet weather peak flow clarifier to the treatment plant or on through the wet weather treatment train. Three submersible pumps, each with a design capacity of 1,388 gpm (total: 5.99 MGD). The acceptable pump is the Flygt N3171 series.
  - At low wet well level with 2 pumps operating, maximum flow is 2,776 gpm (4.0 MGD) at 40 ft of head.

- At high wet well level with 2 pumps operating, maximum flow is 2,776 gpm at 33 ft of head.
- Cloth Disk Tertiary Filtration – Installation of one Aqua Aerobics – Aquastorm Cloth Media Filter and backwash pump.
  - Disc filter is capable of peak daily flow of 6 MGD, with a maximum hydraulic loading rate of 6.45 gpm/sq ft and a maximum solids loading rate of 7.75 lbs/day-sq ft.
- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.
  - Liquid Chlorine – Bulk storage of the sodium hypochlorite chlorine disinfection system is proposed to be in two 3,000-gallon high-density polyethylene (HDXPE) bulk tanks within concrete chemical containment.
    - Designed for 12.5 percent sodium hypochlorite concentration.
    - The tanks are proposed to be stored outdoors under canopy cover to protect the hypochlorite from UV light.
  - Dechlorination – 1,500-gallon high density polyethylene (HDXPE) sodium bisulfite bulk tank is proposed to be stored in totes indoors to prevent chemical freezing at cool temperatures. Design minimum feed rate is 0.15 gallons per hour, design average feed rate of 1.75 gallons per hour, and design max feed rate is 2.6 gallons per hour.
  - Chlorine Contact Tank – The existing chlorine contact basin will be rehabilitated and put back into service. The basin is bifurcated and serpentine, creating two 234-ft long by 5-foot-wide channels.
- Relocated Outfall- a new outfall structure will be constructed to handle the blended flows, approximately 50 feet downstream from the existing outfall structure. The new outfall structure will still discharge to Dry Branch. New 24-inch and 42-inch lines will be installed to convey the water.

## 6. **OPERATING PERMIT**

Operating permit MO-0022098 will require a modification to reflect the construction activities. The modified operating permit was successfully public noticed from May 10, 2024 to June 10, 2024, with one comment received on the setting of total phosphorus limits as part of the operating permit modification. While 10 CSR 20-7.015(9)(B)2.D is set for treatment facilities less than 15 MGD to achieve compliance with the total phosphorus rule by 2033, the Antidegradation Process allows the department to set effluent limits for pollutants of concern that are protective of Water Quality Standards and designated uses. The 2023 Antidegradation Review set the total phosphorus limit as part of the review in part based on the [2018 Nutrient Implementation Plan](#) for dischargers in lake watersheds. In the alternatives analysis as part of the Antidegradation Review, all four alternatives evaluated included the ability to meet a 1.0 mg/L or better total phosphorus effluent limit and it was considered cost effective to meet the 1.0 mg/L. During the Antidegradation Review, the facility expressed interest in the permit reflecting the annual mass loading, rather than the concentration-based limit to provide flexibility as the city continues to grow, work on the collection system to reduce inflow and infiltration, and to operate a new treatment plant. The mass loading rate remains for the facility after construction of the MBR system is complete, which includes phosphorus removal technologies as part of the design.

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. This project is partially funded by ARPA funds and no modification fee is due.

#### **V. NOTICE OF RIGHT TO APPEAL**

If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, whichever date was earlier. If any such petition is sent by registered mail or certified mail, it will be deemed filed on the date it is mailed; if it is sent by any method other than registered mail or certified mail, it will be deemed filed on the date it is received by the AHC. Any appeal should be directed to:

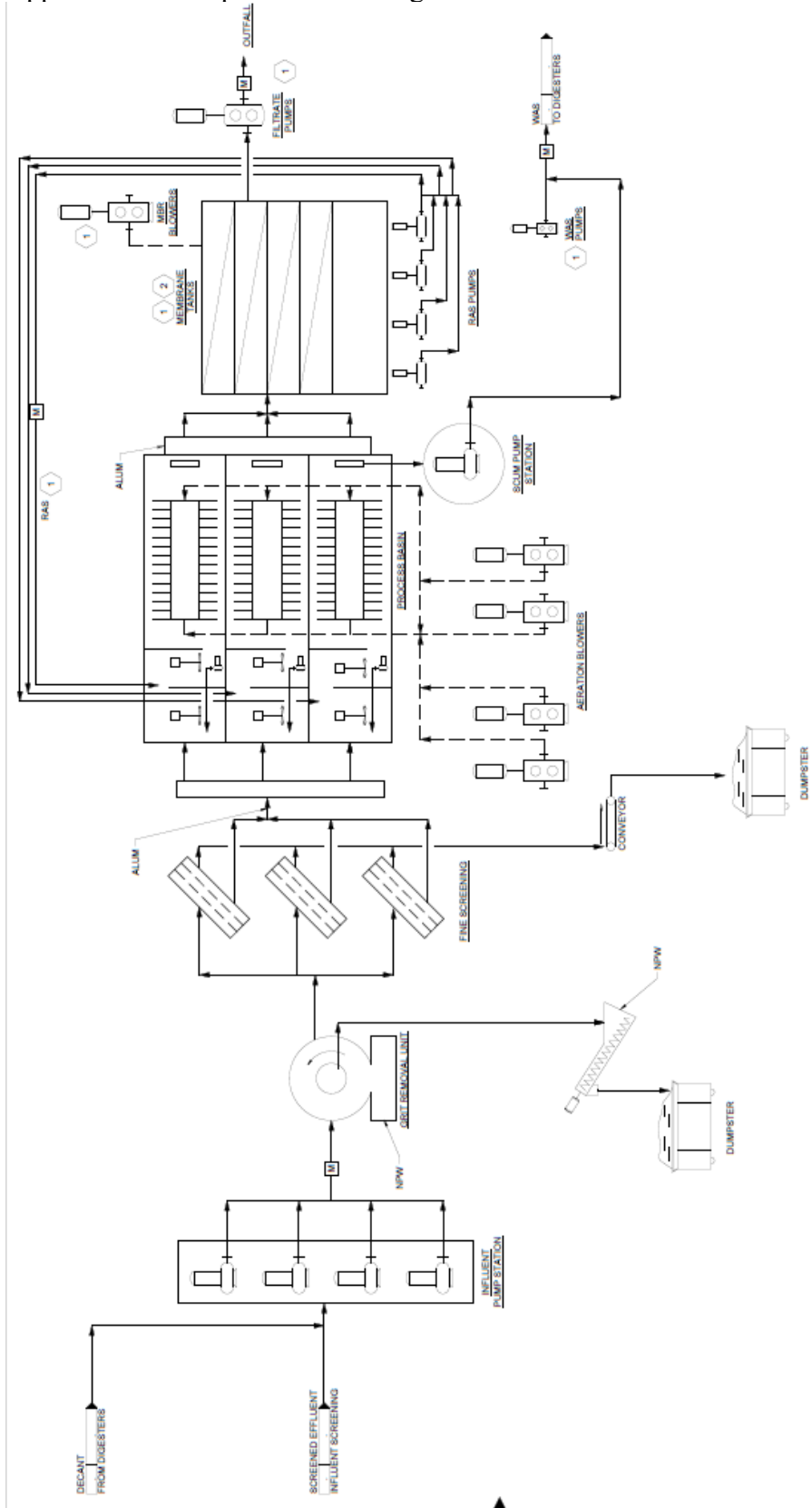
Administrative Hearing Commission  
U.S. Post Office Building, Third Floor  
131 West High Street, P.O. Box 1557  
Jefferson City, MO 65102-1557  
Phone: 573-751-2422  
Fax: 573-751-5018  
Website: <https://ahc.mo.gov>

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

Chia-Wei Young, P.E.  
Engineering Section  
[Chia-wei.young@dnr.mo.gov](mailto:Chia-wei.young@dnr.mo.gov)

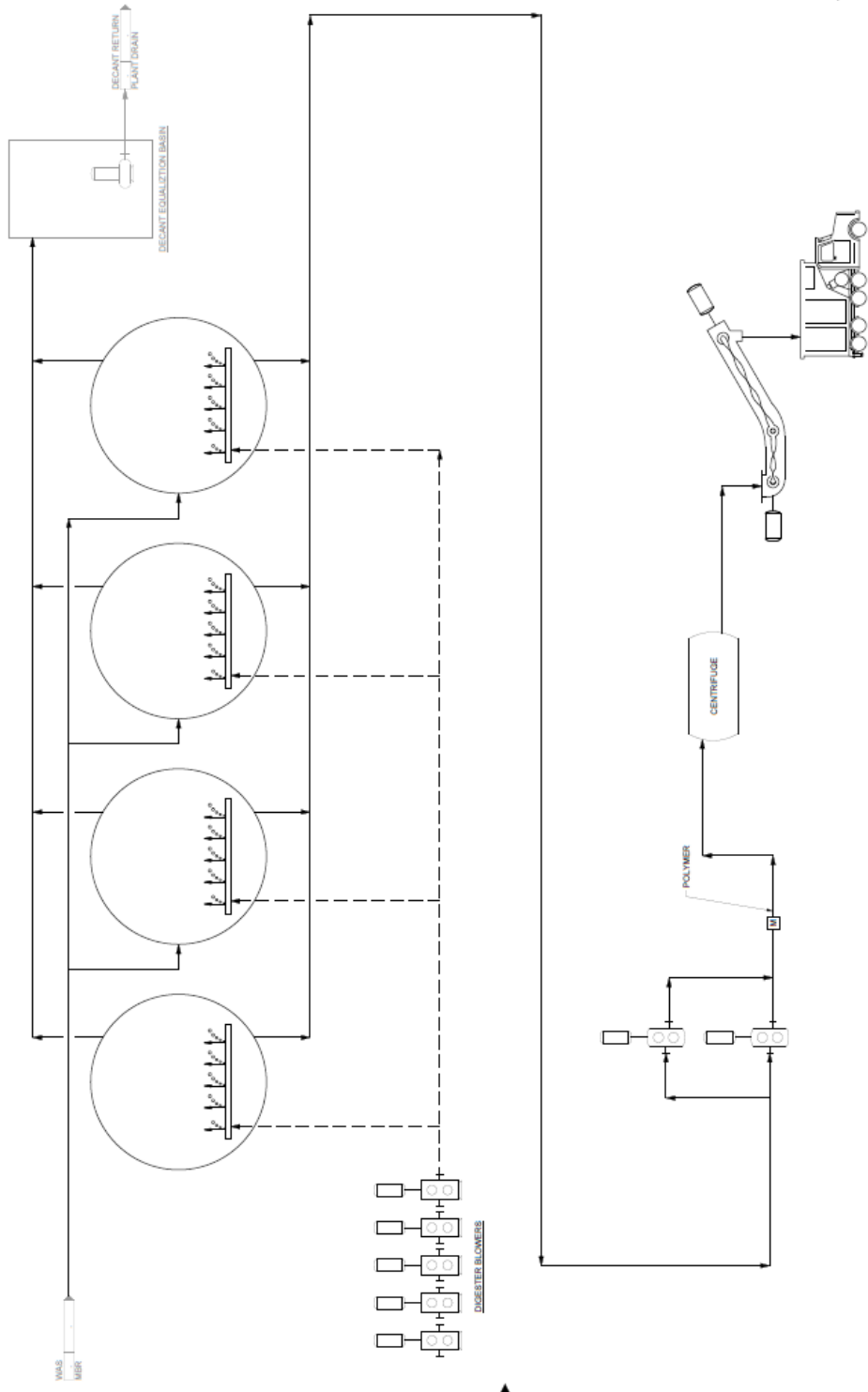
# Appendix A: Process Diagrams

## Appendix A-1: Liquid Process Diagram





### Appendix A-2: Solids Process Diagram





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	CHECK NO.
DATE RECEIVED	

**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: DNR/ARPA/SRF Project #: DNR-LP-E5B3F40BFA16
- 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	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$
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2.3 PROJECT DESCRIPTION

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION

2.5 DESIGN INFORMATION

A. Current population: 16,000; Design population: 32,000

B. Actual Flow: 1,531,000 gpd; Design Average Flow: 5 M gpd;  
 Actual Peak Daily Flow: 6.3 M gpd; Design Maximum Daily Flow: 12 M gpd; Design Wet Weather Event: 16 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	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY

Wastewater Treatment Facility: Mo- (Outfall Of )

3.1 Legal Description: \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, \_\_\_\_\_ ¼, Sec. \_\_\_\_\_, T \_\_\_\_\_, R \_\_\_\_\_  
(Use additional pages if construction of more than one outfall is proposed.)

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

3.3 Name of receiving streams: \_\_\_\_\_

**4.0 PROJECT OWNER**

NAME		TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS	
ADDRESS	CITY	STATE	ZIP CODE	

**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	
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	
ADDRESS	CITY	STATE	ZIP CODE	

**7.0 APPLICATION FEE**

CHECK NUMBER  JETPAY CONFIRMATION NUMBER Not applicable per Lease Meyers

**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 		DATE
PRINTED NAME		DATE
TITLE OR CORPORATE POSITION	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

## INSTRUCTIONS FOR COMPLETING APPLICATION FOR CONSTRUCTION PERMIT – WASTEWATER TREATMENT FACILITIES

All blanks must be filled in when the application is submitted to the Missouri Department of Natural Resources. This includes the **required signature**.

**Note:** Use the form Application for Construction Permit – Sewer Extension, MO 780-1632, if only collection system component(s) are to be constructed.

A land disturbance permit is required if construction will result in the disturbance of one or more acres of land. A land disturbance permit is available through the department's ePermitting system at [dnr.mo.gov/env/wpp/epermit/help.htm](http://dnr.mo.gov/env/wpp/epermit/help.htm). A permit fee in accordance with 10 CSR 20-6.011 is required.

After receiving a complete application, the Department enters the application information into the Missouri Clean Water Information System. You may search for the status of a construction permit online at [dnr.mo.gov/mocwis\\_public/applicationInprocessSearch.do](http://dnr.mo.gov/mocwis_public/applicationInprocessSearch.do).

### Part A – Basic Application Information

- 1.0 If the answer to any of the questions in this section is no, this application may be considered incomplete and returned to the applicant.
- 1.1 Check the appropriate box. If the project is funded with federal or state monies, supply the funding agency name and project number.
- 1.2 Check the appropriate box. Provide the date of department approval for the antidegradation report. Include a copy of the approved *Water Quality and Antidegradation Review* with this application. Not every construction project may require an antidegradation review. For more information, guidance documents and forms concerning antidegradation visit [dnr.mo.gov/env/wpp/permits/antideg-implementation.htm](http://dnr.mo.gov/env/wpp/permits/antideg-implementation.htm).
- 1.3 Check the appropriate box and provide the date of department approval. Per 10 CSR 20-8.110(2), a facility plan must be submitted to the department prior to the submittal of a construction permit application. The department has developed a fact sheet to aid in the development of an approvable facility plan, Facility Plan Guidance for Wastewater Treatment Facilities, Fact Sheet--PUB2416.
- 1.4 Complete only if No. 1.3 is answered No. Check the appropriate box. Include the exemption reason from 10 CSR 20-6.010(4)(B).
- 1.5 Check the appropriate box. Provide a copy of the appropriate plans and specifications for department review when applying for a construction permit per 10 CSR 20-8.110 and 10 CSR 20-6.010. A Missouri registered professional engineering seal, signature and date is required on each sheet of the plans and the cover of the technical specifications. An electronic copy of the construction permit application and the information listed below in Portable Document Format (PDF) searchable format or department approved equivalent per 10 CSR 20-6.010(5)(G), along with one (1) paper copy for projects not seeking department funding or two (2) paper copies for projects seeking department funding under 10 CSR 20-4.
- 1.6 Check the appropriate box. A summary of design shall accompany the plans and specifications when applying for a construction permit per 10 CSR 20-6.010(5)(G) and 10 CSR 20-8.110(8). The department has developed a fact sheet to aid in the development of an acceptable summary of design. This document is available online at [dnr.mo.gov/pubs/pub2417.htm](http://dnr.mo.gov/pubs/pub2417.htm).
- 1.7 Check the appropriate box if an operating permit modification is needed. Include the applicable operating permit application. New outfalls, discharges, projects converting to land application, or a lagoon upgrade require an operating permit modification application. Contact the Department for clarification. Projects that may not need an operating permit modification check the N/A box and indicate whether you want to review the draft prior to public notice should the Department determine a modification is required. The Department can modify your operating permit without an application for projects that are adding chlorine disinfection, constructing to meet current operating permit limits, or constructing to meet limits in a schedule of compliance.
  - Form A is available online at [dnr.mo.gov/forms/780-1479-f.pdf](http://dnr.mo.gov/forms/780-1479-f.pdf).
  - Form B is available online at [dnr.mo.gov/forms/780-1512-f.pdf](http://dnr.mo.gov/forms/780-1512-f.pdf).
  - Form B2 is available online at [dnr.mo.gov/forms/780-1805-f.pdf](http://dnr.mo.gov/forms/780-1805-f.pdf).
- 1.8 Check the appropriate box. More information about the Compliance and Enforcement Water Protection Program is available online at [dnr.mo.gov/env/wpp/enf/index.html](http://dnr.mo.gov/env/wpp/enf/index.html).

- 1.9 Check the appropriate box. Include payment or payment confirmation for the fee with your application. See 10 CSR 20-6.011(2) and Wastewater Treatment Facility Permit Fees -- PUB2564.
- Note:** The department returns incomplete construction permit applications and related engineering documents and the application forfeits the fees. See 10 CSR 20-6.011(5)(A). The applicant forfeits the fees when the applicant withdraws construction applications. See 10 CSR 20-6.011(5)(B).
- 2.1 Provide the name of the proposed construction project.
- 2.2 Provide the estimated project construction cost. The estimated and final project construction cost will be useful to the department in conducting affordability analyses.
- 2.3 Briefly describe the construction project by providing the number and capacity of each new unit.
- 2.4 Briefly describe the method of sludge handling, use and disposal at the treatment facility.
- 2.5 Provide the project design information and when required in the units specified.
- A. Provide the current population and the design population to be served by the wastewater treatment facility.
- B. Provide the estimated design flow information in accordance with 10 CSR 20-8.110(3).
- 2.6 Provide the additional project information in accordance with 10 CSR 20-8.110(5).
- A. Attach a topographic map of the area extending at least one mile beyond the facility property boundaries. This map must show the outline of the facility and the following information. A topographic map is available online at [dnr.mo.gov/internetmapviewer](http://dnr.mo.gov/internetmapviewer) or from the Department of Natural Resources' Missouri Geological Survey in Rolla, Mo., at 573-368-2125. (Submittals of more than one map may be necessary to show the entire area.)
1. The area surrounding the wastewater treatment facility, including all unit processes.
  2. The major pipes or other structures through which wastewater enters the treatment facility and the pipes or other structures through which treated wastewater is discharged from the treatment facility. Include outfalls from bypass piping, if applicable.
  3. The actual point of discharge.
  4. Wells, springs, other surface water bodies and drinking water wells that are: 1) within ¼ mile of the property boundaries of the treatment facility and 2) listed in public record or otherwise known to the applicant.
  5. Any areas where biosolids produced by the treatment facility are treated, stored, or disposed.
  6. If the treatment facility receives waste classified as hazardous under the Resource Conservation and Recovery Act, or RCRA, by truck, rail, or special pipe, show on the map where hazardous waste enters the treatment works and where it is treated, stored or disposed.
  7. Outline any wastewater land application sites.
- B. Provide a process flow diagram with the influent and effluent design average flow and peak flow capabilities. Also, depict all of the treatment facility components and the corresponding hydraulic capacities of each component. In addition, include all recycle flows in the diagram. If land application is used, depict all irrigation equipment and application sites.
- 3.0 Complete the Wastewater Treatment Facility information. Include the Missouri State Operation Permit number, outfall number, physical location, and other appropriate contact information.
- 3.1 Provide the project legal description. The department's mapping system is available online at [dnr.mo.gov/internetmapviewer](http://dnr.mo.gov/internetmapviewer).
- 3.2 A Global Positioning System, or GPS, is a satellite-based navigation system. The department prefers that a GPS receiver is used and the displayed coordinates submitted. If access to a GPS receiver is not available, use a mapping system to approximate the coordinates.
- 3.3 Provide the name of the receiving stream(s) to which the discharge is directed and any subsequent tributary until a continuous flowing stream is reached.
- 4.0 Complete Project Owner information. Include the legal name, address, phone number with area code and email address.
- 5.0 Complete Continuing Authority contact information. If same as the Project Owner, write "Same as above". 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. A continuing authority is not, however, an entity or individual that is contractually hired by the permittee to sample or operate and maintain the system for a defined time period, such as a certified operator or analytical laboratory. To access the regulatory requirement regarding continuing authority, 10 CSR 20-6.010(2), please visit <https://s1.sos.mo.gov/cmsimages/adrules/csr/current/10csr/10c20-6.pdf>. A continuing authority's name must be listed exactly as it appears on the Missouri Secretary of State's (SoS's) webpage: <https://bsd.sos.mo.gov/BusinessEntity/BESearch.aspx?SearchType=0>, unless the continuing

authority is an individual(s), government, or otherwise not required to register with the SoS. See 10 CSR 20-6.010(2) for the regulatory requirement regarding continuing authority.

- 5.1 Check the appropriate box. Include a letter signed by the continuing authority (if not same as the project owner) stating they will “accept, operate and maintain” the wastewater treatment facility after successful construction. If the continuing authority will not accept and agree to operate and maintain the wastewater treatment facility, this application will be considered incomplete.
- 5.2 Complete if the continuing authority is a Missouri Public Service Commission, or PSC, regulated entity. See 10 CSR 20-6.010(2)(B)3 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with a PSC entity as owner and continuing authority.
- 5.3 Complete if the continuing authority is a property owners association. See 10 CSR 20-6.010(2)(B)5 for more information. This information is not necessary for existing wastewater treatment facilities currently permitted with the property owners association as owner and continuing authority.
- 6.0 Complete Engineer contact information.
- 7.0 Check the appropriate box and include check or confirmation number. Applicants can pay fees online by credit card or eCheck through a system called JetPay.
- Per Section 37.001, RSMo, a transaction fee will be included. The transaction fee is paid to the third party vendor JetPay, not the Department of Natural Resources.
  - Be sure to select the correct fee type and corresponding URL to ensure your payment is applied appropriately. If you are unsure what type of fee to pay, please contact the Water Protection Program’s Budget, Fees, and Grants Management Unit by phone at (573) 522-1485 for assistance.
  - Upon successful completion of your payment, JetPay provides a payment confirmation. Submit this form with a copy of the payment confirmation if requesting a new permit or a permit modification. For permit renewals of active permits, the Department will invoice fees annually in a separate request.
  - If you are unable to make your payment online, but want to pay with credit card, you may email your name, phone number, and invoice number, if applicable, [WPPFEES@dnr.mo.gov](mailto:WPPFEES@dnr.mo.gov). The Budget, Fees, and Grants Management Unit will contact you to assist with the credit card payment. **Please do not include your credit card information in the email.**
  - Applicants can find fee rates in 10 CSR 20-6.011 and Wastewater Treatment Facility Permit Fees -- PUB2564 (<https://dnr.mo.gov/pubs/pub2564.htm>).

WP 04 Construction Permits: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/592/>

- 8.0 The owner of the construction project must sign the application.

## Part B – Land Application

Complete Part B only if the proposed construction project includes land application of wastewater from a treatment facility.

- 8.0 Provide the applicable Facility Information land application information. Check the appropriate boxes.
- 9.0 Provide the applicable Storage Basins information. Check the appropriate boxes.
- Freeboard – The depth from the top of the berm to the emergency spillway. Minimum depth • is one foot.
  - Safety Volume – The depth to contain the 25-year, 24-hour storm event. Minimum depth is • one foot.
  - Maximum Operating Water Level – The water level at the bottom of the safety volume. • Minimum depth is two feet below the top of the berm.
  - Minimum Operating Water Level – The water level above the bottom of the lagoon basin for • seal protection. Minimum depth is two feet and may be greater when additional treatment volume is included.
  - Total Depth is from the top of the berm to the bottom of the lagoon basin including freeboard. •
- 10.0 Provide the applicable Land Application System information. Check the appropriate boxes.
- 10.7 Check the appropriate box. If the land application rate is based on a Nutrient Management Plan, or N and P, include the plan with this application for department review.

Mail the completed form and applicable fee to the department.

If there are any questions concerning this form, please contact the Department of Natural Resources, Water Protection Program at 800-361-4827 or 573-751-1300 or visit [dnr.mo.gov/env/wpp](http://dnr.mo.gov/env/wpp).