STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

INNSBROOK OWNERS ASSOCIATION, INC.
Innsbrook Estates Wastewater Treatment Facility
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.

April 1, 2025
Effective Date

March 31, 2027
Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Construction of an oxidation ditch and appurtenances to expand the design flow of Innsbrook Estates Wastewater Treatment Facility's (WWTF), MO0098906, from 68,000 gallons per day (gpd) to 150,000 gpd. This project is the last component of the WWTF's expansion project necessary to have the WWTF rated at 150,000 gpd as listed in the November 2018 Water Quality Antidegradation Review (WQAR). The previous construction permits regarding the expansion included a 445,000-gallon equalization basin (CP0002064), a clarifier with design flow of 150,000 gpd, and a 28,000-gallon sludge holding basin (CP0002318).

A closure plan will need to be submitted to the St. Louis Regional Office for review and approval prior to any closure activities.

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 publicly 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 Kyle Pociask, P.E., with Four Points Land Surveying & Engineering 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 St. Louis 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 St. Louis 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-0098906. 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 the 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)

- 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.

- 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.

- 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)

9. Upon completion of construction:

   A. The INNSBROOK OWNERS ASSOCIATION, INC. 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) and request the operating permit modification public noticed on February 14, 2025 be issued. Modification fee has been paid.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Construction of an oxidation ditch and appurtenances to expand the Innsbrook Estates WWTF's design flow from 68,000 gpd to 150,000 gpd.

2. FACILITY DESCRIPTION

This project is for construction of an oxidation ditch to replace the existing extended aeration cells, and it is the last component of the WWTF's expansion project necessary to have the WWTF rated at 150,000 gpd as listed in the November 2018 Water Quality Antidegradation Review (WQAR). The existing extended aeration cells will be used for sludge holding purposes. The previous construction permits regarding the expansion included a 445,000-gallon equalization basin (CP0002064), a clarifier with design flow of 150,000 gpd, and a 28,000-gallon sludge holding basin (CP0002318).

The expanded Innsbrook Estates WWTF will consist of a flow equalization, oxidation ditch, clarifier, sludge holding basin, and UV disinfection. The WWTF is located at Innsbrook Estates Drive, Wright City, in Warren County, Missouri. The expanded WWTF has a design average flow of 150,000 gpd and serves a hydraulic population equivalent of approximately 1,500 people.

3. COMPLIANCE PARAMETERS

The proposed project is required to meet final effluent limits as established in the Antidegradation review dated November 28, 2018.

The limits following the completion of construction will be applicable to the facility:

Parameter	Units	Monthly average limit
Biochemical Oxygen Demand$_5$	mg/L	10
Total Suspended Solids	mg/L	30
Ammonia as N-summer	mg/L	1.4
Ammonia as N-winter	mg/L	2.8
pH	SU	6.5-9.0
Oil & Grease	mg/L	10
E. coli	#/100mL	206

4. ANTIDEGRADATION

The department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review dated November 28, 2018, due to expansion of the facility. See **APPENDIX – ANTIDEGRADATION**.

5. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

- Peak Flow Equalization Basin – 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.

- Existing extended aeration cells – The new oxidation ditch will replace the cells for treatment. The cells will be used for sludge holding purposes.

- Secondary Clarifier – The clarifier is sized for 150,000 gpd. The clarifier is being installed under construction permit CP0002318.

- Sludge Holding Basin – The basin has a storage volume of approximately 28,000 gallons. It is being installed under construction permit CP0002318.

- Ultraviolet (UV) Disinfection – The current UV disinfection systems are sized to treat flows 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 1,500 based on hydraulic loading to the system.

- Oxidation Ditch –The design SRT is 15 days with a design MLSS of 3,978 mg/L. The hydraulic retention time is 15 hrs at design flow of 150,000 gpd. The side water depth of the treatment train is 7 ft. Process design calculations were provided for an organic load of 20 lb. BOD per 1,000 cf. Total peak oxygen required is 526 lb./day or 21.9 lb./hr. The actual oxygen transfer rate (AOTR) is 27.8 lb./hr.

6. OPERATING PERMIT

Operating permit MO-0098906 will require a modification to reflect the construction activities. The modified Innbrook Estates WWTF, MO-0098906, was successfully public noticed from February 14, 2025, to March 17, 2025. 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.

Operating permit MO-0098906 will be expiring on September 30, 2025. A renewal application must be filed before March 30, 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 573-522-4502.

V. NOTICE OF RIGHT TO APPEAL

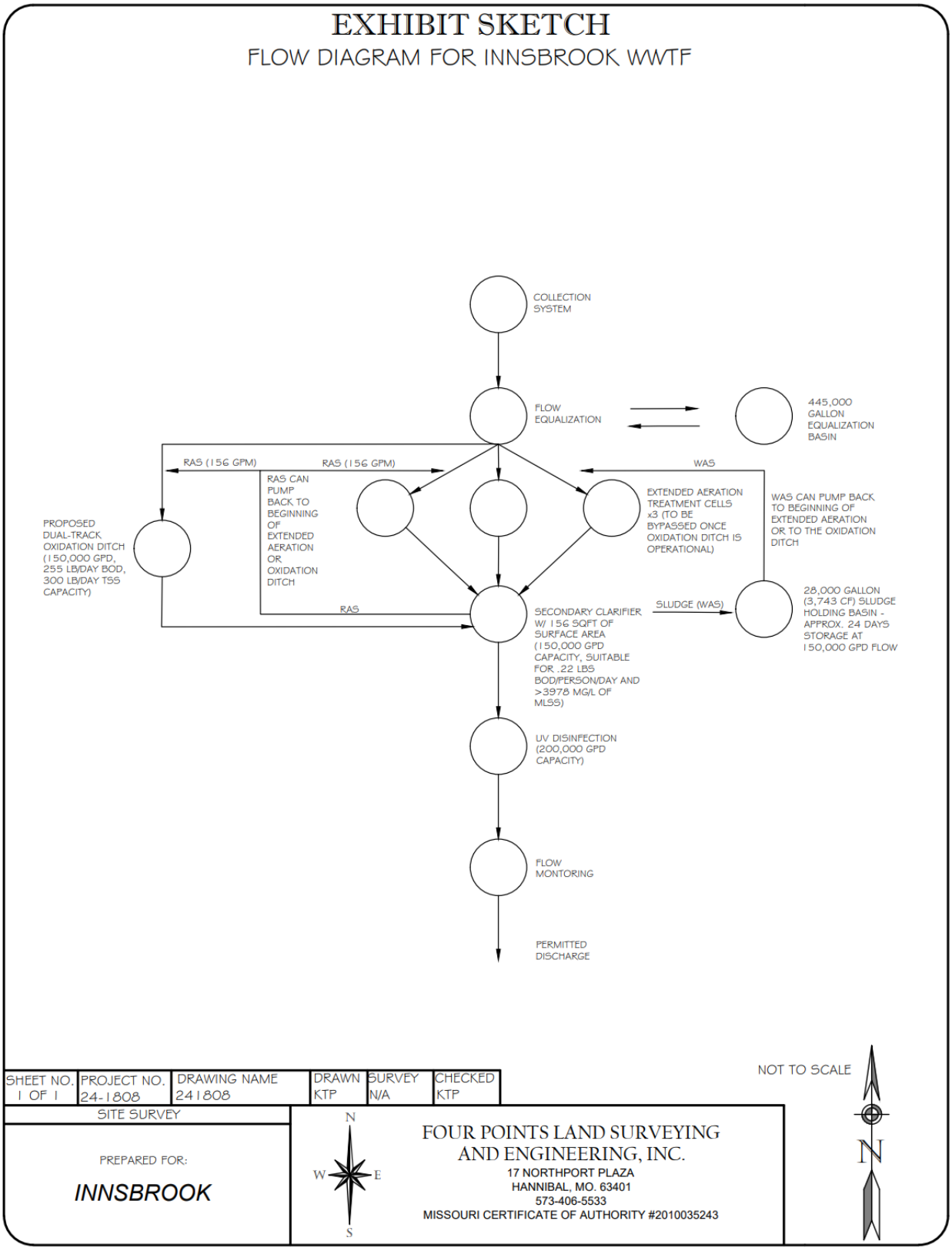
If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered, 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

Sieu T. Dang, P.E.
Engineering Section
sieu.dang@dnr.mo.gov

APPENDICES

- **Process Flow Diagram**



- **Antidegradation Review**

Missouri Department of NATURAL RESOURCES
dnr.mo.gov
Michael L. Parson, Governor
Carol S. Comer, Director

NOV 28 2018

Mr. Greg Nissing
Innsbrook Owners Association
#1 Innsbrook Estates Drive
Wright City, MO 63390

RE: Water Quality and Antidegradation Review Preliminary Determination for Village of Innsbrook WWTF, MO0098906

Dear Mr Nissing:

In accordance with the *Missouri Antidegradation Rule and Implementation Procedure (AIP)*, your proposed discharge is subject to an Antidegradation Review. The enclosed *Water Quality and Antidegradation Review (WQAR)* summarizes this preliminary determination based upon your *Antidegradation Review Request Report for Innsbrook Wastewater Treatment Facility* dated August 2018, which proposed to expand the Innsbrook Estates Wastewater Treatment Facility design flow to 0.150 MGD. The alternatives evaluated include modifying the existing treatment system, constructing a new treatment system at the existing location, and constructing a new treatment system at a new location in the southwest portion of the Innsbrook development.

The WQAR contains pertinent antidegradation review information based on the use of existing water quality, effluent limitations and monitoring requirements for the facility discharge. It was developed in accordance with 10 CSR 20-7.031, the Clean Water Commission approved *Missouri Antidegradation Rule and Implementation Procedure* (AIP) dated July 13, 2016, U.S. Environmental Protection Agency (US EPA) guidance, the applicant-supplied antidegradation review documentation, and the State of Missouri's effluent regulations (10 CSR 20-7.015). Please refer to the *General Assumptions of the Water Quality and Antidegradation Review* section of the enclosed WQAR. The WQAR is preliminary and subject to change as new information becomes available during future permit application processing.

Based on the Missouri Department of Natural Resources (Department) initial review, preliminary determination is that the applicant-supplied antidegradation review documentation satisfies the requirements of the AIP. This WQAR/preliminary determination may be appealed within 30 days of this letter in accordance with the AIP Section II.F.4. The WQAR would also allow you to pursue construction of one of the other approved reasonable alternatives without the need to modify this Antidegradation review.

You may proceed with submittal of an application for an operating permit and antidegradation review public notice, an engineering report, or a facility plan. These submittals must reflect the design flow, facility description, and general treatment components of this WQAR or this preliminary determination may have to be revisited. To reduce cost and time spent scanning permit applications, plans, and specification, the Water Protection Program's Engineering Section has begun asking for electronic copies of

Recycled paper

submitted documents in addition to paper copies. While it is not currently a requirement, submittal of electronic documents on a compact disc or other removable electronic media is being proposed in the new rulemaking for 10 CSR 20-6.010.

Following the Department's public notice of draft Missouri State Operating Permit including the antidegradation review findings and preliminary determination, the Department will review any public notice comments received. If significant comments are made, the project may require another public notice and potentially another antidegradation review. If no comments are received or comments are resolved without another public notice, these findings and determinations will be considered final.

Following issuance of the construction permit and completion of the actual facility construction, the Department will proceed with the issuance of the operating permit.

Some projects are eligible for funding through the Department's Clean Water State Revolving Fund (CWSRF) Program. Applications for funding and guidance documents can be found at https://dnr.mo.gov/env/wpp/srf/wastewater-project-guidance.htm. Project eligibility determinations are made, in accordance with 10 CSR 20-4.040. Projects that are eligible for funding are listed on the Intended Use Plan, provided additional CWSRF requirements are met, including but not limited to environmental review requirements, public hearing requirements, user charge requirements and approval of construction plans and specifications. For questions related to the CWSRF Program, please contact Joan Doerhoff, Financial Assistance Center Coordinator Unit Chief, at 573-526-0940.

If you should have questions, please feel free to contact Ms. Ellen Modglin by telephone at 573-751-7466, by e-mail at Ellen.Modglin@dnr.mo.gov, or by mail at P.O. Box 176, Jefferson City, MO 65102.

Sincerely,

WATER PROTECTION PROGRAM

Refaat Mefrakis

Refaat Mefrakis, P.E., Chief
Engineering Section

Enclosures

RM:emn

c: Ms. Ginny Bretzke, P.E., Cochran Engineering

Missouri Department of Natural Resources
Water Protection Program
Water Pollution Control Branch
Engineering Section

Water Quality and Antidegradation Review

For the Protection of Water Quality
and Determination of Effluent Limits for Discharge to
Charrette Creek

by
Innsbrook Estates Wastewater Treatment Facility

November, 2018

Table of Contents

1. FACILITY INFORMATION

FACILITY NAME: Innsbrook Estates WWTF NPDES #: MO-0098906

FACILITY TYPE: NON-POTW– Lakeside Community – SIC #8641
FACILITY DESCRIPTION: The current treatment facility has a design flow of 0.068 MGD and consists of three extended aeration units, three clarifiers, a sludge holding tank, and ultraviolet (UV) disinfection. As a result of the submitted alternatives analysis, the applicant's preferred alternative is a new oxidation ditch treatment facility (either two oxidation ditches or one multichannel oxidation ditch). The facility will also include two new clarifiers. The existing aeration tank structures will be used for flow equalization, and the existing UV equipment will be used for disinfection. The design flow will be 0.150 MGD.

COUNTY:	Warren	UTM COORDINATES:	X= 669834 / Y= 4291925
12- DIGIT HUC:	10300200-0505	LEGAL DESCRIPTION:	Section 8, T46N, R1W
EDU*:	Central Plains / Ozark	ECOREGION:	Claypan Till Plains / Outer Ozark Border

* - Ecological Drainage Unit

2. WATER QUALITY INFORMATION

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)] and federal antidegradation policy at Title 40 Code of Federal Regulation (CFR) Section 131.12 (a), the Missouri Department of Natural Resources (Department) developed a statewide antidegradation policy and corresponding procedures to implement the policy. A proposed discharge to a water body will be required to undergo a level of Antidegradation Review, which documents that the use of a water body's available assimilative capacity is justified. Effective August 30, 2008, and revised July 13, 2016, a facility is required to use *Missouri's Antidegradation Implementation Procedure (AIP)* for new and expanded wastewater discharges.

2.1. WATER QUALITY HISTORY:

The facility was last inspected on July 5, 2017. The inspection was conducted in response to a fish kill emergency reported on July 4, 2017, which was caused by a sanitary sewer overflow at Innsbrook Estates. The incident affected 0.5 miles of Charrette Creek with a total of 694 fish killed. The facility is currently under enforcement action for the following reasons: failing to meet effluent limits for Ammonia and failing to meet minimum design standards for storage capacity during peak flow.

The discharge monitoring data over the last five years indicated an average flow of 0.029 MGD. The facility reported an exceedance for its Ammonia effluent limits on the following DMR reports: May 2018, April 2018, April-June 2017, October 2016, May-August 2016, December 2015, October 2015, July 2015, and July 2014. The facility reported an exceedance for its *E. coli* effluent limits on the following DMR reports: August 2017, July 2016, June 2016, April 2016, and April-June 2013.

The facility is located in the Missouri River Watershed, which has a TMDL for Chlordane and Polychlorinated Biphenyls (PCBs); however, the facility's discharge does not contain any contaminants associated with this TMDL.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	0.23	Secondary	Tributary to Charrette Creek	0.15
			Charrette Creek	

3. Receiving Waterbody Information

Waterbody Name	Class	WBID	Low-Flow Values (cfs)			Designated Uses**
			1Q10	7Q10	30Q10	
Tributary to Charrette Creek	-	-	0.0	0.0	0.0	General Criteria
Charrette Creek	C	1615	0.0	0.0	0.0	AQL, IRR, LWW, SCR, WBC-B, HHP

** Irrigation (IRR), Livestock & Wildlife Protection (LWP), Protection of Warm Water Aquatic Life (AQL), Human Health Protection (HHP), Cool Water Fishery (CLF), Cold Water Fishery (CDF), Whole Body Contact Recreation – Category A (WBC-A), Whole Body Contact Recreation – Category B (WBC-B), Secondary Contact Recreation (SCR), Drinking Water Supply (DWS), Industrial (IND), Groundwater (GRW).

Receiving Water Body Segment #1: Tributary to Charrette Creek
Upper end segment* UTM coordinates: X= 669834 / Y= 4291925 (Outfall)
Lower end segment* UTM coordinates: X= 669809 / Y= 4291710 (meets classified))

* Segment is the portion of the stream where discharge occurs. Segment is used to track changes in assimilative capacity and is bound at a minimum by existing sources and confluences with other significant water bodies.

4. General Comments

Cochran Engineering prepared, on behalf of the Innsbrook Owners Association, the *Antidegradation Review Request Report for Innsbrook Wastewater Treatment Facility* dated August 2018. Applicant elected to assume that all pollutants of concern (POC) are significantly degrading the receiving stream in the absence of existing water quality. An alternatives analysis was conducted to fulfill the requirements of the AIP. Dissolved oxygen modeling (Appendix C) analysis using EPA's QUAL2K software was submitted for review. Staff believes that the results of the model are protective of the water quality standards for dissolved oxygen. Information that was provided by the applicant in the submitted report and summary forms in Appendix D was used to develop this review document.

Geohydrological Evaluation was submitted with the request and the receiving stream is gaining for discharge purposes (Appendix A: Map).

A Missouri Department of Conservation Natural Heritage Review was obtained by the applicant; and no records of endangered species were found for the project area (Appendix B).

5. Antidegradation Review Information

The following is a review of the *Antidegradation Review Request Report for Innsbrook Wastewater Treatment Facility* dated August 2018.

5.1. Tier Determination

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix D), Pollutants of concern are defined as those pollutants "proposed for discharge that affects beneficial use(s) in waters of the state. POCs include pollutants that create conditions unfavorable to beneficial uses in the water body receiving the discharge or proposed to receive the discharge." (AIP, Page 7). Tier 2 was assumed for all POCs (see Appendix D).

Table 1. Pollutants of Concern and Tier Determination

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD_5/DO	2	Significant	
Ammonia	2	Significant	
pH	***	Significant	Permit limits applied
Escherichia coli (*E. coli*)	2	Significant	Permit limits applied
Oil and Grease	2	Significant	Permit limits applied
Total Phosphorus	**		Monitoring only
Total Nitrogen	**		Monitoring only

* Tier assumed. Tier determination not possible: ** No in-stream standards for these parameters. *** Standards for these parameters are ranges

The following Antidegradation Review Summary attachments in Appendix D were used by the applicant:

For pollutants of concern, the attachments are:
☒ Attachment A, Tier 2 with significant degradation.

5.2. EXISTING WATER QUALITY

No existing water quality data was submitted. All POCs were considered to be Tier 2 and significantly degraded in the absence of existing water quality.

5.3. NO DISCHARGE EVALUATION

According to 10 CSR 20-6.010 (4)(D), reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Because Missouri's antidegradation implementation procedures specify that if the proposed activity results in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Part of that analysis as shown below is the non-degrading or no discharge evaluation. See Section 5.4.1 discussion for the regionalization alternative.

The facility proposed both a subsurface land application system and a spray irrigation surface land application system. Both options were deemed impractical for numerous reasons including the following: the extensive area required for wastewater application of the relatively large design flow (approximately 23 acres for subsurface application and 84 acres for spray application), the limited availability of soils in the vicinity with the required soil type and depth for onsite wastewater treatment, the large volume of wastewater storage needed, and the extensive networks of piping and pumps needed to apply wastes over the required area.

5.4. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify that if the proposed activity does result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are required. Eight alternatives from non-degrading to less degrading to degrading were evaluated. The non-degrading alternatives, subsurface irrigation, surface irrigation, and regionalization were eliminated as impracticable.

Of the remaining five alternatives, the first alternative considered (Alternative 1) was to expand the existing extended aeration treatment system, which would require two additional sections of extended aeration treatment units. This alternative would also include a flow equalization pond capable of storing 150,000 gallons. The estimated cost of construction for this option is $1,549,400. Estimated operation and maintenance costs are $168,100 per year. The total present worth of this option at an interest rate of 5% over 20 years is $3,644,300.

The second alternative considered (Alternative 2) was to modify the existing treatment system by adding modular fixed activated sludge treatment (FAST) units into the existing extended aeration tanks. Additionally, a fourth treatment train consisting of four treatment tanks and one clarifier tank would be added to the overall system. New aeration equipment would be installed in the bottom of each tank to scour the media once a month. This alternative also includes a 150,000 gallon flow equalization storage pond. The estimated cost of construction for this option is $1,529,900. Estimated operation and maintenance costs are $157,600 per year. The total present worth of this option at an interest rate of 5% over 20 years is $3,493,900.

The third alternative considered (Alternative 3) was to construct a new oxidation ditch treatment system adjacent to the existing treatment plant location. The design would include either two oxidation ditches or one multi-channel oxidation ditch to provide more flexibility in handling fluctuations in flow. Two new clarifiers would also be added, and the existing aeration tank structures would be used for flow equalization and sludge holding. The estimated cost of construction for this option is $1,855,400. Estimated operation and maintenance costs are $140,000 per year. The total present worth of this option at an interest rate of 5% over 20 years is $3,600,100.

The fourth alternative considered (Alternative 4) was to construct a new oxidation ditch system in the southwest portion of the Innsbrook development. The new treatment facility would have a design flow of 82.000 gpd, and it would include screening, flow equalization basins (80,000 gallons storage), oxidation ditch treatment, two clarifiers, sludge holding, and UV disinfection. The existing extended aeration treatment system would also continue to be operated at the design flow of 68,000 gpd, and a new 150,000 gallon flow equalization pond would be added. New force mains would be required to direct wastewater from the western portion of the development to the new oxidation ditch system. The estimated cost of construction for this option is $2,934,600. Estimated operation and maintenance costs are $252,800 per year. The total present worth of this option at an interest rate of 5% over 20 years is $6,085,000.

The fifth alternative considered (Alternative 5) was to construct a new Moving Bed Biological Reactor (MBBR) system adjacent to the existing treatment plant location. The design would include a primary screen, two 20,000 gallon horizontal cylindrical aerated equalization tanks, two 2-stage MBBR tanks, and three spiral flow clarifiers. This alternative also includes a 150,000 gallon flow equalization storage pond. The estimated cost of construction for this option is $2,568,500. Estimated operation and maintenance costs are $158,900 per year. The total present worth of this option at an interest rate of 5% over 20 years is $4,548,700.

Only those alternatives that were considered practicable were included in the economic efficiency analysis. In terms of economic efficiency, Alternative 2 is the baseline option for comparison due to the overall lowest present worth cost while being protective of the receiving stream's water quality standards. Of the five options considered, only Alternatives 1, 2, and 3 are economically efficient as Alternatives 4 and 5 cost over 20% more than the baseline option. Based on the alternatives analysis, Alternative 3, constructing a new oxidation ditch adjacent to the existing treatment plant location, is the preferred alternative. This alternative has the most flexibility for operations to be adjusted based on flow variations, which is the facility's main concern. Furthermore, the oxidation ditch is expected to have a longer useful life than re-using components of the existing plant, as it will be an entirely new treatment system.

Table 1: Alternatives Analysis Comparison

	Alternative 1: Extended Aeration	Alternative 2: FAST	Alternative 3: Oxidation Ditch	Alternative 4: Two Treatment Plants	Alternative 5: MBBR
BOD	10/15	10/15	10/15	10/15	10/15
TSS	30/30	30/30	30/30	30/30	30/30
Ammonia (s/w)	0.6	<1	0.6	0.6	0.6
Practical	Y	Y	Y	Y	Y
Economical	Y	Y	Y	N	N
Life Cycle Cost*	$3,644,600	$3,494,900	$3,600,100	$6,085,00	$4,548,700
Ratio	1:1.04	1:1	1:1.03	1:1.74	1:1.30

* Life cycle cost at 20 year design life and 5% interest

The proposed technology will provide less-degrading Preferred Alternative Effluent Limits (PELs) for BOD and ammonia. The selected alternatives can also likely achieve an effluent quality with TSS concentrations lower than the 30/30 limits proposed; however, in order to guarantee the facility will consistently meet these lower limits under all operating conditions the vendor specified an added filtration process. The cost of the additional filtration required to ensure compliance with TSS limits of 10 mg/L monthly average and 15 mg/L weekly average was estimated to be approximately $200,000. As there is no in-stream standard for TSS and at the proposed effluent concentration TSS is not expected to impact beneficial uses, TSS is not being evaluated as a pollutant of concern. Therefore, requiring an extra filtration step is not necessary in this setting.

5.4.1. REGIONALIZATION ALTERATIVE

Within Section II B 1. of the AIP, discussion of the potential for discharge to a regional wastewater collection system is mentioned. The applicant provided discussion of this alternative. The alternatives analysis mentions four possible systems for connection listed below in Table 2.

Table 2: Selected Warren County Wastewater Treatment Systems

System No.	Community	Design Flow (MGD)	Actual Flow (MGD)	Distance, miles
MO-0023191	Wright City South	0.500	0.300	4.5
MO-0091529	Lake Sherwood	0.350	0.336	7.2
MO-0087912	Warrenton	3.20	1.40	7.3
MO-0044113	Marthasville	0.120	0.093	9.4

Lake Sherwood and Marthasville were both deemed impractical as they do not have sufficient excess capacity to accept more wastewater. Wright City South was deemed impractical as it is an aerated lagoon system, which may require upgrades to meet more stringent ammonia limits. Although Warrenton appears to have the necessary excess capacity to accept additional wastewater, the cost of constructing 7.3 miles of sewer mains and operating the lift stations make this option cost prohibitive. Additionally, negotiations for a treatment agreement and easement acquisition requirements make this option impractical. Therefore, regionalization was not further pursued.

5.3.2 LOSING STREAM ALTERATIVE DISCHARGE LOCATION

Under 10 CSR 20-7.015(4) (A), *discharges to losing stream shall be permitted only after other alternatives including land application, discharge to gaining stream and connection to a regional facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.*
The facility does not discharge to a losing stream segment and will not discharge within 2 miles of a losing stream segment.

5.3.3 SOCIAL, ECONOMIC, AND ENVIRONMENTAL IMPORTANCE EVALUATION

While the facility's average flow over the past five years is approximately 0.029 MGD, peak flows upwards of 0.150 MGD have been experienced on weekends and holidays. Increasing the facility's design flow and flow equalization capabilities will allow the facility to handle the fluctuations in flow that are typical of a lake community. Additionally, the increased capacity should help prevent sewer system overflows, which can have negative environmental impacts.

The affected community was identified as Innsbrook, MO and the surrounding area in Warren County. The Innsbrook community attracts primarily retired people, many of whom have a limited income. According to the 2010 U.S. Census, of the 552 residents of the Village of Innsbrook approximately 47.8 percent are 65 years and over. Increasing the capacity of the Innsbrook Estate's WWTF will increase the number of lots available, which will add to the economic base of the region. New housing would help increase the community tax base and would be generally supportive of economic growth.

6. GENERAL ASSUMPTIONS OF THE WATER QUALITY AND ANTIDEGRADATION REVIEW

1. A Water Quality and Antidegradation Review (WQAR) assumes that [10 CSR 20-6.010(3) Continuing Authorities and 10 CSR 20-6.010(4) (D), consideration for no discharge] has been or will be addressed in a Missouri State Operating Permit or Construction Permit Application.
2. A WQAR does not indicate approval or disapproval of alternative analysis as per [10 CSR 20-7.015(4) Losing Streams], and/or any section of the effluent regulations.
3. Changes to Federal and State Regulations made after the drafting of this WQAR may alter Water Quality Based Effluent Limits (WQBEL).
4. Effluent limitations derived from Federal or Missouri State Regulations (FSR) may be WQBEL or Effluent Limit Guidelines (ELG).
5. WQBEL supersede ELG only when they are more stringent. Mass limits derived from technology based limits are still appropriate.
6. A WQAR does not allow discharges to waters of the state, and shall not be construed as a National Pollution Discharge Elimination System or Missouri State Operating Permit to discharge or a permit to construct, modify, or upgrade.
7. Limitations and other requirements in a WQAR may change as Water Quality Standards, Methodology, and Implementation procedures change.
8. Nothing in this WQAR removes any obligations to comply with county or other local ordinances or restrictions.
9. If the proposed treatment technology is not covered in 10 CSR 20-8 Design Guides, the treatment process may be considered a new technology. As a new technology, the permittee will need to work with the review engineer to ensure equipment is sized properly. The operating permit may contain additional requirements to evaluate the effectiveness of the technology once the facility is in operation. This Antidegradation Review is based on the information provided by the facility and is not a comprehensive review of the proposed treatment technology. If the review engineer determines the proposed technology will not consistently meet proposed effluent limits, the permittee will be required to revise their Antidegradation Report.

7. Mixing Considerations

Mixing Zone (MZ): Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(a)].

Zone of Initial Dilution (ZID): Not Allowed [10 CSR 20-7.031(5)(A)4.B.(I)(b)]

8. Permit Limits and Monitoring Information

Wasteload Allocation Study Conducted (Y or N):	N	Use Attainability Analysis Conducted (Y or N):	N	Whole Body Contact Use Retained (Y or N):	Y

OUTFALL #001

Wet Test (Y or N): N Frequency: N/A AEC: N/A Method: N/A

Table 3. Effluent Limits Outfall 001

Parameter	Units	Daily Maximum	Weekly Average	Monthly Average	Basis for Limit (Note 2)	Monitoring Frequency
Flow	MGD	*		*	FSR	Once/Month
Biochemical Oxygen Demand$_5$	MG/L		15	10	PEL	Once/Month
Total Suspended Solids	MG/L		30	30	PEL	Once/Month
pH	SU	6.5–9.0		6.5 – 9.0	FSR	Once/Month
Ammonia as N (Apr 1 – Sept 30)	MG/L	1.7		0.6	PEL	Once/Month
Ammonia as N (Oct 1 – Mar 31)	MG/L	5.6		2.1	PEL	Once/Month
Escherichia coliform (*E. coli*)	Note 1	1030**		206**	FSR	Once/Week
Oil and Grease	MG/L	15		10	FSR	Once/Month
Total Nitrogen	MG/L	*		*	FSR	Once/Quarter
Total Phosphorus	MG/L	*		*	FSR	Once/Quarter

Note 1 – Colonies/100 mL
Note 2– Water Quality-based Effluent Limitation – WQBEL; or Minimally Degrading Effluent Limit – MDEL; or Preferred Alternative Effluent Limit – PEL; or Technology-based Effluent Limit – TBEL; or No Degradation effluent Limit – NDEL; or Federal/State Regulation – FSR; or Not Applicable – N/A.
Also, please see the **General Assumptions of the WQAR #4 & #5.**

* Monitoring requirements only.

** The Monthly and Weekly Average for *E. coli* shall be reported as a Geometric Mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

9. Receiving Water Monitoring Requirements

No receiving water monitoring requirements recommended at this time.

10. Derivation and Discussion of Limits

Wasteload allocations and limits were calculated using two methods:

1) Water quality-based – Using water quality criteria or water quality model results and the dilution equation below:

$$C = \frac{(C_s \times Q_s) + (C_e \times Q_e)}{(Q_e + Q_s)}$$ (EPA/505/2-90-001, Section 4.5.5)

Where C = downstream concentration
C_s = upstream concentration
Q_s = upstream flow
C_e = effluent concentration
Q_e = effluent flow

Chronic wasteload allocations were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and stream volume of flow at the edge of the mixing zone (MZ). Acute wasteload allocations were determined using applicable water quality criteria (CMC: criteria maximum concentration) and stream volume of flow at the edge of the zone of initial dilution (ZID).

Water quality-based maximum daily and average monthly effluent limitations were calculated using methods and procedures outlined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

2) Alternative Analysis-based – Using the preferred alternative's treatment capacity for conventional pollutants such as BOD_5 and TSS that are provided by the consultant as the WLA, the significantly-degrading effluent average monthly and average weekly limits are determined by applying the WLA as the average monthly (AML) and multiplying the AML by 1.5 to derive the average weekly limit (AWL). For toxic and nonconventional pollutant such as ammonia, the treatment capacity is applied as the significantly-degrading effluent monthly average (AML). A maximum daily can be derived by dividing the AML by 1.19 to determine the long-term average (LTA). The LTA is then multiplied by 3.11 to obtain the maximum daily limitation. This is an accepted procedure that is defined in USEPA's "Technical Support Document For Water Quality-based Toxics Control" (EPA/505/2-90-001).

Note: Significantly-degrading effluent limits have been based on the authority included in Section III. Permit Consideration of the AIP. Also under 40 CFR 133.105, permitting authorities shall require more stringent limitations than equivalent to secondary treatment limitations for 1) existing facilities if the permitting authority determines that the 30-day average and 7-day average BOD_5 and TSS effluent values could be achievable through proper operation and maintenance of the treatment works, and 2) new facilities if the permitting authority determines that the 30-day average and 7-day average BOD_5 and TSS effluent values could be achievable through proper operation and maintenance of the treatment works, considering the design capability of the treatment process.

10.1. OUTFALL #001 – MAIN FACILITY OUTFALL

10.2. LIMIT DERIVATION

- **Flow**. In accordance with [40 CFR Part 122.44(i)(1)(ii)] the volume of effluent discharged from each outfall is needed to assure compliance with permitted effluent limitations. If the permittee is unable to obtain effluent flow, then it is the responsibility of the permittee to inform the Department, which may require the submittal of an operating permit modification.

- **Biochemical Oxygen Demand (BOD_5)**. BOD_5 limits of 10 mg/L monthly average, 15 mg/L average weekly limits were proposed.

  To protect beneficial uses within Charrette Creek, the consultant performed a stream evaluation, which included QUAL2K Analysis. Effluent limits of 30 BOD mg/L, 30 TSS mg/L, and 1.9 ammonia mg/L were used as input to the analysis. The modeled lowest dissolved oxygen or critical dissolved oxygen sag was above 8 mg/L.

As a result of this analysis, Department staff concludes that the above mentioned effluent limits are protective of beneficial uses and existing water quality.

- **Total Suspended Solids (TSS).** 30 mg/L monthly average, 30 mg/L average weekly limits were proposed and are protective of beneficial uses.

- **pH**. – 6.5-9.0 SU. Technology based effluent limitations of 6.0-9.0 SU [10 CSR 20-7.015] are not protective of the Water Quality Standard, which states that water contaminants shall not cause pH to be outside the range of 6.5-9.0 SU. No mixing zone is allowed due to the classification of the receiving stream, therefore the water quality standard must be met at the outfall.

- **Total Ammonia Nitrogen**. The facility did a technology evaluation as part of the submitted Antidegradation Review and selected a treatment technology that meets the economic efficiency and practicability evaluations under the alternatives analysis. In addition, the selected technology could meet the proposed 2013 EPA Ammonia criteria (see Notice to Permittee below). The facility elected to build a treatment plant that meets the expected criteria and that provides a high level of treatment to potentially reduce the need to upgrade in the near future. See Appendix D for further discussion on the preferred alternative effluent limits.

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	1.7	0.6
Winter	5.6	2.1

- ***Escherichia coli (E. coli)***. Monthly average of 206 per 100 mL as a geometric mean and Daily Maximum of 1030 during the recreational season (April 1 – October 31), to protect Whole Body Contact Recreation (B) designated use of the receiving stream, as per 10 CSR 20-7.031(5)(C). An effluent limit for both monthly average and daily maximum is required by 40 CFR 122.45(d).

  For facilities greater than 100,00 gpd: At a minimum, weekly monitoring is required during the recreational season (April 1 – October 31), with compliance to be determined by calculating the geometric mean of all samples collected during the reporting period (samples collected during the calendar week for the weekly average, and samples collected during the calendar month for the monthly average). The weekly average requirement is consistent with EPA federal regulation 40 CFR 122.45(d). Please see **GENERAL ASSUMPTIONS OF THE WQAR #7.**

- **Oil & Grease**. Conventional pollutant, [10 CSR 20-7.031, Table A]. Effluent limitation for protection of aquatic life; 10 mg/L monthly average, 15 mg/L daily maximum.

- **Total Phosphorus and Total Nitrogen**. Monitoring required for facilities greater than 100,000 gpd design flow per 10 CSR 20-7.015(9)(D)7. Once per quarter sampling for one permit cycle or up to 5 years if permit cycle is less than 5 years.

11. Antidegradation Review Preliminary Determination

The proposed new facility discharge, Innsbrook Estates WWTF, 0.150 MGD will result in significant degradation of the segment identified in Charrette Creek. Alternative 2, modular fixed activated sludge treatment, was determined to be the base case technology (lowest cost alternative that meets technology and water quality based effluent limitations). The cost effectiveness of the other technologies were evaluated, and Alternative 3, oxidation ditch, was found to be cost effective and was determined to be the preferred alternative.

It has also been determined that the other treatment options presented (extended aeration, modular fixed activated sludge, and moving bed biological reactor) may also be considered reasonable alternatives provided they are designed to be capable of meeting the effluent limitations developed based on the preferred alternative. If any of these options are selected, you may proceed with the appropriate facility plan, construction permit application, or other future submittals without the need to modify this Antidegradation review document.

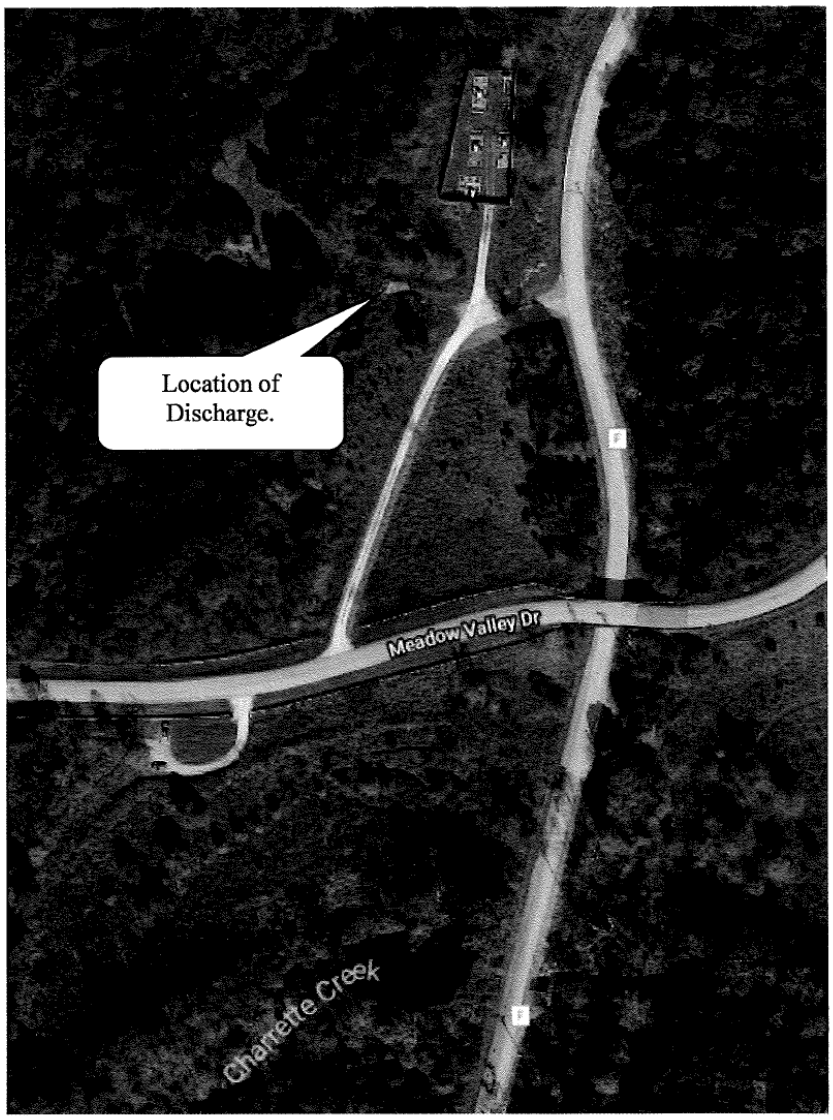
Additionally, an alternative discharge site was evaluated as part of Alternative 4, which involves the construction of a new 82,000 gpd wastewater treatment plant in the southwest portion of the Innsbrook development. As the proposed treatment plant in this location would also discharge to Charrette Creek and fall under a Tier 2 level review, this alternative may also be considered reasonable provided the treatment plant is designed to be capable of meeting the effluent limitations based on the preferred alternative.

Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to attain the highest statutory and regulatory requirements. The Department has determined that the submitted review is sufficient and meets the requirements of the AIP. No further analysis is needed for this discharge.

Reviewer: Ellen Modglin
Date: November 2018
Unit Chief: John Rustige, P.E. JR

Appendix A: Map of Discharge Location

(A USGS topographic map can be obtained on the web at http://www.dnr.mo.gov/internetmapviewer/.)



Appendix B: Natural Heritage Review

(Applicant must check for rare and endangered aquatic species that may be affected by the discharge by using the following web link: http://mdcgis.mdc.mo.gov/heritage/. The results of the survey must indicate whether there are known endangered species on the site.)

Missouri Department of Conservation

Missouri Department of Conservation's Mission is to protect and manage the forest, fish, and wildlife resources of the state and to facilitate and provide opportunities for all citizens to use, enjoy and learn about these resources

Natural Heritage Review Level Three Report: Species Listed Under the Federal Endangered Species Act

There are records for species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

Foreword: Thank you for accessing the Missouri Natural Heritage Review Website developed by the Missouri Department of Conservation with assistance from the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, Missouri Department of Transportation and NatureServe. The purpose of this website is to provide information to federal, state and local agencies, organizations, municipalities, corporations and consultants regarding sensitive fish, wildlife, plants, natural communities and habitats to assist in planning, designing and permitting stages of projects.

PROJECT INFORMATION

Project Name and ID Number: Innsbrook WWTP Expansion #4020
User Project Number: 18-7182
Project Description: Expansion of existing wastewater treatment plant T46N R01W Section 8 38°45'38" N, 91°02'42"W Discharge into Charrette Creek (Operating Permit MO-0098906) Warren County
Project Type: Waste Transfer, Treatment, and Disposal, Liquid waste/Effluent, Wastewater treatment plant, Construction or expansion
Contact Person: Ginny Bretzke
Contact Information: gbretzke@cochraneng.com or 636-684-0540

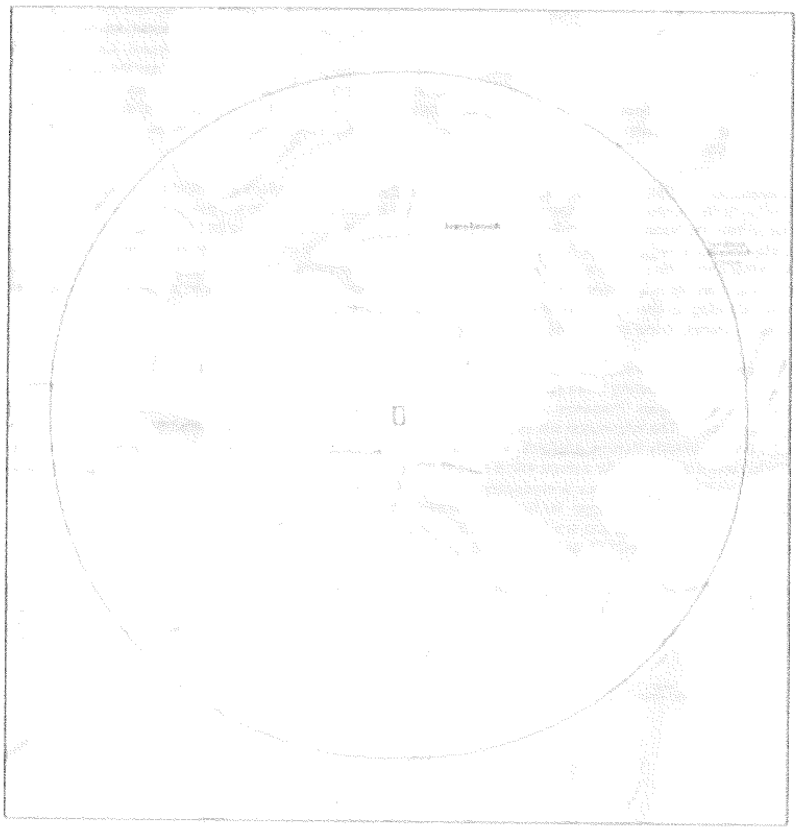
Disclaimer: The NATURAL HERITAGE REVIEW REPORT produced by this website identifies if a species tracked by the Natural Heritage Program is known to occur within or near the area submitted for your project, and shares suggested recommendations on ways to avoid or minimize project impacts to sensitive species or special habitats. If an occurrence record is present, or the proposed project might affect federally listed species, the user must contact the Department of Conservation or U.S. Fish and Wildlife Service for more information. The Natural Heritage Program tracks occurrences of sensitive species and natural communities where the species or natural community has been found. Lack of an occurrence record does not mean that a sensitive plant, animal or natural community is not present on or near the project area. Depending on the project, current habitat conditions, and geographic location in the state, surveys may be necessary. Additionally, because land use conditions change and animals move, the existence of an occurrence record does not mean the species/habitat is still present. Therefore, Reports include information about records near but not necessarily on the project site.

The Natural Heritage Report is not a site clearance letter for the project. It provides an indication of whether or not public lands and sensitive resources are known to be (or are likely to be) located close to the proposed project. Incorporating information from the Natural Heritage Program into project plans is an important step that can help reduce unnecessary impacts to Missouri's sensitive fish, forest and wildlife resources. However, the Natural Heritage Program is only one reference that should be used to evaluate potential adverse project impacts. Other types of information, such as wetland and soils maps and on-site inspections or surveys, should be considered. Reviewing current landscape and habitat information, and species' biological characteristics would additionally ensure that Missouri Species of Conservation Concern are appropriately identified and addressed in planning efforts.

U.S. Fish and Wildlife Service – Endangered Species Act (ESA) Coordination: Lack of a Natural Heritage Program occurrence record for federally listed species in your project area does not mean the species is not present, as the area may never have been surveyed. Presence of a Natural Heritage Program occurrence record does not mean the project will result in negative impacts. The information within this report is not intended to replace Endangered Species Act consultation with the U.S. Fish and Wildlife Service (USFWS) for listed species. Direct contact with the USFWS may be necessary to complete consultation and it is required for actions with a federal connection, such as federal funding or a federal permit; direct contact is also required if ESA concurrence is necessary. Visit the USFWS information for Planning and Conservation (IPaC) website at https://ecos.fws.gov/ipac/ for further information. This site was developed to help streamline the USFWS environmental review process and is a first step in ESA coordination. The Columbia Missouri Ecological Field Services Office may be reached at 573-234-2132, or by mail at 101 Park DeVille Drive, Suite A, Columbia, MO 65203.

Transportation Projects: If the project involves the use of Federal Highway Administration transportation funds, these recommendations may not fulfill all contract requirements. Please contact the Missouri Department of Transportation at 573-526-4778 or www.modot.mo.gov/ehp/index.htm for additional information on recommendations.

Innsbrook WWTP Expansion



March 7, 2018

1:19,225

Project Boundary

Buffered Project Boundary

Species or Communities of Conservation Concern within the Area:

There are records for species listed under the Federal Endangered Species Act, and possibly also records for species listed Endangered by the state, or Missouri Species and/or Natural Communities of Conservation Concern within or near the the defined Project Area. Please contact the U.S. Fish and Wildlife Service and the Missouri Department of Conservation for further coordination.

MDC Natural Heritage Review
Resource Science Division
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182
NaturalHeritageReview@mdc.mo.gov

U.S. Fish and Wildlife Service
Ecological Service
101 Park Deville Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Other Special Search Results:

No results have been identified for this project location.

Project Type Recommendations:

Waste Transfer, Treatment and Disposal -Wastewater treatment plant: New or Maintenance; Clean Water Act permits issued by other agencies regulate both construction and operation of wastewater systems, and provide many important protections for fish and wildlife resources throughout the project area and at some distance downstream. Fish and wildlife almost always benefit when unnatural pollutants are removed from water, and concerns are minimal if construction is managed to minimize erosion and sedimentation/runoff to nearby streams and lakes, including adherence to any "Clean Water Permit" conditions.

Revegetation of disturbed areas is recommended to minimize erosion, as is restoration with of native plant species compatible with the local landscape and for wildlife needs. Annuals like ryegrass may be combined with native perennials for quicker green-up. Avoid aggressive exotic perennials such as crown vetch and sericea lespedeza.

Management Recommendations for Construction Projects Affecting Missouri Streams and Rivers is a Conservation Department publication available at http://mdc.mo.gov/sites/default/files/resources/2013/02/constprojnearstreams_2013.pdf

Project Location and/or Species Recommendations:

Endangered Species Act Coordination - Indiana bats *(Myotis sodalis,* federal- and state-listed endangered) and **Northern long-eared bats** (*Myotis septentrionalis,* federal-listed threatened) may occur near the project area. Both of these species of bats hibernate during winter months in caves and mines. During the summer months, they roost and raise young under the bark of trees in wooded areas, often riparian forests and upland forests near perennial streams. During project activities, avoid degrading stream quality and where possible leave snags standing and preserve mature forest canopy. Do not enter caves known to harbor Indiana bats or Northern long-eared bats, especially from September to April. **If any trees need to be removed for your project, please contact the U.S. Fish and Wildlife Service (Ecological Services, 101 Park Deville Drive, Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132 ext. 100 for Ecological Services) for further coordination under the Endangered Species Act.**

Invasive exotic species are a significant issue for fish, wildlife and agriculture in Missouri. Seeds, eggs, and larvae may be moved to new sites on boats or construction equipment. Please inspect and clean equipment thoroughly before moving between project sites. See http://mdc.mo.gov/9033 for more information.

- Remove any mud, soil, trash, plants or animals from equipment before leaving any water body or work area.
- Drain water from boats and machinery that have operated in water, checking motor cavities, live-well, bilge and transom wells, tracks, buckets, and any other water reservoirs.
- When possible, wash and rinse equipment thoroughly with hard spray or HOT water (?140° F, typically available at do-it-yourself car wash sites), and dry in the hot sun before using again.

Streams and Wetlands – Clean Water Act Permits: Streams and wetlands in the project area should be protected from activities that degrade habitat conditions. For example, soil erosion, water pollution, placement of fill, dredging, in-stream activities, and riparian corridor removal, can modify or diminish aquatic habitats. Streams and wetlands may be protected under the Clean Water Act and require a permit for any activities that result in fill or other modifications to the site. Conditions provided within the U.S. Army Corps of Engineers (USACE) Clean Water Act Section 404 permit (http://www.nwk.usace.army.mil/Missions/RegulatoryBranch.aspx) and the Missouri Department of Natural Resources (DNR) issued Clean Water Act Section 401 Water Quality Certification (http://dnr.mo.gov/env/wpp/401/index.html) if required should help minimize impacts to the aquatic organisms and aquatic habitat within the area. Depending on your project type, additional permits may be required by the Missouri Department of Natural Resources, such as permits for stormwater, wastewater treatment facilities, and confined animal feeding operations. Visit http://dnr.mo.gov/env/wpp/permits/index.html for more information on DNR permits. Visit both the USACE and DNR for more information on Clean Water Act permitting.

For further coordination with the Missouri Department of Conservation and the U.S. Fish and Wildlife Services, please see the contact information below

MDC Natural Heritage Review
Resource Science Division
P.O. Box 180
Jefferson City, MO
65102-0180
Phone: 573-522-4115 ext. 3182
NaturalHeritageReview@mdc.mo.gov

U.S. Fish and Wildlife Service
Ecological Service
101 Park DeVille Drive
Suite A
Columbia, MO
65203-0007
Phone: 573-234-2132

Miscellaneous Information

FEDERAL Concerns are species/habitats protected under the Federal Endangered Species Act and that have been known near enough to the project site to warrant consideration. For these, project managers must contact the U.S. Fish and Wildlife Service Ecological Services (101 Park DeVille Drive Suite A, Columbia, Missouri 65203-0007; Phone 573-234-2132; Fax 573-234-2181) for consultation.

STATE Concerns are species/habitats known to exist near enough to the project site to warrant concern and that are protected under the Wildlife Code of Missouri (RSMo 3 CSR 1 0). "State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, with requirements expressed in the Missouri Wildlife Code, rule 3CSR 1 0-4 111. Species tracked by the Natural Heritage Program have a "State Rank" which is a numeric rank of relative rarity. Species tracked by this program and all native Missouri wildlife are protected under rule 3CSR 10-4.110 General Provisions of the Wildlife Code.

Additional information on Missouri's sensitive species may be found at http://mdc.mo.gov/discover-nature/field-guide/endangered-species. Detailed information about the animals and some plants mentioned may be accessed at http://mdc4.mdc.mo.gov/applications/mofwis/mofwis_search1.aspx. If you would like printed copies of best management practices cited as internet URLs, please contact the Missouri Department of Conservation.

Appendix C: Charrette Creek Stream Evaluation

(*A plot of DO over distance and/or the model input summaries and model results should be included in the appendix.*)

Stream Evaluation

Village of Innsbrook
Warren County, Missouri

Innsbrook

Charrette Creek
February 7, 2006
Revised July 31, 2006

Presented to:

Village of Innsbrook
Warren County, Missouri

Date

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State of Missouri
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Cochran Project No. 05-2444

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SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

1. Charrette Creek in Warren County resembles a typical Missouri stream. The characteristics of the stream deviate very little from that of other streams common to this area.

2. Charrette Creek is considered a Class "C" stream upstream of Schuetzen Ground Road and Class "P" from Schuetzen Ground Road to its confluent with the Missouri River. The tributary to which the existing treatment facility discharges is a Class U stream.

3. A stream must maintain a dissolved oxygen level of 5 mg/L.

4. Data and samples were gathered on November 14, 2005. The temperature was 45°F and cloudy.

5. A treatment facility of the Village of Innsbrook is proposed for Charrette Creek. The flow of the facility will be approximately 140,000 gpd.

6. Oakview Estates currently maintains a treatment facility downstream of the proposed facility. The design flow for this plant is 23,000 gpd.

7. A QUAL2K Analysis at Charrette Creek was performed taking into account several factors including the existing facilities, existing stream condition and surrounding environmental information. Using sound engineering practices several assumptions were made as to the characteristics of this data.

8. The following limits are proposed for the new treatment facility:

CALCULATION TABLE OF MONTHLY LIMITS
EXISTING LOCATION (DISCHARGE POINT "A")

BOD (mg/L)	30
TSS (mg/L)	30
PH (s.u.)	6 to 9
FECAL COLI FORMS (#100 ML)	400
AMMONIA (mg/L)	1.9 Summer, 3.7 Winter

STRACK CHURCH ROAD
LOCATION (PROPOSED DISCHARGE POINT "B")

BOD (mg/L)	45
TSS (mg/L)	45
PH (s.u.)	6 to 9
FECAL COLI FORMS (#100 ML)	400
AMMONIA (mg/L)	1.9 Summer, 3.7 Winter

INTRODUCTION

The Village of Innsbrook is currently in the process of reviewing its sanitary sewer collection and treatment facility. The treatment facility currently operates under NPDES Permit Number MO-0098906. This facility is an extended air facility updated in 2004 with a design capacity of 68,000 gpd. The Village is constantly expanding its limits and plans are in the works to acquire large areas of land surrounding the current borders.

At this time the Village has asked Cochran to evaluate Charrette Creek for the water quality and to model the affects of an expanded treatment facility. At this time the Village is looking at two locations. The first being at the existing facility and the second at the crossing of Charrette Creek and Strack Church Road. This report will provide information as to the quality of water in Charette Creek prior to and after construction of a new treatment facility at either location. Water quality samples, pictures and data were taken along the creek to provide information on its existing status. The effluent limit of the proposed treatment facility will be discussed in this report. All pertinent information was used, along with calculations using the EPA's QUAL2K Software to propose these limits.

In January 2000, Cochran performed an Engineering Report in which it was recommended a 94,470 gpd lagoon be placed near Strack Church Road at Charrette Creek for future use. Because of the rate growth and the acquisition at adjacent land, the Village is now realizing it may be time to expand. As stated previously, two (2) locations are currently being analyzed for the new treatment facility. The existing treatment plant located along Highway F could be expanded. However, a lagoon placed near the intersection of Charrette Creek and Strack Church Road would be able to treat a larger drainage area.

EXISTING CONDITIONS AND DATA COLLECTED

Samples were taken at three points along the Charrette Creek. One just downstream of a treatment facility owned by the Village of Innsbrook, one at Strack Church Road and one along Schuetzen Ground Road. A topographic map depicting these locations follow this Section. Samples were taken for BOD, ammonia and fecal coli forms. Also measured were pH, dissolved oxygen and temperature. A dissolved oxygen meter was used to measure dissolved oxygen, all other results were sampled and measured in a laboratory. The following pictures were taken along the creek. Also measured at each location were latitude and longitude using a GPS device. This information is given with the pictures shown. Sample locations can be found on the following U.S.G.S. Map. The following table displays the data found:

SAMPLE POINT DATA TABLE

SAMPLE POINT	TIME	TEMPERATURE	pH	DISSOLVED OXYGEN (mg/L)	BOD (mg/L)	AMMONIA (mg/L)	SUSPENED SOLIDS (mg/L)	FECAL COLI FORMS (100 #/L)
1	11:13 a.m.	49°F (9.7°C)	7.2	7.9	<2	0.869	2.5	6
2	11:31 a.m.	51°F (10.7°C)	7.5	11.4	<2	0.129	<1	64
3	12:20 p.m.	51°F (10.8°C)	7.6	9.1	<2	0.157	1.8	24

All samples were taken on November 14, 2005. The weather was cloudy and 45°F (7.2°C).

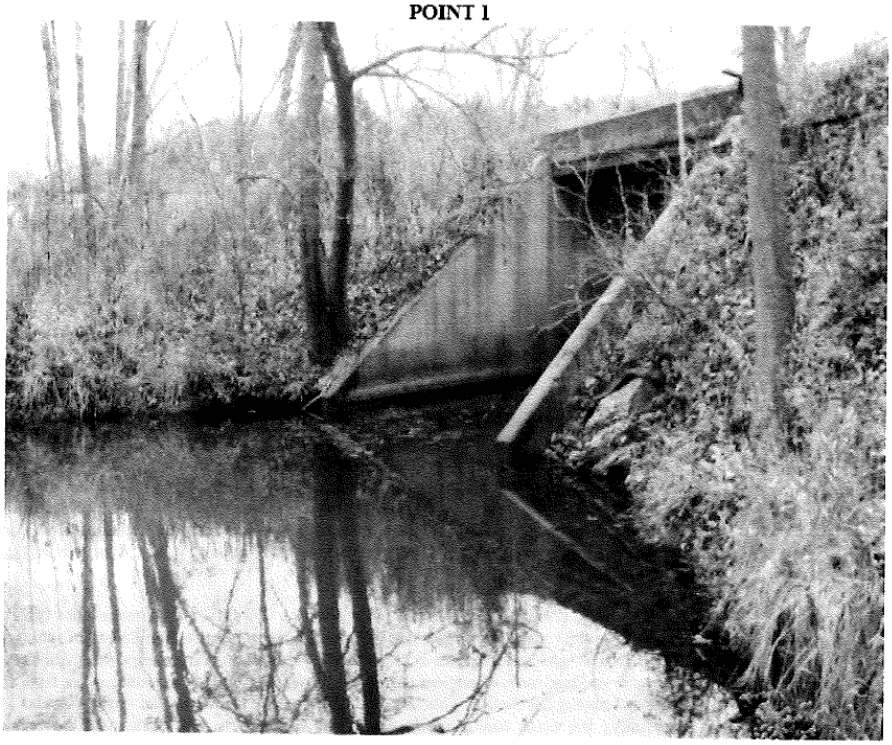
In some areas Charrette Creek is considered a losing stream by the Missouri Department of Natural Resources Division of Geology and Land Survey. Therefore, a geohydrologic evaluation of both locations has been conducted for the new Innsbrook Treatment Facility. These evaluations showed no sign of a losing stream existing in these reaches. The need to design this facility for a losing stream was therefore not considered necessary. Copies of these evaluations can be found in the Appendix of this report.

Pictures of Charrette Creek as it exists today follow. From walking the stream, the stream looks typical of a Missouri Creek. In several areas the stream bottom is rocky, even at times solid areas of rock are exposed. In many other areas soil and sediment is present. Gravel bars can be found periodically along the reach. In many places, large rock formations adjoin the creek and provide aeration in the form of waterfalls for any water entering the stream. This may aid in retaining higher dissolved oxygen levels. In many places rocks lining the creek cause ripples that could also add to the aeration of the water.

A USGS map is provided to help better describe the areas in which samples were taken. Latitude and longitude are also given on the provided map.

SAMPLE POINT NO. 1
N38° 45.46'
W091° 02.708'
T46N R1N SE ¼ Sec 8

POINT 1



Samples were taken in this pool of the existing Village Treatment Facility. This picture is looking up Charrette Creek. One option is to expand the existing facility at this site. Lake Aspen Dam is upstream of this site.

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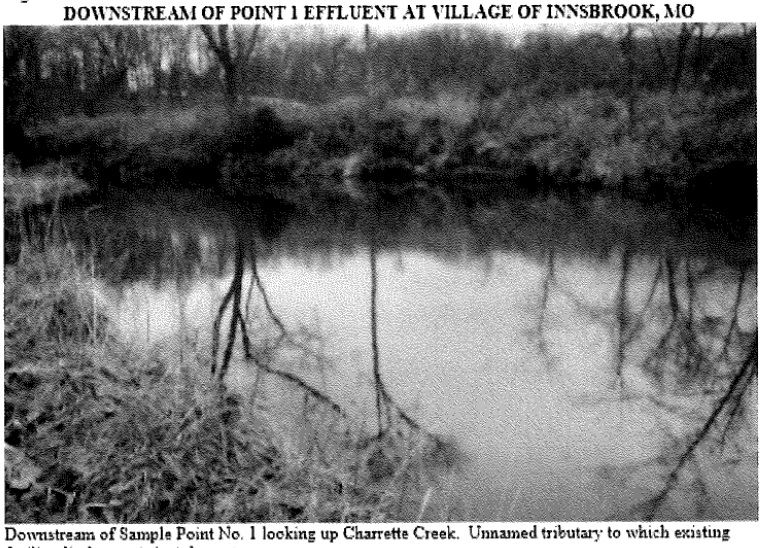
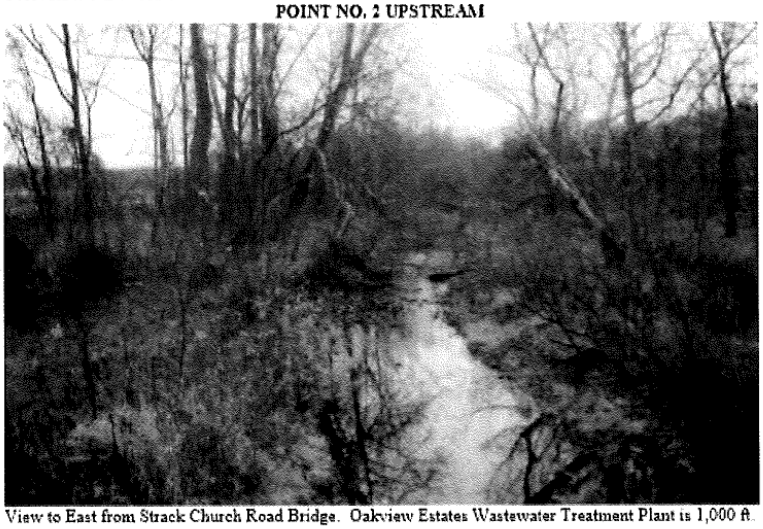
DOWNSTREAM OF POINT 1 EFFLUENT AT VILLAGE OF INNSBROOK, MO



Downstream of Sample Point No. 1 looking up Charrette Creek. Unnamed tributary to which existing facility discharges is just downstream.

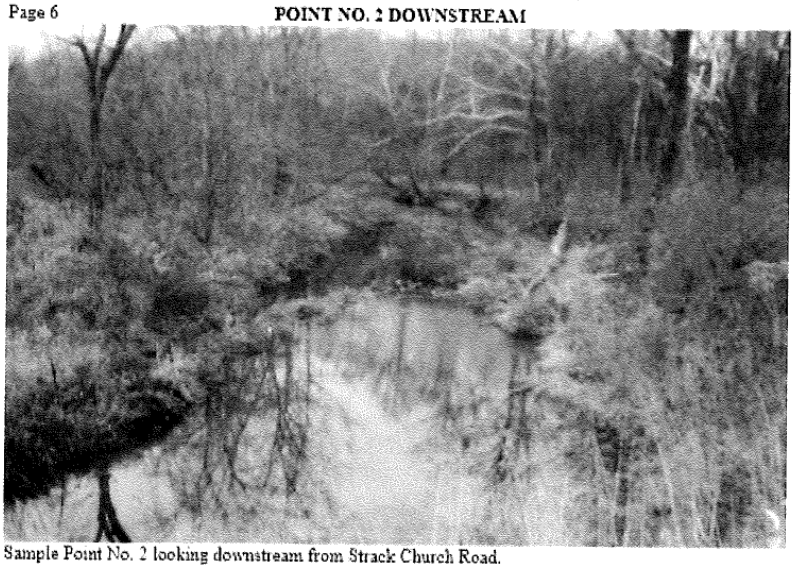
SAMPLE POINT NO. 2
N38° 45.055'
W091° 03.620'
T46N R1W NE ¼ Sec 18

POINT NO. 2 UPSTREAM



View to East from Strack Church Road Bridge. Oakview Estates Wastewater Treatment Plant is 1,000 ft. upstream.

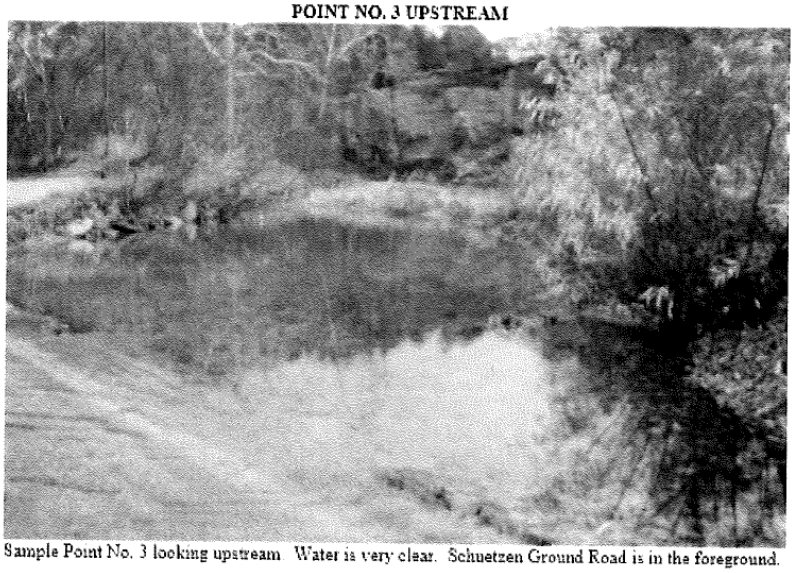
POINT NO. 2 DOWNSTREAM



Sample Point No. 2 looking downstream from Strack Church Road.

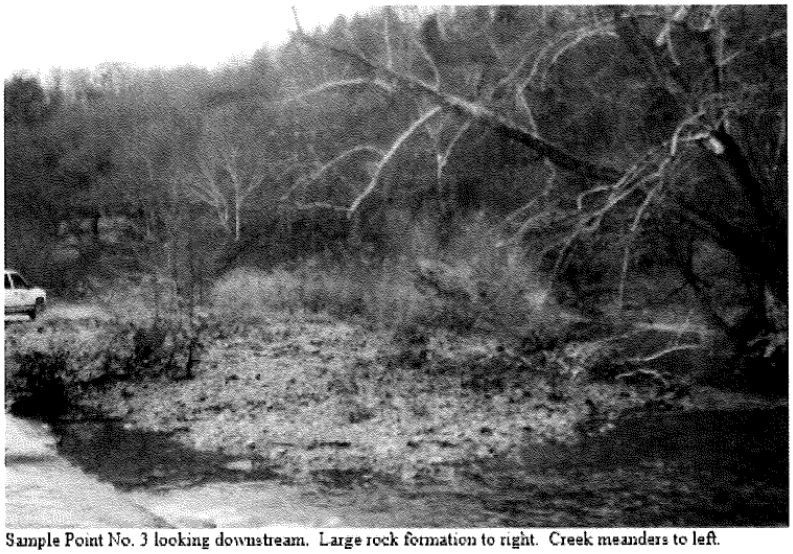
SAMPLE POINT NO. 3
N38° 43.332'
W91° 05.363'
T46N R2W NW ¼ Sec 25

POINT NO. 3 UPSTREAM



Sample Point No. 3 looking upstream. Water is very clear. Schuetzen Ground Road is in the foreground.

POINT NO. 3 DOWNSTREAM



Sample Point No. 3 looking downstream. Large rock formation to right. Creek meanders to left.

CALCULATIONS PERFORMED

QUAL2K is a river and stream water quality model (Chapra & Pelletier, 2003) which is an update to the QUAL2E model written by Brown and Barnwell in 1987. QUAL2K is available from the United States Environmental Protection Agency. This software is based on a Microsoft Excel spreadsheet format. It can be downloaded at www.epa.gov. QUAL2K utilizes several mass balance equations to perform its calculations. Many of these equations have been derived from variations of those found in EPA Document 440/4-86-015 "Technical Guidelines Manual for Performing Waste Load Allocations – Simplified Analytical Method for Determining NPDES Effluent Limitation for POTWs Discharging into Low-Flow Streams".

Data gathered on November 14, 2005 was entered into the QUAL2K software. Many factors were taken into consideration while entering information into the database of the software. Because the Oakview Estates is downstream of the proposed discharge point "A", it will have an effect on the oxygen relationship between a proposed treatment plant and Charrette Creek. This facility will discharge into the stream prior to the recovery of oxygen from a proposed discharge. QUAL2K allows the user to take these types of relationships into effect. Any treatment plant affecting the reach can be entered into the software as a point source of pollution.

Another factor that will affect the oxygen content of a stream is the prevalence of livestock along the creek. The existence of livestock was not evident from walking these reaches of the stream. Most areas surrounding these reaches of Charrette Creek consist of woods and open field. These fields may be used for hay or straw, however no signs of livestock exist. No diffuse sources have been modeled for this analysis.

Several engineering assumptions were made while inserting data into the database pertaining to the factors stated above. Many assumptions can be made using simple common sense, but do require a sound engineering judgment with proper justification.

Also considered during the model is existing point sources because the actual headwater flow and the proposed discharge point is minimal, Sample Point No. 1 has been enclosed as a point source using the field data found at this point. A flow of 0.100 cfs is assumed in Charrette Creek. The Oakview Estates Treatment Facility is located just upstream of Strack Church Road. The design capacity of this facility is 23,000 gpd. It consists of an extended air package facility. The monthly limits of this facility are 30 – BOD and 30 TSS. No ammonia limits exist. A copy of the NPDES Permit MO-0125181 is located in the Appendix. The weekly limits of 45 – BOD and 45 TSS are used to conservatively model this source.

Other information entered into the input database of the software were weather condition, including ambient air temperature, wind, cloud cover and dew point, stream hydraulic characteristics, channel slope, side slopes and Mannings n values (0.04 is recommended by the QUAL2K Manual). The stream was divided into four reaches, one reach between each sample point. Existing data is entered and plotted with calculated information.

HIGHWAY F LOCATION

The current Innsbrook Treatment Facility is located along Highway F, near the Aspen Lake Dam. This facility, upgraded in 2004, is an extended air package plant and is designed to treat 68,000 gpd. At this time this facility is large enough to treat all wastewater created by the Village, however expansion of the Village and growth within the existing Village limits are inevitable. It is therefore been decided that a new facility be evaluated.

If a facility was to be located near the existing treatment facility, we should analyze existing limits applied to the new facility. A copy of the existing NPDES permit is located in the Appendix.

STRACK CHURCH ROAD LOCATION

As recommended in the January 2000 Engineering Report, a facility located near the intersection of Strack Church Road and Charrette Creek should be analyzed. A facility at this location would be most ideal when looking at overall drainage area of the Village. An overview of the data and calculations performed can be found in the following Sections.

INTERPRETATION OF DATA

Calculations were performed using the QUALK2K Software for various BOD and suspended solids levels. An ammonia level of 1.9 mg/L was used for all analyses. BOD and TSS limits of 30 mg/L were used for Location A and limits of 45 mg/L were used for Location B.

Output for all these options follow in this report.

In all cases the critical sag point remaining above 8 mg/L. In no case, do the dissolved oxygen levels in Charrette Creek approach 5 mg/L. This probably occurs due to the low flows expected by our new facility compared to the flows realized in Charrette Creek itself.

If ammonia levels of 1.9 mg/L are maintained, the level of ammonia in Charrette Creek does not exceed 1.5 mg/L and stabilizes at less than 0.4 mg/L. Therefore, ammonia should be observed, however, should not cause levels in the stream to become dangerous.

At Sample Point No. 1, the unnamed tributary to which the current treatment facility discharges enters Charrette Creek. Discharge Point "A" is also proposed at this same location. The existing discharge actually occurs approximately 1,000 feet upstream into this unclassified stream. Because of the size of the treatment facility and the minimal flow at the unnamed tributary, it can be shown that the effluent of any treatment facility discharging 30 BOD mg/L, 30 TSS mg/L and 1.9 ppm of ammonia will not affect Charette Creek. In fact the dissolved oxygen level seen at Sample Point No. 1 is lowered most likely due to the presence of a lake effluent being near and a pooling of water occurring at this location. From discussions with Alan Moreau, MoDNR, and a draft from May 31, 2006 "Total Ammonia Nitrogen with Criteria Guidance", new ammonia criteria are currently being implemented for the State of Missouri. For an unclassified stream limits are 3.7 summer and 7.5 winter for maximum daily limits and 1.9 and 3.7 respectively for an average monthly limit. Date and figures showing this occurrence are located in the Appendix of this report.

CONCLUSION

In conclusion, several interpretations were run in the QUAL2K Software, using several different sets of limits for the proposed treatment facility. After evaluating these calculations, the range of BOD and ammonia limits used did not greatly affect the downstream water quality. A properly operated treatment facility should maintain the integrity of the stream. If a treatment facility is constructed at the existing location, it should be discharging a monthly average of 30 mg/L of BOD and 30 mg/L TSS, and pH should be maintained in the range of 6 to 9. Ammonia limits should not be set at this time, however, it should be monitored. Proper procedures should be implemented to maintain ammonia levels below 3.7 mg/L in the winter, and 1.9 mg/L in the summer as stated in 10CSR 20-7. However, if a facility is constructed at Location B, BOD and TSS limits of 45 mg/L will still maintain a quality stream.

CALCULATION TABLE OF MONTHLY LIMITS
EXISTING LOCATION (DISCHARGE POINT "A")

BOD (mg/L)	30
TSS (mg/L)	30
PH (s.u.)	6 to 9
FECAL COLI FORMS (#100 ML)	400
AMMONIA (mg/L)	1.9 Summer, 3.7 Winter

STRACK CHURCH ROAD
LOCATION (PROPOSED DISCHARGE POINT "B")

BOD (mg/L)	45
TSS (mg/L)	45
PH (s.u.)	6 to 9
FECAL COLI FORMS (#100 ML)	400
AMMONIA (mg/L)	1.9 Summer, 3.7 Winter

Appendix D: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant, Innsbrook Estates. Department staff determined that changes must be made to the information contained within these attachments. The following were modified and can be found within the Department WQAR:

1) Attachment A: The levels of treatment attainable for BOD_5, TSS, and Ammonia were revised within the submitted antidegradation report based on the memorandum below.

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MEMORANDUM

TO: Ellen Modglin
Missouri Department of Natural Resources
Water Protection Program

FROM: Ginny Bretzke

DATE: November 1, 2018

RE: Innsbrook Antidegradation Review Request

The purpose of this memorandum is to follow up on our phone conversation on October 11, 2018, with you, John Rustige and Refaat Mefrakis from your office and Brian Gentges and me from Cochran. During the call we discussed whether the technologies evaluated in the Antidegradation Review Request Report (dated 08-08-2018, with Addenda 08-14-18 and 10-03-18) could consistently meet effluent limits lower than the Water Quality Standards, based on the capabilities of treatment processes. We indicated some of the operational concerns in meeting theoretical treatment levels for technologies in this situation, due to the significant fluctuations in flows seasonally and on weekends, as well as the need for storing excess wastewater following peak holiday/weekend events.

As a follow up to our phone conversation, we have re-contacted equipment suppliers for the technologies considered, to clarify what levels can be met. They provided the following information:

- BOD: For all technologies, 15 mg/L avg. weekly; 10 mg/L avg. monthly is attainable.
- TSS: For all technologies, 30 mg/L avg. weekly; 30 mg/L avg. monthly is attainable. For levels approaching 15 mg/L, an extra filtration step would likely be needed to reach these limits.
- Ammonia: 0.6 mg/L (summer) could be met for Extended Aeration, Oxidation Ditch, or MBBR. The FAST system was designed based on Ammonia levels < 1 mg/L.

These limits are based on the options described for new or expanded treatment processes to increase the Design Flow to 150,000 gallon per day, as described in the Antidegradation Review Request Report.

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MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM

WATER QUALITY REVIEW ASSISTANCE/ ANTIDEGRADATION REVIEW REQUEST

PRE-CONSTRUCTION REVIEW FOR PROTECTION OF BENEFICIAL USES AND DEVELOPING EFFLUENT LIMITS

RECEIVED

For Office Use Only	
CHECK NUMBER	
DATE RECEIVED	FEE SUBMITTED

TYPE OF PROJECT ☐ Grant ☐ SRF Loan ☑ All Other Projects

REQUESTER	TELEPHONE NUMBER WITH AREA CODE
Greg Nissing	(636) 928-3366
PERMITTEE / FACILITY NAME	MSOP NUMBER (IF APPLICABLE)
Innsbrook Estates	MO-0098906
COUNTY	SIC / NAICS CODE
Warren County	4952

REASON FOR REQUEST

☑ New Discharge (See Instruction #9) ☐ Upgrade (No expansion) (See AIP) ☐ Expansion ☐ QAPP or Study Review

DESCRIPTION OF PROPOSED ACTIVITY

Expand Design Flow from the currently permitted level of 68,000 gpd to 150,000 gpd. This may be accomplished as an expansion/modification of the existing treatment system, a new treatment system at the existing location, or a new treatment system at a new location in the southwest portion of the development

FACILITY INFORMATION

DISINFECT BACTERIA COMPLIANCE

☐ Chlorine Disinfection ☑ Ultraviolet Disinfection ☐ Ozone ☐ Not Applicable

WATER QUALITY ISSUES*

Sanitary Sewer overflow occurred July 4, 2017 during a peak usage weekend. Corrective measures have been taken for avoiding future overflows, but increasing the Design Flow and expanding the flow equalization capacity will provide better long-term solutions

*Water quality issues include: effluent limit compliance issues, notices of violation, water body beneficial uses not attained or supported, etc.

OUTFALL	LOCATION [UTM OR LAT/LONG OR LEGAL DESCRIPTION]	MAPPED[1] (CHECK)	RECEIVING WATER BODY[2]
#003	X= 669834 Y= 4291925, 38°45'36"N, 91°02'43"W	✓	Charrette Creek
New	38°44'13"N, 91°05'18"W	✓	Charrette Creek

[1] Please attach topographic map (See: www.dnr.mo.gov/internetmapviewer/) with outfall locations clearly marked. For additional outfalls, attach a separate form.

[2] Please see general instructions for discharges to streams.

OUTFALL	NEW DESIGN FLOW ** (MGD)	TREATMENT TYPE	EFFLUENT TYPES*
#003	up to 0.15	Extended Aeration (existing); Oxidation Ditch (proposed)	Domestic Wastewater
New	.082	Oxidation Ditch (proposed)	Domestic Wastewater

* Describe predominating character of effluent. Example: Domestic Wastewater, Municipal Wastewater, Industrial Wastewater, Storm water, Mining Leachate, etc.

** If expansion, indicate new design flow.

See General Instructions. Additional information may be needed to complete your request. Your request may be returned if items are missing. The water quality review assistance is a process to determine effluent limits for new facilities or existing facilities seeking to increase loading into the receiving stream.

SIGNATURE	DATE
	6/6/2019
PRINT NAME	EMAIL ADDRESS
Greg Nissing	greg.nissing@innsbrook-resort.com
	TELEPHONE NUMBER WITH AREA CODE
	(636) 928-3366

Applicant supplied (check all that apply)

- ☑ Fee. See Instructions
- ☐ Attachment A – Significant Degradation
- ☐ Attachment B – Minimal Degradation
- ☐ Attachment C – Temporary degradation
- ☐ Attachment D – Tier 1 Review
- ☐ No Degradation Evaluation
- ☑ Heritage Review Determination. See Instruction #8
- ☐ Geohydrologic Evaluation. See Instruction #9
- ☐ Tier Analysis for minimal degradation (see Page 3, Tier 2 Reviews)
- ☐ Quality Assurance Project Plan
- ☐ Time of travel study (see Instruction #3) or model (see Instruction #2)

Submit request to
Missouri Department of Natural Resources
Water Protection Program
ATTN: WPCB Engineering Section
P.O. Box 176
Jefferson City, MO 65102-0176
Telephone: 573-751-1300
Fax: 573-522-9020

MO 780-1891 (12-16)

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RECEIVED

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM, WATER POLLUTION CONTROL BRANCH

ANTIDEGRADATION REVIEW SUMMARY FOR PUBLIC NOTICE
ATTACHMENT A: TIER 2 – SIGNIFICANT DEGRADATION

1. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE	
Innsbrook Estates		(636) 928-3366	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
#1 Innsbrook Estates Drive	Wright City	MO	63390

2. OWNER

NAME AND OFFICIAL TITLES			
Innsbrook Owners Association			
ADDRESS	CITY	STATE	ZIP CODE
#1 Innsbrook Estates Drive	Wright City	MO	63390
TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS		
(636) 928-3366	greg.nissing@innsbrook-resort.com		

3. CONTINUING AUTHORITY The regulatory requirement regarding continuing authority is found in 10 CSR 20-6.010(3) available at www.sos.mo.gov/adrules/csr/current/10csr/10c20-6a.pdf.

NAME AND OFFICIAL TITLES			
Innsbrook Owners Association			
ADDRESS	CITY	STATE	ZIP CODE
#1 Innsbrook Estates Drive	Wright City	MO	63390
TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS		
(636) 928-3366	greg.nissing@innsbrook-resort.com		

4. RECEIVING WATER BODY SEGMENT #1

NAME
Charrette Creek (C)

4.1 UPPER END OF SEGMENT (Location of discharge)
UTM _____ OR Lat 38.7 58 Long -91.0 46

4.2 LOWER END OF SEGMENT
UTM _____ OR Lat 38.7 31 Long 91.0 91

Per the Missouri Antidegradation Implementation Procedure, or AIP, the definition of a segment, "a segment is a section of water that is bound, at a minimum, by significant existing sources and confluences with other significant water bodies."

5. WATER BODY SEGMENT #2 (IF APPLICABLE, Use another form if a third segment is needed)

NAME

5.1 UPPER END OF SEGMENT
UTM _____ OR Lat _____ Long _____

5.2 LOWER END OF SEGMENT
UTM _____ OR Lat _____ Long _____

6. WET WEATHER ANTICIPATIONS

If an applicant anticipates excessive inflow or infiltration and pursues approval from the department to bypass secondary treatment, a feasibility analysis is required. The feasibility analysis must comply with the criteria of all applicable state and federal regulations including 40 CFR 122.41(m)(4). Attach the feasibility analysis to the antidegradation review report.

What is the Wet Weather Flow Peaking Factor in relation to design flow?

Wet Weather Design Summary:
Although some I/I is observed from the portion of the development served by gravity sewers, it is not excessive. Provisions in the design to handle seasonal and weekend/holiday peak flows will be more than sufficient for wet weather flows.

MO 780-2021 (02-13)

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7. EXISTING WATER QUALITY DATA OR MODEL SUMMARY

Obtaining Existing Water Quality is possible by three methods according to the Antidegradation Implementation Procedure Section II A.1. : (1) using previously collected data with an appropriate Quality Assurance Project Plan, or QAPP (2) collecting water quality data approved by the Missouri Department of Natural Resources methodology or (3) using an appropriate water quality model QAPPs must be submitted to the department for approval well in advance (six months) of the proposed activity. Provide all the appropriate corresponding data and reports which were approved by the department Watershed Protection Section. **Additional information needed with the FWQ data includes** : 1) Date existing water quality data was provided by the Watershed Protection Section. 2) Approval date by the Watershed Protection Section of the QAPP project sampling plan and data collected for all appropriate POCs

Comments/Discussion: Per John Rustige of DNR on 3/13/18, a 2006 Water Quality Review Sheet is on file; no sampling needed.

8. SUMMARY OF THE POLLUTANTS OF CONCERN AND THE PROPOSED EFFLUENT LIMITS

Pollutants of Concern to be considered include those pollutants reasonably expected to be present in the discharge per the Antidegradation Implementation Procedure Section II A and assumed or demonstrated to cause significant degradation. The tier protection levels are specified and defined in rule at 10 CSR 20-7.031 (2).

What are the proposed pollutants of concern and their respective effluent limits that the selected treatment option will comply with:

Pollutants of Concern*	Units	Wasteload Allocation	Average Monthly Limit	Daily Maximum Limit
BOD5	MG/L		30	45 (weekly average)
TSS	MG/L		30	45 (weekly average)
DISSOLVED OXYGEN	MG/L			
AMMONIA (SUMMER)	MG/L		1.4	3.7
AMMONIA (WINTER)	MG/L		2.9	7.5
BACTERIA (E. COLI)	CFUS		206	1030
OIL AND GREASE			10	15

Proposed limits must not violate water quality standards, be protective of beneficial uses, and achieve the highest statutory and regulatory requirements.

*Assumed Tier 2

9. IDENTIFYING ALTERNATIVES

Supply a summary of the alternatives considered and the level of treatment attainable with regards to the alternative. "For Dischanges likely to cause significant degradation: an analysis of non-degrading and less-degrading alternatives must be provided." as stated in the Antidegradation Implementation Procedure Section II B.1. Per 10 CSR 20-6.010(4)(D)1., the feasibility of a no-discharge system must be considered. Attach all supportive documentation in the Antidegradation Review report.

Applicants choosing to use a new wastewater technology that are considered an "unproven technology" in Missouri in their Tier 2 Reviews with alternative analysis must comply with the requirements set forth in the *New Technology Definitions and Requirements Factsheet* that can be found at: http://dnr.mo.gov/pubs/pub2453.pdf

Non-degrading alternatives

Alternatives ranging from less-degrading to degrading including Preferred Alternative
(All treatment levels for POCs must at a minimum meet water quality standards)

Alternatives	Level of Treatment Attainable for each Pollutant of Concern					
	BOD5	TSS	AMMONIA AS N	Ammonia as N	Bacteria (E. coli	Oil & Grease
	(MG/L)	MG/L	MG/L	MG/L	CFUS	MG/L
			Summer	Winter		
2 - Extended Aeration	30/45	30/45	1.4/3.7	2.9/7.5	206/1030	10/15
3 - Fixed Activated Sludge	30/45	30/45	1.4/3.7	2.9/7.5	206/1030	10/15
4 - Oxidation Ditch	30/45	30/45	1.4/3.7	2.9/7.5	206/1030	10/15
5- Two Treatment Facilities	30/45	30/45	1.4/3.7	2.9/7.5	206/1030	10/15

MO 780-2871 (07-11)

10. DETERMINATION OF THE REASONABLE ALTERNATIVE

Per the Antidegradation Implementation Procedure Section II.B.2, "a reasonable alternative is one that is practicable, economically efficient and affordable." Provide basis and supporting documentation in the Antidegradation Review report. **Please do not write "See Report" for any box below.**

Practicability Summary:

"The practicability of an alternative is considered by evaluating the effectiveness, reliability, and potential environmental impacts," according to the Antidegradation Implementation Procedure Section II.B.2.a. Examples of factors to consider, including secondary environmental impacts, are given in the Antidegradation Implementation Procedure Section II.B.2.a.

Because of the large volume of the Design Flow of 150,000 gallons per day, none of the Land application options presented in ALTERNATIVE 1 (Subsurface Application or Spray Irrigation Surface Application) are practicable. Factors that make these options impractical include: (SEE ATTACHMENT)

Economic Efficiency Summary:

Alternatives that are deemed practicable must undergo a direct cost comparison in order to determine economic efficiency. Means to determine economic efficiency are provided in the Antidegradation Implementation Procedure Section II.B.2.b.

Alternative 1 Land Application options are not practicable, as noted above, and are also likely to be significantly more expensive than the treatment options. The treatment options in Alternatives 2 through 4 are within 10% of each other in costs, so any of them are viable from an economic efficiency perspective. The cost of Alternative 5 is more than 70% above the base option, but may be considered based on other factors

Affordability Summary:

Alternatives identified as most practicable and economically efficient are considered affordable if the applicant does not supply an affordability analysis. An affordability analysis per the Antidegradation Implementation Procedure Section II.B.2.c. "may be used to determine if the alternative is too expensive to reasonably implement."

Preferred Chosen Alternative:

Alternative 4--Oxidation Ditch
This Alternative includes
* New Oxidation Ditch treatment facilty (either 2 oxidation ditches or one multichannel oxidation ditch) capable of treating 150,000 gpd
* New clarifiers (2)
* Use existing tank structures for flow equalization
* Use existing sludge holding facilities, sludge to be taken by a contract hauler for offsite disposal
* Use existing UV equipment for disinfection (already sized for the new Design Flow)

Reasons for Rejecting the other Evaluated Alternatives:

For Alternative 1, both subsurface and surface applications were considered; however, they were determined to not be practicable, due to the relatively large design flow which would require huge application areas and storage facilities and because the depth and characteristics of the soils in the vicinity were not well suited for land application.
Alternative 2--Expansion of Extended Aeration and Alternative 3--Fixed Activated Sludge are both feasible options; however, Alternative 4--Oxidation Ditch, appears to offer better long-term benefits.
Alternative 5--Two Treatment Facilities option is outside of the range for Economic Efficiency, but may be considered based on long-term planning strategies.

Comments/Discussion:

Each of the three Alternatives 2 through 5 can consistently treat the wastewater to the water quality criteria levels and can often reach lower levels, especially with refinements in operations. All of these Alternatives will generally reach similar effluent levels. However, there are numerous operational challenges that will occur throughout the year that will make it difficult to always meet levels lower than the water quality criteria, including seasonal variations in flow and short term peaks on weekends and holidays. Flow equalization will be incorporated for the highest flow days and longer retention times will also make it more difficult to meet lower effluent limits. For these reasons, the Level of Treatment Attainable for all treatment alternatives was left at Water Quality Standards levels.

11. SOCIAL AND ECONOMIC IMPORTANCE OF THE PREFERRED ALTERNATIVE

If the preferred alternative will result in significant degradation, then it must be demonstrated that it will allow important economic and social development in accordance to the Antidegradation Implementation Procedure Section II.E. Social and Economic Importance is defined as the social and economic benefits to the community that will occur from any activity involving a new or expanding discharge.

Identify the affected community:

The affected community is defined in 10 CSR 20-7.031(2)(B) as the community in the geographical area in which the waters are located. Per the Antidegradation Implementation Procedure Section II.E.1, the affected community should include those living near the site of the proposed project as well as those in the community that are expected to directly or indirectly benefit from the project."

The affected community is Innsbrook, MO, and the surrounding area in Warren County.

Identify relevant factors that characterize the social and economic conditions of the affected community:

Examples of social and economic factors are provided in the Antidegradation Implementation Procedure Section II.E.1, but specific community examples are encouraged.

The U.S. EPA EJSCREEN tool was used to identify Minority Populations, Low Income Populations and Populations of those over 64 years old. In much of the region, Minority Populations are less than 50 percent of the overall population, so the project will not be unduly affecting a certain segment of the population. Low income populations range from less than 50 percent up to 70 percent, some of which may be related to the high percentage of retired people in the area. The map showing the Population over Age 64 indicates 80 to over 95 percent of the people are in this category.

Describe the important social and economic development associated with the project:

Determining benefits for the community and the environment should be site specific and in accordance with the Antidegradation Implementation Procedure Section II.E.1.

SEE ATTACHMENT

PROPOSED PROJECT SUMMARY:

The recommended Alternative 4 includes two new oxidation ditches (or one multi-channel oxidation ditch) and two new clarifiers. The existing tank structures will be used for flow equalization and sludge holding. The existing UV system will be used for disinfection and is sized for the increased Design Flow. Sludge will be taken by a contract hauler for offsite disposal.

Attach the Antidegradation Review report and all supporting documentation. This is a technical document, which must be signed sealed and dated by a registered professional engineer of Missouri.

CONSULTANT: I have prepared or reviewed this form and all attached reports and documentation. The conclusion proposed is consistent with the Antidegradation Implementation Procedure and current state and federal regulations.

SIGNATURE	DATE
Danny Bratzke, PE	08-08-2018

NAME AND OFFICIAL TITLE (CLEARLY PRINT)	COMPANY NAME
Danny Bratzke, P.E. (License No. 023880)	Cochran

ADDRESS	CITY	STATE	ZIP CODE
538A East Independence Drive	Union	MO	63084

TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
(636) 584-0540	gbratzke@cochranengr.com

OWNER: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE	DATE

CONTINUING AUTHORITY: I have read and reviewed the prepared documents and agree with this submittal.

SIGNATURE	DATE

ATTACHMENT TO FORM MO 780-2021 (02/13)

Continuation of Practicability Summary:

- The very large area needed for wastewater application (approximately 23 acres for subsurface application and 84 acres for spray application) and the limited amount of land in the vicinity available for this purpose.
- The limited availability of soils in the vicinity with the required soil type and depth for onsite wastewater treatment.
- The large volume of wastewater storage needed, especially for providing up to 105 days of storage when surface application cannot be used in the winter months.
- The extensive networks of piping and pumps needed to apply wastes over the required area, and the associated operational challenges.
- Considering the location in a residential lake development, undesirable aesthetic factors such as noise from pumps or odors.

Describe the important social and economic development associated with the project:

The wastewater treatment system improvements will enhance the environmental and economic conditions in the area. Support Services needed for the operation and maintenance of the Innsbrook Community provide job opportunities for lower income populations. Maintaining appropriate wastewater treatment capabilities helps protect the environment, which is particularly important to people in this lake community. In general, business development and population growth has expanded westward across St. Charles County and into Warren County over the past few decades. Properly maintaining the Innsbrook utilities is important in making the community a desirable option, which will enhance economic growth in the region.

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: _____ Project #: _____

1.2 Has the Missouri Department of Natural Resources approved the proposed project's antidegradation review?
☑ YES Date of Approval: May 2022 ACT1198 ☐ 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
Oxidation Ditch for Innsbrook Estates WWTF	$

2.3 PROJECT DESCRIPTION
Installation of an Oxidation Ditch and related appertenances.

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
New Clarifiers are currently being constructed. Some sludge shall be returned to the Oxidation Ditch (RAS) and some shall be wasted in accordance with existing facility operations.

2.5 DESIGN INFORMATION

A. Current population: _____; Design population: 1400

B. Actual Flow: 42k gpd; Design Average Flow: 97k gpd;
Actual Peak Daily Flow: 155k gpd; Design Maximum Daily Flow: 200k gpd; Design Wet Weather Event: 542k

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
Innsbrook Estates WWTF		joe.kueper@innsbrook-resort.com

ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE	COUNTY
596 Aspen Way Drive	Innsbrook	MO	63390	Warren

Wastewater Treatment Facility: Mo- 0098906 (Outfall Of)

3.1 Legal Description: _____ ¼, _____ ¼, _____ ¼, Sec. 8, T 46N, R 1W
(Use additional pages if construction of more than one outfall is proposed.)

3.2 UTM Coordinates Easting (X): 669834 Northing (Y): 4291925
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

3.3 Name of receiving streams: Tributary to Charrette Creek

4.0 PROJECT OWNER

NAME	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
Innsbrook Owners Association, Inc.		joe.kueper@innsbrook-resort.com

ADDRESS	CITY	STATE	ZIP CODE
596 Aspen Way Drive	Innsbrook	MO	63390

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
Innsbrook Owners Association, Inc.		joe.kueper@innsbrook-resort.com

ADDRESS	CITY	STATE	ZIP CODE
596 Aspen Way Drive	Innsbrook	MO	63390

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
Kyle Pociask / Four Points Land Surveying & Eng., Inc.	573-406-5533	kyle@fourpointssurvey.com

ADDRESS	CITY	STATE	ZIP CODE
17 Northport Plaza	Hannibal	MO	63401

7.0 APPLICATION FEE

☐ CHECK NUMBER ☑ JETPAY CONFIRMATION NUMBER

8.0 PROJECT OWNER: I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

PROJECT OWNER SIGNATURE

PRINTED NAME	DATE
Charles Boyce	6/18/2024

TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS
CEO	636 745 3000	Charles.Boyce@Innsbrook-Resort.com

Mail completed copy to:

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
P.O. BOX 176
JEFFERSON CITY, MO 65102-0176

END OF PART A.
REFER TO THE APPLICATION OVERVIEW TO DETERMINE WHETHER PART B NEEDS TO BE COMPLETE.