



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

December 8, 2022

Joe Kueper
Utilities Manager
Innsbrook Owners Association, Inc.
596 Aspen Way Drive
Innsbrook, MO 63390

RE: Innsbrook Estates WWTF New Clarifier – Innsbrook Estates Wastewater Treatment Facility, MO-0098906, Construction Permit No. CP0002318, Warren County

Dear Joe Kueper:

The Missouri Department of Natural Resources' Water Protection Program has reviewed the plans and specifications submitted by Cochran for the Innsbrook Owners Association, Inc. Please find enclosed Construction Permit No. CP0002318. Upon completing construction covered under this permit submit a Statement of Work Completed form (<https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155>) to the Department in accordance with 10 CSR 20-6.010(5)(N).

This permit will expire 24 months from the date of issuance. In accordance with 10 CSR 20-6.010(5)(J), the Department may grant an extension. If you believe that an extension is necessary, you must submit a request and a justification in writing for the extension at least 30 days prior to the permit expiration date. Expired construction permits require submittal of a new application and fee.

You must submit the enclosed form Statement of Work Completed to the Department upon completion of construction in accordance with 10 CSR 20-6.010(5)(N) with a request to issue the operating permit.

This construction permit does not supersede any requirements of the operating permit or enforcement actions. Nothing in this permit removes any obligations to comply with county or other local ordinances or restrictions.



Joe Kueper
Page 2

If you have any questions concerning this matter, please contact Steve Hamm, of the Water Protection Program by phone at 573-526-1002, or by email at steven.hamm@dnr.mo.gov. You may also submit questions or comments in writing to the Department of Natural Resources, P.O. Box 176, Jefferson City, MO 65102.

Thank you for your efforts to help ensure clean water in Missouri.

Sincerely,

WATER PROTECTION PROGRAM

A handwritten signature in cursive script that reads "Cindy LePage".

Cindy LePage, P.E., Chief
Engineering Section

CL:sha

Enclosures

c: David Van Leer, P.E., Cochran
Joe Kueper, Innsbrook Estates

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

The Missouri Department of Natural Resources hereby issues a permit to:

Joe Kueper
Utilities Manager
Innsbrook Owners Association, Inc.
596 Aspen Way Drive
Innsbrook, MO 63390

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.

December 8, 2022
Effective Date

December 7, 2024
Expiration Date

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

The scope of work will include the construction of a new secondary clarifier, new sludge holding basin, new sludge pump station, new valve box, new flow control box, and appertenances to implement the Innsbrook Estates WWTF new clarifier (Cochran Project No. 22-9010).

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 complete a cost analysis for compliance because the facility is not a combined or separate sanitary sewer system for a publically-owned treatment works.

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 David Van Leer, P.E. with Cochran 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 Saint Louis Regional Office per 10 CSR 20-7.015(9)(G).
5. The wastewater treatment facility shall be located at least fifty feet (50') from any dwelling or establishment per 10 CSR 20-8.140(2)(C)2.
6. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
7. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation per 10 CSR 20-8.140(2)(B). The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.
8. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at <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.
9. 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.
10. 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 the one hundred (100)-year flood elevation. 10 CSR 20-8.140(2)(B).
 - Facilities shall be readily accessible by authorized personnel from a public right-of-way at all times. 10 CSR 20-8.140 (2) (D).

- 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: 10 CSR 20-8.140(8)
 - 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)
 - 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)
- Electrical equipment. Electrical equipment shall be provided with the following requirements:
 - Utilize corrosive resistant equipment located in the wet well; 10 CSR 20-8.130 (3) (B) 2. B.
 - Provide a watertight seal and separate strain relief for all flexible cable; 10 CSR 20-8.130(3) (B) 2. C.
 - Install a fused disconnect switch located above ground for the main power feed for all pumping stations. 10 CSR 20-8.130 (3) (B) 2. D.
 - When such equipment is exposed to weather, it shall comply with the requirements of weather proof equipment; enclosure NEMA 4; NEMA 4X where necessary; and *NEMA Standard 250-2014*, published December 15, 2014. 10 CSR 20-8.130 (3) (B) 2. E.
 - Install lightning and surge protection systems; 10 CSR 20-8.130 (3) (B) 2. F.
 - Install a one hundred ten volt (110 V) power receptacle inside the control panel located outdoors to facilitate maintenance; 10 CSR 20-8.130 (3) (B) 2. G.

- Provide Ground Fault Circuit Interruption (GFCI) protection for all outdoor receptacles. 10 CSR 20-8.130 (3) (B) 2. H.
- 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 three hundred feet (300'). 10 CSR 20-8.140 (2) (C) 1.
- All sampling points shall be designed so that a representative and discrete twenty-four (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.
- A means of flow measurement shall be provided at all wastewater treatment facilities. 10 CSR 20-8.140 (7) (E)
- Effluent twenty-four (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)
- 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)

- Overflow weirs shall be readily adjustable over the life of the structure to correct for differential settlement of the tank. 10 CSR 20-8.160 (3) (C) 1.
- Walls of settling tanks shall extend at least six inches (6") above the surrounding ground surface and shall provide not less than twelve inches (12") of freeboard. 10 CSR 20-8.160 (3) (E)
- 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)
- 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)

11. Upon completion of construction:

- A. Innsbrook Owners Association, Inc. will become the continuing authority for operation and maintenance of these facilities;
- B. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications; and
- C. Submit the enclosed Form MO 780-2155, Wastewater Construction Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N). 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 permitted construction is being conducted to increase the treatment capacity of the existing Innsbrook Estates WWTF, eliminate effluent limit exceedances, and improve peak flow management. The construction of the secondary clarifier will serve as an

intermediate phase for the full oxidation ditch construction, the selected alternative that was identified in the November 2018 Antidegradation Review (ACT472).

2. FACILITY DESCRIPTION

The existing system includes an influent lift station, flow equalization, extended aeration, clarification, UV disinfection, with sludge disposed by contract hauler.

New construction includes a new secondary clarifier, sludge holding basin, sludge pumping station, flow control box, and valve box.

The Innsbrook Estates WWTF is located at Innsbrook Estates Drive, Wright City, in Warren County, Missouri. The facility has a design average flow of 97,000 gpd and serves a hydraulic population equivalent of approximately 970 people.

3. COMPLIANCE PARAMETERS

Expansion to 97,000 gpd, Secondary Clarifier and

The permitted construction in CP0002318 is required to meet final effluent limits that are established in the Antidegradation review dated May 2022 (ACT1198).

Innsbrook Estates WWTF Effluent Limits at 0.097 MGD
for the secondary clarifier construction, CP0002318:

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average
Flow	MGD	*		*
Biochemical Oxygen Demands	mg/L		45	30
Total Suspended Solids	mg/L		45	30
Ammonia as N (Jan1 – Mar31)	mg/L	12.1		3.1
Ammonia as N (Apr1 – Jun30)	mg/L	10.1		1.5
Ammonia as N (Jul1 – Sep30)	mg/L	8.4		1.0
Ammonia as N (Oct1 – Dec31)	mg/L	8.4		2.2
Oil & Grease	mg/L	15		10
<i>E. coli</i>	#/100mL	1030		206
Parameter	Units	Minimum		Maximum
pH	SU	6.5		9.0

* Monitoring Only

4. ANTIDEGRADATION

The Department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated May 2022 (ACT1198), due to the increased design flow with the phased construction.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

- Peak Flow Equalization Basins – Wet weather, seasonal and holiday flow equalization is utilized where the peak flow is greater than the design peak capacity of the treatment facility. The equalization basin has a design volume of 445,000 gallons. This basin volume corresponds to 4.5 days of detention at 97,000. This peak flow equalization basin was permitted for construction in 2019 under construction permit CP0002064. The largest total peak flow over a 3 day weekend was recorded on the 4th of July weekend in 2018 at 465,131 gallons over 3 days (155,044 gpd).
- Extended Aeration Package Plant – There are currently 3 extended aeration package plants installed in series for secondary treatment.
- Ultraviolet (UV) Disinfection – The current UV disinfection systems are sized to treat flows up to 200,000 gpd. The UV disinfection system will not be modified and will remain in operation with the future scope of work.

Construction will cover the following items:

- Components are designed for a Population Equivalent of 970 based on organic loading to the system.
- Flow Control Box – One new Flow Control Box (FCB) will be constructed to receive influent from two forcemains and the flow equalization basin. Effluent from the new flow control box will flow to either the first extended aeration plant or the existing Lift Station 1, which pumps to the flow equalization basin. The FCB will have a v-notch weir to control the flow to the extended aeration plants and a slide gate to control the raw wastewater flow to the flow equalization basin.
- Secondary Clarifier – One secondary clarifier is designed to accommodate the future design average flow of 150,000 gpd. The clarifier will be constructed with a total effective surface area of 156 sf and a diameter of 20 feet. This clarifier will have a surface overflow rate of 962 gpd/ft² at the design average flow of 150,000 gpd and a surface overflow rate of 962 gpd/ft² at the peak hourly flow of 150,000 gpd (104 gpm). These surface overflow rates meet the requirements of 10 CSR 20-8.160(3)(B)3. The sidewater depth will be 12.25 ft minimum. The weir loading rate is 8,307 gpd/lf which meets the requirements of 10 CSR 20-8.160(3)(C)2. of being less than 20,000 gpd/lf. The solids loading rate is 24.07 lbs/day/sf which meets the requirements of 10 CSR 20-8.160(3)(B)3. of less than 35 lbs/day/sf at the peak flow of 104 gpm.
- Sludge Holding Basin – Construction of one sludge holding basin with a 20 ft diameter, a 14.25 ft sidewater depth, and a volume of 28,000 gallons. The sludge holding basin will receive sludge from the secondary clarifiers, extended aeration plants, and future oxidation ditch etc.
- Return Activated Sludge Pump Station – Construction of a duplex RAS pump station and associated valves. The two Return Activated Sludge (RAS) ABS Sulzer PE 35/2-

C-60Hz submersible sewage pumps will be capable of pumping 53 gpm at 94 ft of TDH with a 5.36 HP motor. The RAS pumps are utilized to pump RAS from the secondary clarifier and sludge holding basin to each of the three extended aeration treatment units. The RAS pumps are designed to pump 53 gpm each.

Future Construction - Oxidation Ditch

A 150,000 gpd oxidation ditch is planned for construction under a separate construction permit. This expansion is identified as the preferred alternative in the August, 2018 Antidegradation review (ACT472) and the October, 2018 Facility Plan (ACT497). This construction permit, CP0002318, is intended to be an intermediate phase for the full buildout. The future scope of work will include the construction of the 150,000 gpd oxidation ditch and appurtenances.

6. OPERATING PERMIT

Operating permit MO-0098906 will require a modification to reflect the construction activities and increased design flow. The modified Innsbrook Estates WWTF, MO-0098906, was successfully public noticed from September 16, 2022 to October 17, 2022 with no comments received. This facility does not meet the requirements of MOGD00000 issued on July 1, 2019 due to the design flow above 50,000 gpd. This facility is not being converted to a general operating permit at this time.

Operating permit MO-0098906 will be expiring on September 30, 2025. A renewal application must be filed before April 3, 2025 regardless of the status of these construction activities. If you have questions on completing the renewal application, please contact the NPDES permitting section at 573-751-1300.

After the completion of construction project submit:

- Form MO 780-2155, Wastewater Construction Statement of Work Completed, <https://dnr.mo.gov/document-search/wastewater-construction-statement-work-completed-mo-780-2155>, and
- As-builts if the project was not constructed in accordance with previously submitted plans and specifications.

Operating Permit Application Form B and operating permit fee of \$200 have already been submitted to the Department. The public noticed draft of the Missouri State Operating Permit, MO-0098906, will be issued after receipt of the above documents.

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>

Steve Hamm P.E.
Engineering Section
Steven.hamm@dnr.mo.gov