#### **STATE OF MISSOURI**

## DEPARTMENT OF NATURAL RESOURCES

## MISSOURI CLEAN WATER COMMISSION



## **CONSTRUCTION PERMIT**

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

Susan Spiegel, P.E. Director of Public Works City of Wentzville 1001 Schroeder Creek Boulevard Wentzville, MO 63385

#### 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.

March 17, 2021 Effective Date

Edward B. Galbraith, Director, Division of Environmental Quality

March 16, 2023

Expiration Date

Chris Wieberg, Director, Water Protection Program

## **CONSTRUCTION PERMIT**

## I. CONSTRUCTION DESCRIPTION

Modification to an existing activated sludge wastewater treatment facility. Modify influent flow splitter box. In east treatment train convert treatment unit #2 to be exclusively an aerobic sludge digester by removing internal equipment and clarifier parts, and modifying piping. In west treatment train: modify aeration basin #5 by removing interim baffles, adding recycle pumps and replacing mixers; and add a new aeration basin of similar capacity (approximately 1,740,000 gallons) and operation as existing basin; to be designated basin #6.

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. Design flow of facility will increase to 7.04 MGD, the outfall will remain at the existing location. Discharge is to McCoy Creek in Landgrant 00935, St. Charles County.

## II. COST ANALYSIS FOR COMPLIANCE

Pursuant to Section 644.145, RSMo, when issuing permits under this chapter that incorporate a new requirement for discharges from publicly owned combined or separate sanitary or storm sewer systems or publicly owned treatment works, or when enforcing provisions of this chapter or the Federal Water Pollution Control Act, 33 U.S.C. 1251 et seq., pertaining to any portion of a publicly owned combined or separate sanitary or storm sewer system or [publicly owned] treatment works, the Department of Natural Resources shall make a "finding of affordability" on the costs to be incurred and the impact of any rate changes on ratepayers upon which to base such permits and decisions, to the extent allowable under this chapter and the Federal Water Pollution Control Act. This process is completed through a cost analysis for compliance. Permits that do not include new requirements may be deemed affordable.

The Department is not required to determine Cost Analysis for Compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

## III. CONSTRUCTION PERMIT CONDITIONS

The permittee is authorized to construct subject to the following conditions:

- 1. This construction permit does not authorize discharge.
- 2. All construction shall be consistent with plans and specifications signed and sealed by: Amanda B. Bagwell, PE; David L. Wiseman, PE; Ronald Blaine Hardee, PE; Thomas Keith Boyd, III, PE; Kevin K. Thernes, PE; and David G. Bunch, PE, HDR Inc.

- 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. The wastewater treatment facility shall be located above the twenty-five (25)-year flood level.
- 6. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation per 10 CSR 20-8.140(2)(B). The minimum distance between wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300') per 10 CSR 20-8.140(2)(C)1.
- 7. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge 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 <u>dnr.mo.gov/env/wpp/epermit/help.htm</u>. See <u>dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm</u> for more information.
- 8. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department's Water Protection Program at 573-751-1300 for more information. See <u>dnr.mo.gov/env/wpp/401/</u> for more information.
- 9. All construction must adhere to applicable 10 CSR 20-8 (Chapter 8) requirements listed below.

## 10 CSR 20-8.140 Wastewater Treatment Facilities

- Flood protection shall apply to new construction and to existing facilities undergoing major modification. The wastewater facility structures, electrical equipment, and mechanical equipment shall be protected from physical damage by not less than the one hundred- (100-) year flood elevation. 10 CSR 20-8.140 (2) (B)
- Unless another distance is determined by the Missouri Geological Survey or by the department's Public Drinking Water Branch, the minimum distance between

wastewater treatment facilities and all potable water sources shall be at least three hundred feet (300'). 10 CSR 20-8.140 (2) (C) 1.

- Facilities shall be readily accessible by authorized personnel from a public right–ofway at all times. 10 CSR 20-8.140 (2) (D)
- The alarm shall be activated in cases of high water levels. Follow the provisions in subsection (7)(C) of this rule for alarm systems. 10 CSR 20-8.140 (4) (D)
- All wastewater treatment facilities shall be provided with an alternate source of electric power or pumping capability to allow continuity of operation during power failures. 10 CSR 20-8.140 (7) (A) 1.
- Electrical systems and components in raw wastewater or in enclosed or partially enclosed spaces where hazardous concentrations of flammable gases or vapors that are normally present, shall comply with the NFPA 70 *National Electric Code (NEC)* (2017 Edition), as approved and published August 24, 2016, requirements for Class I, Division 1, Group D locations. 10 CSR 20-8.140 (7) (B)
- An audiovisual alarm or a more advanced alert system, with a self-contained power supply, capable of monitoring the condition of equipment whose failure could result in a violation of the operating permit, shall be provided for all wastewater treatment facilities. 10 CSR 20-8.140 (7) (C)
- No piping or other connections shall exist in any part of the wastewater treatment facility that might cause the contamination of a potable water supply. 10 CSR 20-8.140 (7) (D) 1.
- Where a potable water supply is to be used for any purpose in a wastewater treatment facility other than direct connections, a break tank, pressure pump, and pressure tank or a reduced pressure backflow preventer consistent with the department's Public Drinking Water Branch shall be provided. 10 CSR 20-8.140 (7) (D) 3. A.
- For indirect connections, a sign shall be permanently posted at every hose bib, faucet, hydrant, or sill cock located on the water system beyond the break tank or backflow preventer to indicate that the water is not safe for drinking. 10 CSR 20-8.140 (7) (D) 3. B.
- Where a separate non-potable water supply is to be provided, a break tank will not be necessary, but all system outlets shall be posted with a permanent sign indicating the water is not safe for drinking. 10 CSR 20-8.140 (7) (D) 4.
- A means of flow measurement shall be provided at all wastewater treatment facilities. 10 CSR 20-8.140 (7) (E)
- 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 (4') 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 twelve (12) complete air changes per hour. Where continuous ventilation would cause excessive heat loss, provide intermittent ventilation of at least thirty (30) complete air changes per hour when facility personnel enter the area. Base air change demands on one hundred percent (100%) 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 (2) 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)

## 10 CSR 20-8.170 Solids Handling and Disposal.

- Piping galleries shall be ventilated in accordance with paragraph (4)(C)4. of this rule. 10 CSR 20-8.170 (4) (C) 2.
- Electrical fixtures, equipment, and controls. Electrical fixtures, equipment, and controls shall comply with the National Electrical Manufacturers Association (NEMA) 4X enclosure rating where necessary; *NEMA Standard 250-2014*, published December 15, 2014. This standard shall hereby be incorporated by reference into this rule, as published by National Electrical Manufacturers Association, 1300 North 17th Street, Arlington, VA 22209. This rule does not incorporate any subsequent amendments or additions. Electrical equipment, fixtures, and controls, in places enclosing and adjacent to anaerobic digestive appurtenances where hazardous gases are included. 10 CSR 20-8.170 (4) (C) 3.
- Water supplies using indirect connections shall comply with 10 CSR 20-8.140(7)(D). 10 CSR 20-8.170 (4) (D)
- Aerobic Solids Digestion High Level Emergency Overflow. An unvalved emergency overflow shall be provided that will convey digester overflow to the treatment plant headworks, the aeration process, or to another liquid sludge storage facility and that has an alarm for high level conditions. 10 CSR 20-8.170 (5)
- For solids pumping systems, audio-visual alarms shall be provided in accordance with 10 CSR 20-8.140(7)(C) for:
  - Pump failure; 10 CSR 20-8.170 (6) (A)
  - Pressure loss; 10 CSR 20-8.170 (6) (B) and
  - High pressure. 10 CSR 20-8.170 (6) (C)
- 10. Upon completion of construction:
  - A. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications; and
  - B. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(N)

## IV. <u>REVIEW SUMMARY</u>

## 1. CONSTRUCTION PURPOSE

Construction is to increase the design flow to 7.04 MGD from 5.33 MGD, and also enhance performance and improve operability. Improvements will enable facility to meet all final limits in the proposed permit. Construction includes the addition of an activated sludge aeration basin and improvements to the existing aeration basin #5 in the west treatment train; and the conversion of treatment unit #2 in the east train to be exclusively an aerobic sludge digester.

## 2. FACILITY DESCRIPTION

The Wentzville Water Reclamation Center is located at 2455 Mette Road, Wentzville, in St. Charles County, Missouri. The existing facility is an activated sludge treatment facility with a design average flow of 5.33 MGD. The facility will be upgraded to a design average flow of 7.04 MGD. After construction the facility description is as follows:

Influent wastewater enters the wastewater treatment plant via three influent lift stations / 2 mechanical bar screens / 1 manual bar screen / 2 aerated cyclone grit chambers / influent then enters the Influent Flow Splitter Structure, which splits the influent flow between the East Treatment Train and the West Treatment Train

East Treatment Train: Aerated equalization basin / 2 circular multi-zone activated sludge units with integral final clarifiers

West Treatment Train: 2 rectangular multi-zone activated sludge basins / 2 final clarifiers

Effluent from the East Treatment Train and West Treatment Train is then rejoined and receives UV disinfection and then enters the post aeration basin prior to discharge at Outfall #003

Sludge from both treatment trains are pumped to the 4 aerobic sludge digesters / three sludge/biosolids holding tanks / frame and plate filter press / dewatered biosolids are stored on a covered concrete pad / biosolids are land applied

## 3. <u>COMPLIANCE PARAMETERS</u>

The proposed project is required to meet final effluent limits established in the Water Quality and Antidegradation Review Preliminary Determination on December 16, 2020. Also, the construction satisfies the Schedule of Compliance in Operating Permit MO-0093599 for meeting Selenium limits. The new limits from the antidegradation review and final Selenium limits are reflected in the draft Operating Permit placed on public notice February 5, 2021.

<u> </u>		
Parameter	Units	Monthly average
		limit
Biochemical Oxygen	mg/L	18
Demand <sub>5</sub>		
Total Suspended Solids	mg/L	27
Ammonia as N-summer	mg/L	1.1
Ammonia as N-winter	mg/L	2.5
pH	SU	6.5-9.0
E. coli	#/100mL	206

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

Copper, Total Recoverable	μg/L	12.2
Selenium, Total Recoverable	μg/L	3.1

## 4. ANTIDEGRADATION

The Department has reviewed the antidegradation report for this facility and issued the Water Quality and Antidegradation Review Preliminary Determination on December 16, 2020. The WQAR was required due to the increase in design flow. See **APPENDIX – ANTIDEGRADATION**.

## 5. <u>REVIEW of MAJOR TREATMENT DESIGN CRITERIA</u>

The treatment facility is proposed to be upgraded with the following capital improvements:

- Influent splitter box will be modified to enable easier operation and adjustments.
- In the east treatment train; treatment unit #2 will be converted to an aerobic sludge digester by removing internal equipment and clarifier parts, and modifying piping.
- In the west treatment train. Aeration basin #5 will be modified by removing interim baffles, adding recycle pumps and replacing mixers. An activated sludge aeration basin will be added to be known as aeration basin #6. It will be of similar capacity of existing aeration basin #5 and contain the same new enhancements.
  - These improvements will increase the design flow to 7.04 MGD; the design peak hourly flow rate will be 18.7 MGD. The population equivalent changes to 61,824, based on one PE for every 0.17 lb. of BOD treated/day. Design sludge production of 1,113 dry tons/year is based on an estimated production of 0.018 dry tons of sludge/PE/year.
  - Influent flow splitter. Modifications to the Return Activated Sludge (RAS) piping at the Influent Flow Splitter Box to improve RAS mixing. Modifications to the Influent Flow Splitter Box to enable improved metering data, allowing better control over the wastewater flow diverted to the Equalization Basin and Treatment Units #3 and #4.
  - Aerobic Sludge Digester. Treatment Unit #2 to be converted to exclusively aerobic sludge digestion. Internal equipment and clarifier components will be removed. Piping and walls will be modified. Two separate digestion zones will be created. The final effective volume of this sludge digester will be approximately 650,000 cubic feet.
  - Aeration Basin #5 Improvements. Remove interim baffles, add recycle pumps and replace mixers. Provide one new mixer and one recycle pump to the swing zone (normally anaerobic); provide two new mixers and one recycle pump to the anoxic zone. Recycle pumps to be 4 HP and each have a capacity of 800 gpm, returns mixed liquor from aeration zone. Mixers to be hyperbolic, bridge mounted, 1.5 HP and 2.0 HP.

- New Aeration Basin #6. Construct concrete basin similar to existing Basin #5; typical water depth of approximately 18 feet; Swing zone volume 77,560 gal. with mixer and recycle pump; Anoxic zone volume 261,800 gallons, with 2 mixers, and recycle pump; Aeration zone volume 1,400,000 gallons, with fine bubble diffusers, air is supplied by existing aeration equipment.
- Existing two clarifiers in west train to serve aeration basin #5 and new aeration basin #6. Design flow through each basin and each clarifier is 1.82 MGD; design peak hourly flow through each is 5.10 MGD. Surface settling rate at peak hourly flow is 1015 gpd/sq. ft. Clarifiers are of adequate size to not exceed a maximum settling rate of 1200 gpd/sq. ft. at peak hourly flow rate. Process to provide biological nutrient reductions.
- Existing UV disinfection is adequate to provide disinfection to a flow rate of 23.4 MGD. This exceeds the Phase 3 Expansion design peak hourly flow rate of 18.1 MGD

## 6. **OPERATING PERMIT**

Operating permit MO-0093599 will require a modification to reflect the construction activities. The modified Wentzville Water Reclamation Center, MO-0093599, was successfully public noticed from February 5, 2021 to March 8, 2021 with no comments received. 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. The modification fee of \$200.00 has been paid.

### 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 mailed 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: <u>https://ahc.mo.gov</u>

Andrew Appelbaum, P.E. Engineering Section andy.appelbaum@dnr.mo.gov **APPENDIX – ANTIDEGRADATION** 



December 16, 2020

City of Wentzville 310 West Pearce Boulevard Wentzville, MO 63385

RE: Water Quality and Antidegradation Review Preliminary Determination for Wentzville Water Reclamation Center WWTF, St. Charles County

Dear Susan Spiegel:

In accordance with the *Missouri Antidegradation Rule and Implementation Procedure (AIP)*, your proposed discharge is subject to an Antidegradation Review. The revised *Water Quality and Antidegradation Review (WQAR)* summarizes this preliminary determination based upon your City of Wentzville, Missouri Water Reclamation Center Antidegradation Review Report dated July, 2018, which proposed to increase the facility's design flow to 7.04 MGD. The revision reflects new methods for calculating copper limits according to Missouri's recently revised Water Quality Standards and allows for slightly higher copper effluent concentrations.

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 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 <u>https://dnr.mo.gov/env/wpp/srf/wastewater-project-guidance.htm</u>. 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 Steve Hamm by telephone at 573-526-1002, by email at <u>steven.hamm@dnr.mo.gov</u>, or by mail at P.O. Box 176, Jefferson City, Missouri 65102-0176.

Sincerely,

WATER PROTECTION PROGRAM

LePage

Cindy LePage, P.E., Chief Engineering Section

Enclosures

CL:sht

c: David Carani, HDR, Inc.

# Water Quality and Antidegradation Review

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

by Wentzville Wastewater Treatment Facility



December, 2020

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## **1. FACILITY INFORMATION**

FACILITY NAME: Wentzville Water Reclamation Center

NPDES #: MO-0093599

#### FACILITY TYPE/DESCRIPTION:

FACILITY TYPE: POTW

FACILITY DESCRIPTION: The current permitted design flow is 6.4 MGD. The facility currently has peak flow equalization, screens and grit removal, extended aeration, and clarifiers. The proposed design flow will be 7.04 MGD.

COUNTY:	St. Charles	UTM COORDINATES:	X= 684925 / Y= 4303837
12- DIGIT HUC:	07110008-0408	LEGAL DESCRIPTION:	Landgrant 145
$EDU^*$ :	Central Plains	ECOREGION:	Mississippi Hills River
* E 1 ' 1D '	TT '		

\* - 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:

McCoy Creek was on the 2016 Missouri 303 (d) List for dissolved oxygen; however, McCoy Creek has been delisted since the 2018 Missouri 303 (d) List. Within the past five years, the facility has only had a single permit exceedance in January 2019 for total suspended solids.

OUTFALL	DESIGN FLOW (CFS)	TREATMENT LEVEL	RECEIVING WATERBODY	DISTANCE TO CLASSIFIED SEGMENT (MI)
001	9.92	Secondary	McCoy Creek	Directly Discharges

#### 3. RECEIVING WATERBODY INFORMATION

WATERBODY NAME	CLASS	WRID	LOW-FLOW VALUES (CFS)			Designated Uses**	
WATERBODT NAME	CLASS	WDID	1Q10	7Q10	30Q10	DESIGNATED USES	
McCoy Creek	С	214	0.0	0.0	0.0	AQL, HHP, IRR, LWW, SCR, WBCB	

\*\* 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:	McCoy Creek
Upper end segment* UTM coordinates:	X= 684925/ Y= 4303837 (outfall)
Lower end segment* UTM coordinates:	X = 685460/Y = 4304693 (confluence with tributary)

\* 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

HDR Engineering, prepared, on behalf of Wentzville, the *Wentzville Wastewater Facility Antidegradation Review Report* dated July 2018.

Applicant elected to determine that discharge of all pollutants of concern (POC) is non-degrading or insignificant to the receiving stream. This analysis was conducted to fulfill the requirements of the AIP. Information that was provided by the applicant in the submitted report and summary forms in Appendix C was used to develop this review document.

A Geohydrological Evaluation was not submitted for this facility upgrade. The stream is gaining for discharge purposes (Appendix A: Map).

A Missouri Department of Conservation Natural Heritage Review Report was obtained by the applicant; MDC found no record of wildlife preserves, critical habitats, or state or federal endangered-list species records within one mile of the site.

#### 5. ANTIDEGRADATION REVIEW INFORMATION

The following is a review of the *Wentzville Wastewater Facility Antidegradation Review Report* dated July 2018.

#### 5.1. TIER DETERMINATION

Below is a list of pollutants of concern reasonably expected to be in the discharge (see Appendix C). 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 is assumed for all POCs; however, tier determinations were not necessary with maintenance of mass loading determinations (see Appendix C).

POLLUTANTS OF CONCERN	TIER*	DEGRADATION	COMMENT
BOD <sub>5</sub> /DO	*	Insignificant	
Total Suspended Solids (TSS)	**	Insignificant	
Ammonia as N	*	Insignificant	
pH	***	Insignificant	Permit limits applied
Oil & Grease	*	Insignificant	
Copper, Total Recoverable	*	Insignificant	
Bacteria/Escherichia coli (E. coli)	*	Insignificant	Permit limits applied

#### Table 1. Pollutants of Concern and Tier Determination

\* Tier determination not possible with the demonstration of mass loading maintenance.

\*\* 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 C were used by the applicant: For pollutants of concern, the attachments are:

Attachment B, Tier 2 with minimal degradation.

5.2. EXISTING WATER QUALITY

No existing water quality data was submitted. POCs were considered to be Tier 2 or non-degrading in the absence of existing water quality.

According to 10 CSR 20-6.010 (4)(A)5.B., reports for the purpose of constructing a wastewater treatment facility shall consider the feasibility of constructing and operating a no discharge facility. Missouri's antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are not required.

The Antidegradation Review Report prepared for Wentzville Water Reclamation Center describes a no discharge evaluation as a non-degrading alternative. Land irrigation is presented as infeasible due to site limitations including land application availability, water storage availability, and soil conditions. This alternative is estimated to cost above \$91.5 million.

#### 5.4. 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 or will not discharge within 2 miles of a losing stream segment.

#### 5.5. DEMONSTRATION OF INSIGNIFICANCE

In Section II.A of the *Missouri's Antidegradation Rule and Implementation Procedure*, a demonstration of insignificance of the discharge requires the applicant to show a reduction, or maintenance of loading, i.e., no change in ambient water quality concentrations in the receiving waters. As demonstrated in *Wentzville Wastewater Facility Antidegradation Review Report* dated July, 2018, Table 2 below summarizes the results of current loading based on the current permit concentrations and proposed loadings based on the proposed permit concentrations.

POLLUTANTS OF CONCERN	CURRENT WEEKLY AVERAGE OR MAXIMUM DAILY LIMIT (MG/L)	PROPOSED MAXIMUM DAILY LIMIT (NOTE 1) (MG/L)	CURRENT LOADING (LBS/DAY)	PROPOSED LOADING (LBS/DAY)	NET CHANGE (LBS/DAY)
BOD <sub>5</sub>	30	27	1601.3	1601.3	0
Total Suspended Solids (TSS)	45	41	2401.9	2401.9	0
Ammonia (Summer)	6	5.5	320.3	320.3	0
Ammonia (Winter)	11	10	587.1	587.1	0
Copper	0.0268	0.0244	1.43	1.43	0

#### Table 2. Net Change in Loadings Based upon Current and Proposed Permit Limits.

\* WQBEL=water quality based effluent limit.

\*\* See Derivation and Discussion of Limits, Section 10.

\*\*\* Value is in the current permit, rather than the expired permit. AWL = average weekly limit.

Note 1—Except for TSS and BOD, the proposed effluent limits that were provided by applicant were determined by using the *ratio of current flow (6.4 MGD) to proposed design flow or 0.9; thus 90% of the current limit* is applied as the proposed limit.

Current design flow (Qd) = 5.25 MGD

Mass conversion -- 1 mg/L = 8.34 lbs/million gallons

Wasteload Allocation (WLA) = maximum daily or weekly average

Existing Load (lbs/day) = Mass conversion \* WLA \* Qd Example: 8.34 (lbs/MG)/(mg/L) \* 1 mg/L \* 5.25 MGD = 43.8 lbs/day

#### 5.6. DEMONSTRATION OF NECESSITY AND SOCIAL AND ECONOMIC IMPORTANCE

Missouri's antidegradation implementation procedures specify that if the proposed activity does not result in significant degradation then a demonstration of necessity (i.e., alternatives analysis) and a determination of social and economic importance are not required. Thus, the Tier 2 Review is not required.

#### 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(2) Continuing Authorities and 10 CSR 20-6.010(4)(A)5.B., 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	M	DNITORING INFORMATION				
WASTELOAD ALLOCATION STUDY CONDUCTED (Y OR N):	N	USE ATTAINABILITY Analysis Conducted (Y or N):	Ν	WHOLE BO USE RETAIN	DY CONTACT ED (Y or N):	Γ Y
OUTFALL #001	_					
WET TEST (Y OR N): N		FREQUENCY:	AEC	:	METHOD:	MULTIPLE

TABLE 3. EFFLUENT LIMITS FOR OUTFALL #001

PARAMETER	UNITS	DAILY MAXIMUM	Weekly Average	Monthly Average	BASIS FOR LIMIT (NOTE 2)	Monitoring Frequency
FLOW	MGD	*		*	FSR	ONCE/WEEKDAY
BOD <sub>5</sub> ***	MG/L		27	18	NDEL	ONCE/MONTH
TSS	MG/L		41	27	NDEL	ONCE/MONTH
PH	SU	6.5 - 9.0		6.5 - 9.0	FSR	ONCE/MONTH
Ammonia as N (April1 – Sept 30)	MG/L	5.5		1.1	NDEL	ONCE/MONTH
Ammonia as N (Oct 1 – Mar 31)	MG/L	10		2.5	NDEL	ONCE/MONTH
ESCHERICHIA COLIFORM (E. COLI)	NOTE 1	1030**		206**	FSR	ONCE/WEEK
COPPER, TOTAL RECOVERABLE	μg/L	24.4		12.2	NDEL	ONCE/QUARTER
PH Ammonia as N (April1 – Sept 30) Ammonia as N (Oct 1 – Mar 31) Escherichia coliform (E. coli) Copper, Total Recoverable	SU MG/L MG/L NOTE 1 μg/L	6.5 - 9.0 5.5 10 1030** 24.4		6.5-9.0 1.1 2.5 206** 12.2	FSR NDEL NDEL FSR NDEL	ONCE/MONTH ONCE/MONTH ONCE/MONTH ONCE/WEEK 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).
- \*\*\* This facility is required to meet a removal efficiency of 85% or more for BOD<sub>5</sub> and TSS. Influent BOD<sub>5</sub> and TSS data should be reported to ensure removal efficiency requirements are met.

#### 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:

$$C = \frac{(Cs \times Qs) + (Ce \times Qe)}{(Qe + Qs)}$$
(EPA/505/2-90-001, Section 4.5.5)

Where: C = downstream concentration

Cs = upstream concentration

Qs = upstream flow

- Ce = effluent concentration
- Qe = 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).

Chronic wasteload allocations (WLAc) were determined using applicable chronic water quality criteria (CCC: criteria continuous concentration) and upstream stream flow without mixing considerations. Acute wasteload allocations are only determined in the absence of applicable chronic criteria.

#### 10.1. OUTFALL #001 - MAIN FACILITY OUTFALL

10.2. LIMIT DERIVATION

- <u>Flow</u>. 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.
  - <u>Biochemical Oxygen Demand (BOD5</u>). BOD5 limits of 18 mg/L monthly average, 27 mg/L average weekly. The technology-based secondary limitations at 10 CSR 20-7.015 (8) of 30 mg/L monthly and 45 mg/L average weekly are less protective of water quality standards than the no degradation expansion limitations in the table below. The table below shows that the expanded loading will be reduced as compared to the current permitted loading. This demonstration of insignificance satisfies the requirements of the AIP. These limitations are non-degrading and protective of existing water quality.

Parameter	Limit	WLA (mg/L)	Current Q <sub>d</sub> (MGD)	Current Load (lbs/day)	Expanded Q <sub>d</sub> (MGD)	Expansion limit (mg/L)
BOD	Monthly	20	6.4	1067.5	7.04	18
BOD <sup>2</sup>	Weekly	30	6.4	1601.3	7.04	27

The applicant submitted a DO model that was revised by WPP staff. Staff used site-specific DO as input to the Streeter Phelps model. Staff also used 1 mg/L as DO in the effluent. For that reason, a dissolved oxygen limitation for the effluent will not be imposed.

Using the weekly expansion limitation stated above, modeling in Appendix B demonstrated that BOD<sub>5</sub> effluent is protective of water quality standards for DO. Streeter Phelps modeling indicated a dissolved oxygen of 5.02 mg/L for the facility, which was the lowest DO concentration resulting from BOD decay (see Appendix B). There is a demonstrated reduction in loading in the above table: therefore, no analysis is needed to show that the proposed expanded loading is insignificant because existing water quality should improve with the proposed discharge. Therefore, staff considers the effluent limitations of 27 mg/L as the average weekly and 18 mg/L as the monthly average protective of aquatic life.

Influent monitoring may be required for this facility in its Missouri State Operating Permit.

• <u>Total Suspended Solids (TSS)</u>. 41 mg/L monthly average, 27 mg/L average weekly limit. The technology-based secondary limitations at 10 CSR 20-7.015 (8) of 30 mg/L monthly and 45 mg/L average weekly are less protective of water quality standards than the no degradation expansion limitations in the table below. Therefore, the no degradation limitations must be applied.

Parameter	Limit	WLA (mg/L)	Current Qd (MGD)	Current Load (lbs/day)	Expanded Qd (MGD)	Expansion limit (mg/L)
TCC	Monthly	30	6.4	1601.3	7.04	27
155	Weekly	45	6.4	2401.9	7.04	41

Influent monitoring may be required for this facility in its Missouri State Operating Permit.

- <u>pH</u>. 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.
- <u>Total Ammonia Nitrogen.</u> Early Life Stages Present Total Ammonia Nitrogen criteria apply [10 CSR 20-7.031(5)(B)7.C. & Table B3]. Background total ammonia nitrogen = 0.01 mg/L

#### **No degradation Limitation Calculations**

The following tables are presented because the facility was recently renewed with lower ammonia limitations, and secondly, to give the applicant-provided antidegradation review loading calculations consideration. The limitations are more stringent and use correct low flow values.

Parameter	Limit	WLA (mg/L)	Current Qd (MGD)	Current Load (lbs/day)	Expanded Qd (MGD)	Expansion limit (mg/L)
Ammonia	Monthly	1.2	6.4	64.1	7.04	1.1
Summer	Daily	6	6.4	320.3	7.04	5.5
Ammonia	Monthly	2.7	6.4	144.1	7.04	2.5
Winter	Daily	11	6.4	587.1	7.04	10

No Degradation Expansion Limitations

Season	Maximum Daily Limit (mg/l)	Average Monthly Limit (mg/l)
Summer	5.5	1.1
Winter	10	2.5

#### *Classified Streams:* 10 CSR 20-7.015 (9)(B)1.A.

• <u>Escherichia coli (E. coli)</u>. 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).

#### Rule for monitoring requirements is 10 CSR 20-7.015 (9)(D)6.A, B and C

For facilities greater than 100,000 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.** 

Weekly monitoring is required at all times with compliance to be determined by *E. coli* water quality standards established in section (5)(C.) of 10 CSR 7.031 and the effluent rule short time limits in 7.015 (9)(B)1.E. Please see **GENERAL ASSUMPTIONS OF THE WQAR #7.** 

#### Hardness Dependent Metals:

Effluent limitations for total recoverable metals were developed using methods and procedures outlined in EPA/505/2-90-001 and "The Metals Translator: Guidance For Calculating A Total Recoverable Permit Limit From A Dissolved Criterion" (EPA 823-B-96-007). General warm-water fishery criteria apply and water hardness = 200 mg/L.

Due to the absence of contemporaneous effluent and instream data for total recoverable metals, dissolved metals, hardness, and total suspended solids with which to calculate metals translators, partitioning between the dissolved and absorbed phases was assumed to be minimal (Section 5.7.3, EPA/505/2-90-001). Freshwater criteria conversion factors for dissolved metals were used as the metals translator as recommended in guidance (Section 1.3, 1.5.3, and Table 1, EPA 823-B-96-007). If concurrent site-specific data for total recoverable metals, dissolved metals, hardness, and total suspended solids are provided to the Department, partitioning evaluations may be considered and site-specific translators developed.

Parameter	Limit	WLA (µg/L)	Current Qd MGD	Current Load (lbs/day)	Expanded Qd MGD	Expansion limit (µg/L)
Copper	Monthly	13.4	6.4	0.715	7.04	12.2
- sppor	Daily	26.8	6.4	1.43	7.04	24.4

Note: Future reasonable potential analysis should use the above limitation as comparison to the receiving water concentration rather than water quality standards. This process prevents further degradation of a Tier 2 water body.

<u>Copper (Total Recoverable)</u> Protection of Aquatic Life Acute Criteria = 24.4 µg/L, Chronic Criteria = 12.2 µg/L. The hardness value of 200 mg/L represents the 50<sup>th</sup> percentile (median) for McCoy Creek. In the above table, the non-degrading effluent limitation for the expanded design flow for copper is shown.

## 11. ANTIDEGRADATION REVIEW PRELIMINARY DETERMINATION

The proposed facility discharge will result in no degradation of the segment identified in the McCoy Creek. Per the requirements of the AIP, the effluent limits in this review were developed to be protective of beneficial uses and to retain the remaining assimilative capacity. 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: Steven Hamm, P.E. Date: December 14, 2020 Unit Chief: John Rustige, P.E. Appendix A: Map of Discharge Location Phase 3 Expansion Wentzville WRC, MO-0093599 Page 22



Appendix B: Dissolved Oxygen Modeling using Streeter Phelps

Part 1: Anal	ysis Docu	mentation						
Permit Applicant: City of Wentzville								
	Analysis Date:	6/1/2018			Permit Number:	MO-009359	9	
Analysis	Performed By:	HDR Engineerin	ig, Inc.					
Part 2: Facil	Part 2: Facility Discharge Information							
County:	County: St. Charles Latitude: Longtitude:							
	Variabia	List	filuent Characte	ristics	ested Value & Comm	ante		
	Elow	MGD	7.04	Fac	liity Design Average I	Flow		
	CBODs	[ma/L]	25	Ad	lust to meet D.O. crite	via		
	NEL N	[mg/l]		Equalt	o or less than toxicity	-based		
	INPU-IN	[mg/L]	1.4	ammor	Na WILA. Adjust to me	et D.O.		
	TSS	[mg/L]	20	AO	just to meet D.O. crite	ina irin		
	D.O.	[mg/L]	•	AQ.	las to meet D.C. crite	//d ava//ah/a		
	pН	S.U.	7.8	ose medi oth	erwise assume 7.8 S	U.		
	Temperature	0.0		Default - 20	°C for summer alloca	dions,		
	remperature	-6	26	6°C winter a	allocations			
Dart 2: Dooo	iving Stro	am Inform	ation					
Part 5: Nece	aving sue	ann miorni	auon					
Name:	McCo	y Creek	Class:	С	Watershed	Area (mi <sup>2</sup> ):	26	
WBID:	2	14	Type:	Riffle-Pool	Aquatic Life Use D	Designation:	GWWF	
	Undraam Cor	difficine			Unstra	am Facilitia		
Variable	Unit	unit Value Default Value Default Value						
Streamfow	ft <sup>3</sup> sec <sup>-1</sup>	0.00			Permit ID	Flow Units	Value	
CBOD <sub>6</sub>	[mg/L]	1	1			MGD		
NH3-N	[mg/L]	0.05	0.05			MGD		
VSS	[mg/L]	2	2			MGD		
D.O.	[mg/L]	5	5			MGD		
pН	S.U.	7.8	7.8			MGD		
Temperature	°C	26	26°C			MGD		
Water	Quality Criteria	a of Receiving	Stream		Hydrogeon	netry & Trai	naport	
Criteria	Unit	Value	Тура		Variable	Unit	Value	
D.O.	[mg/L]	5.0	Chronic		Slope	我/我	0.0021	
NH3-N	[mg/L]	1.5	Chronic - ELP		Elevation	ft ASL	460	
NH3-N	[mg/L]	12.1	Acute		Velocity	ft. sec -1	0.290	
					Velocity Default	ft. sec 🌱	0.288	
	Mixing Zone an	d Critical Flow	18		Width	ft.	17.3	
Flow	Unit	Value	Default Value		Width Default	ħ.	17.3	
7Q10	ft <sup>3</sup> sec <sup>-1</sup>	0	0.00		Depth	ft.	2.2	
D.O. Mxg Zone	ft <sup>0</sup> sec <sup>-1</sup>	0.00	26% Lipstream Flow		Depth Default	f.	2.2	

Part 4: Mode	el Parame	ters and Ra	ite Constant	S		
Stoichiometry of Or	ganic Matter				Model Output Co	ntrol
Carbon	40	.gC			Model Length (mi)	5
Nitrogen	7.2	gN		Out	tput Resolution (mi)	0.15
Dry Weight -OM	100	gD				
			Global Rate	5		
Rate	Unit	Value at 20°C	Value at Simulated Temperature	Theta	Uncallbrated Value	Comments
CBODU:CBOD <sub>5</sub>	mgUt mg5-day	1.5			2.8	Varies between 1.6 to 4.
Effluent VSS:TSS	mgVSS:mgTSS	0.85			0.85	Generally greater than 70%
CBOD Oxidation	day <sup>1</sup>	0.55	0.72	1.05	0.53	Varies between 0.1 to 4
NBOD Oxidation	day1	0.3	0.48	1.08	0.3	
SOD	gO <sub>1</sub> m <sup>2</sup> day <sup>-1</sup>	0.2	0.3	1.07	4.9	Varies between 0.2 and 9
SOD Coverage	%	25%			25%	Varies between 0% to 100%
Reseration Rate	dey' <sup>1</sup>	7.6	8.8	1.02	7.6	See Melching and Flores (1999)
Mass Balance at Po	int of Mixing					
Variable	Unit	Value				
Streamflow	ft <sup>-3</sup> sec <sup>-1</sup>	10.91				
CBOD <sub>5</sub>	[mg/L]	25.0			DUN Streeter D	halas
CBODU	[mg/L]	37.5			KON Streeter-P	neips
NH <sub>3</sub> -N	[mg/L]	1.4				
VSS (Detritus)	[mg/L]	17.0				
D.O.	[mg/L]	6.0				
D.O. Saturation	(mg/L)	7.98				
D.O. Deficit	[mg/L]	1.98		Min	Imum D.O. [mg/L]	5.0
pH	S.U.	7.8				
Temperature	°C	26.0				

## Appendix C: Antidegradation Review Summary Attachments

The attachments that follow contain summary information provided by the applicant. 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's WQAR:

#### 1) Attachment A: Antidegradation Application.

	MISSOURI DEPARTMENT		For Office Use Only CHECK NUMBER		
4 @	WATER QUALITY REV ANTIDEGRADATION				
التحلت	PRE-CONSTRUCTION REV BENEFICIAL LISES AND DE	VEW FOR PROTECTION OF		DATE RECEIVED	FEE SUBMITTED
YPE OF PRO	OJECT Grant	SRF Loan I All Other Pro	piects	-	-
equester usan Spiegel				TELEPHONE NUMBER (636) 639-2049	WITH AREA CODE
ERMITTEE / FACIL	JTY NAME			MBOP NUMBER OF AP	PLICABLE)
ity of Wentzvi	ille Water Reclamation Cente	н,		0093599	
. Charles				4952	
REASON FOR	R REQUEST				
New Disch	harge (See Instruction #9)	Upgrade (No expansion) (See A	MP) 🛛 Expan	nsion 🔲 QAPP of	or Study Review
anticipated grow maximum month expanding to a to 7.04 MGD by the ACILITY INF	with in the area. The City's current per h to average day nallo this equates to design average flow of 6.96 MGD by e year 2020. CORMATION	milliod flow of 6.4 million gallons per day (MGD en actual inversige day capacity of 5.34 MGD. the year 2032. The City is planning that expen	I) is based on a maximum Based on current population in phases, and exp sion in phases, and exp	im monthly flow; with the dation growth projection ects to complete the init	Plant's current s, the City enficipates lat expansion phase t
ETHOD OF BACTE	RIA COMPLIANCE				
Chlorine D	Disinfection 🛛 Ultraviolet D	Disinfection Ozone No	Applicable		
WATER QUALITY IS	SUES*				
one identified					
Water quality is	ssues include: effluent limit comp	liance issues, notices of violation, water	body beneficial uses	not attained or suppo	orted, etc.
OUTFALL	LOCATION (UTM OR L/	AT/LONG OR LEGAL DESCRIPTION)	MAPPED' (CHECK)	RECEIVING	NATER BODY <sup>2</sup>
001	68	4925, 4303837	1	McCo	y Creek
			1		
<sup>1</sup> Pleas	se attach topographic map (S	iee: www.dnr.mo.gov/internetmapvie	wer/) with outfall I	ocations clearly ma	irked. For
additi	ional outfalls, attach a separa	ate form.			
* Pleas	se see general instructions fo	r discharges to streams.			
OUTFALL	(MGD)	TREATMENT TYPE	9	EFFLUENT TYPES*	
001	7.04	Activated Sludge		Domestic WW	
<ul> <li>Desc</li> <li>Wast</li> </ul>	ribe predominating character rewater. Storm water. Mining	of effluent. Example: Domestic Wa	stewater, Municip	al Wastewater, Indu	ustrial
** If exp	pansion, indicate new design	flow.			
iee General Ins	tructions. Additional information	may be needed to complete your reque	st. Your request ma	y be returned if items	are missing. The
aceiving stream	New assistance is a process to c	econtaine endent arris for new faceboes o	ar existing facilities a	eaking to increase los	aoing into the
IGNATURE	linel.		DATE 7/5/10	2	
RINTNAME	april		EMAIL ANORESS		
Isan Spiegel	Hed Johnsk all that south A		susan.spiegel@	wentzvillemo.org	
Fee.	See Instructions		(636) 639-2049	A WITH A GALA	
Attack	nment A - Significant Degradatio	n	(,,	Submit request to	2:
Attack	vment 6 – Minimal Degradation vment C – Temporary degradation	80	Missouri	Department of Natura	I Resources,
Altach	ment D - Tier 1 Review		ATT	Vater Protection Prog WPCB Engineering	ram, Section
No De	egradation Evaluation	Instruction #8	800	P.O. Box 176	
Geoh	ydrologic Evaluation. See Instru	ction #9.	Jof	erson City, MO 6510	2-0176
Tier A	malysis for minimal degradation	(see Page 3, Tier 2 Reviews).		Fax: 573-522-9920	300
Qualit	ty Assurance Project Plan. of travel study (real instruction #	3) or model (see Instruction #2)			
40 745-1850 (12-14)	or makes scool, face manucoon w	of or model (and manacheri wa).	-		Paris 1

MISSOURI DEPARTMENT OF NATU WATER PROTECTION PROGRAM, ANTIDEGRADATION REVIEW ATTACHMENT A: TIER 2 – SI	IRAL RESOURCES WATER POLLUTION CONTROL BR V SUMMARY FOR PUBLIC N IGNIFICANT DEGRADATION	ANCH OTICE	
1. FACILITY			
NAME		TELEPHONE	NUMBER WITH AREA CODE
Wentzwille Water Reclamation Center	· · · · · · · · · · · · · · · · · · ·	(636) 639	-2071
2455 Mette Road	Wentzville	MO	21P CODE 63385
2. OWNER	A CONTRACTOR OF		
KAME AND OFFICIAL TITLES			
Susan Spiegel - Director of Public Works			
ADDRESS 1001 Schroder Creek Blvd	onv Wentzville	STATE MO	ZIP CODE 63385
TELEPHONE NUMBER WITH AREA CODE (636) 639-2049	E-MUL ADDRESS susan.spiegel@wentzviller	mo.org	
3. CONTINUING AUTHORITY The regulatory requi www.sos.mo.gov/adrules/csr/current/10csr/10c20-8a NAME AND OFFICIAL TITLES same as owner	rement regarding continuing authority , pdf.	is found in 10 CSR 20	6.010(3) available at
AODRESS	СЛТУ	BTATE	ZIP CODE
TELEPHONE NUMBER WITH AREA CODE	E-MAIL ADDRESS		
4. RECEIVING WATER BODY SEGMENT #1			And Markenberger
McCoy Creek			
4.1 UPPER END OF SEGMENT (Location of discha	rcse)		
UTM OR Lat	Long 684925, 43	03837	
4.2 LOWER END OF SEGMENT	687923, 43	04448	
UTM OR Lat Per the Missouri Antidegradation Implementation Procedure, or Al existing sources and confluences with other significant waiter bother	P, the definition of a segment, 'a segment is a s	ection of water that is bound,	at a minimum, by significant
5. WATER BODY SEGMENT #2 (IF APPLICABLE,	Use another form if a third segme	nt is needed)	
NA			
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 infiltral feasibility analysis is required. The feasibility analysi including 40 CFR 122.41(m)(4). Attach the feasibilit	tion and pursues approval from the d sis must comply with the criteria of all y analysis to the antidegradation revie	epartment to bypass se applicable state and fe ew report.	condary treatment, a deral regulations
What is the Wet Weather Flow Peaking Factor in rel	ation to design flow? 3:1		
Wet Weather Design Summary:			
The Phase III improvements includes only th existing UV facility will continue to disinfect the	e construction of an additional a he full wet weather flows anticip	aeration basin at the ated for this improv	City's WRC. The ement phase.
MO 760-3021 (02/13)			Page 1

#### Permit No. CP0002184

ge 27								
7. EXISTING WATER Q	UALITY DATA OR MO	DEL SUMMA	RY		10,00	NET NOTE		
Obtaining Existing Wate II.A.1.: (1) using previou data approved by the Mi QAPPs must be submitt appropriate correspondin information needed wit Section, 2) Approval dat appropriate POCs.	r Quality is possible by sly collected data with ssouri Department of t ad to the department fing data and reports with the EWQ data inclu- e by the Watershed Pr	three method an appropriat Natural Resour or approval we lich were appr ides: 1) Date otection Section	s accordin e Quality / ces metho ill in advan oved by th existing w on of the C	g to the Antid Assurance Pro dology or (3) ce (six month e department ater quality da APP, project	egradatio ject Plan, using an s) of the p Watershe ta was pr sampling	n Implementation or QAPP (2) co appropriate wate proposed activity ad Protection Se ovided by the W plan, and data o	n Procedu llecting wa er quality n . Provide a ction. Add atershed F collected fo	re Section ter quality nodel. all the <b>itional</b> Protection r all
Comments/Discussion: A	DO model was devel	oped and subr	nitted in a	ccordance wit	MDNR	guidance.		
8 SUMMARY OF THE	POLLUTANTS OF CO	NCERN AND	THE PRO	POSED EFFI	UENT LI	MITS		
Pollutants of Concern to Antidegradation Implement The tier protection levels	be considered include entation Procedure Se are specified and defi	those pollutar ction II.A. and ned in rule at	nts reason assumed 10 CSR 20	ably expected or demonstrat 0-7.031 (2).	to be pre ed to cau	sent in the disch se significant de	narge per t gradation.	he
What are the proposed p	collutants of concern a	POC	Maximu	m Daily Limit	Average	Weekly Limit	Average M	onthly Lin
Pollutants of Concern*	Units	Ammonia,		6 mm/l		- 2220	14	mali
BOD5	MGA	Summer	3,	o mg/ c			1.4	mg/r
rss	MGA	Ammonia,	7	5 mg/L			2.9	ma/I
DISSOLVED OXYGEN	MGA	Winter		S THEFT				
AMMONIA	MGA	BOD		***	3	10 mg/L	20	mg/L
	CELIE	TSS			3	10 mg/L	20	mg/L
MOTERIA (E. COLI)	GFUB	Copper	22	2.0 ug/L		***	11.0	0 ug/L
		рн	6.5	- 9.0 SU			6.5 -	9.0 SU
		Oil and Grease	1	5 mg/L			. 10	mg/L
		Bacteria		***	1030	cfu/100 mL	206 cf	u/100mL
DENTIFYING ALTER Supply a summary of the all significant degradation, an implementation Procedure	RNATIVES ternatives considered and analysis of non-degrading Section II.B.1. Per 10 CS	d the level of tre and less-degra	atment atta ding alterna	nable with rega atives must be p	rds to the a rovided," a	alternative. "For D as stated in the An	ischarges li tidegradatio	kely to caus
Applicants choosing to use alternative analysis must co http://dnr.mo.gov/pubs/pub;	a new wastewater techno mply with the requirement 2453.pdf.	view report. plogy that are co its set forth in th	nsidered an e New Tec	n "unproven tecl hnology Definiti	nnology* in ons and Re	Missouri in their T equirements Facts	Tier 2 Revier heet that ca	ws with n be found
Non-degrading alternativ	VES: The City evaluated amount of land area	Muent inigation a needed. It was th	s an alternati erefore exclu	ve to the discharg ded from further e	e. However, valuation.	the alternative is not	practicable (	iven the
Alternatives ranging from (All treatment levels for I	n less-degrading to de POCs must at a minim	grading includi um meet wate	ing Prefer r quality st	ed Alternative andards):		E-based Note		
Alternatives	POC	Base Co	ase	Nutrient Re	emoval	Removal		
		Average Mon	thly Limit	Average Mon	thly Limit	Average Monthly	Limit	
	Ammonia,	1.4 mg	h		di la			
	Summer		/1	1.4 m	hr.	1.4 mg/L		
	Summer Ammonia, Winter	2.9 mg	/L	2.9 mg	μL	1.4 mg/L 2.9 mg/L		
	Ammonia, Winter BOD	2.9 mg	/L /L	1.4 mg 2.9 mg 10 mg	/L /L	1.4 mg/L 2.9 mg/L 10 mg/L		
	Ammonia, Winter BOD TSS Conner	2.9 mg 20 mg 20 mg	/L /L /L	1.4 mg 2.9 mg 10 mg 10 mg	n n n	1.4 mg/L 2.9 mg/L 10 mg/L 10 mg/L		
	Summer Ammonia, Winter BOD TSS Copper	2.9 mg 20 mg 20 mg 11.0 ug	/L /L /L	1.4 mg 2.9 mg 10 mg 10 mg 11.0 ug		1.4 mg/L 2.9 mg/L 10 mg/L 10 mg/L 11.0 ug/L 6.5 - 9.0 SU		
	Summer Ammonia, Winter BOD TSS Copper pH Oll and Grease	2.9 mg 20 mg 20 mg 11.0 up 6.5 - 9.0 10 mg	/L /L /L /L SU /L	1.4 mg 2.9 mg 10 mg 10 mg 11.0 ug 6.5 - 9.0 10 mg	/L /L /L /L /L	1.4 mg/L 2.9 mg/L 10 mg/L 11.0 ug/L 6.5 - 9.0 SU 10 mg/L		
	Summer Ammonia, Winter BOD TSS Copper pH Oll and Grease Bacteria	2.9 mg 20 mg 20 mg 11.0 up 6.5 - 9.0 10 mg 205 cfu/1	/L /L /L 5U /L 00mL	1.4 mg 2.9 mg 10 mg 11.0 ug 6.5 - 9.0 10 mg 206 cfu/1	/L /L /L /L ) SU /L 00mL	1.4 mg/L 2.9 mg/L 10 mg/L 11.0 ug/L 6.5 - 9.0 SU 10 mg/L 206 cfu/100m		
M0 780-2021 (00/13)	Summer Ammonia, Winter BOD TSS Copper pH Oil and Grease Bacteria Total Phosphorus	2.9 mg 20 mg 20 mg 11.0 ug 6.5 - 9.0 10 mg 206 cfu/1	/L /L /L /L SU /L 00mL	1.4 mg 2.9 mg 10 mg 10.10 ug 11.0 ug 6.5 - 9.0 10 mg 206 cfu/1 1.0 mg/L - avera	1/L /L /L 1/L 1/L 1/L 00mL annual ge	1.4 mg/L 2.9 mg/L 10 mg/L 10 mg/L 11.0 ug/L 6.5 - 9.0 SU 10 mg/L 206 cfu/100m average	1L U	Page

The Deliter Minimum of The REASONABLE ALTERNATIVE	anable ellevention is one that is practicable, comparisonly
efficient and affordable." Provide basis and supporting documentation in t "See Report" for any box below.	the Antidegradation Review report. Please do not write
Practicability Summary:	
"The practicability of an alternative is considered by evaluating the effect according to the Antidegradation Implementation Procedure Section II.1 environmental impacts, are given in the Antidegradation Implementation	tiveness, reliability, and potential environmental impacts," 8.2.a. Examples of factors to consider, including secondar, 1 Procedure Section II.8.2.a.
The City evaluated four alternatives for this antidegradation analysis. The base on City's existing treatment facility. The base case alternative would expand DAP fron improvements towards attaining biological nutrient removal over the next 20 years	se alternative includes improvements and an expansion to the 5.3 MGD to 7.04 MGD and includes future plans for
Alternatives to the base case included a non-degrading option (effluent inightion) removal and enhanced subtant removal). The non-degrading option was not pract options were considered practicable.	and lwo less-degrading options (immediale biological nutrient icoble due to the land area required. The less-degrading
Economic Efficiency Summary:	
Alternatives that are deemed practicable must undergo a direct cost co to determine economic efficiency are provided in the Antidegradation In	nparison in order to determine economic efficiency. Mean plementation Procedure Section II.B.2.b.
The present worth onsi of the basis case elternative is \$10.1 million. Based on the 120% million are not economically efficient. The estimated present worth costs of the basi-degra significantly exceed this threshold. Therefore, they were excluded from further analysis.	hnshold described in the AIP, alternatives that cost more than \$12.2 using INHR (\$79.2 million) and ENR (\$91.9 million) alternatives
Affordability Summary:	
Alternatives identified as most practicable and economically efficient an affordability analysis. An affordability analysis per the Antidegradation determine if the alternative is too expensive to reasonably implement."	e considered affordable if the applicant does not supply an implementation Procedure Section II.B.2.c, "may be used to
The base case alternative was assumed to be affordable.	
Reduced Channel Allowedian	
Preferred Chosen Alternative: The have case alternative consists of the initial chase of the City's multi-	asset approach to implament biological putriant removal
(BNR) technology over the next 20 years as capacity of med day in Mul- upgrade phases described in Section 1.2 of the report, and are therefore r review is specifically for the Phase III expansion to 7.04 MGD. See the rep consists of the following: installation of Aeration Basin 5 anoxic zone mixe zones, and conversion of Treatment Unit 2 to entirely aerobic digestion.	hese phases follow from the initial two expansion and oferred to as Phase III, IV, V, and VI. This antidegradation ort for an explanation of all phases. Specifically, Phase III rs, a new Aeration Basin 6 to contain anoxic and aerobic
Reasons for Relecting the other Evaluated Alternatives:	
Not economically efficient. See above.	
	THE OF MISSO
	and the second second
	JEFFREY J C
	E G A GRATTER OCH I
	E S YNUMBER S
Commente/Discussion:	E-1999137696
	ROFESSIONAL
MO 765-2021 (02/13)	Page 3

EFERRED ALTER	RNATIVE	up dad	10000	THOM IS NOT
m, then it must be plementation Proc unity that will occu	demonstrated th ædure Section II. r from any activit	at it will allo E. Social a y involving a	w importar nd Econor new or ex	nt economic an nic Importance panding
and the	117 - 2157 Arris	50158		N
(B) as the commu cedure Section II. e in the communit	nity 'in the geog E.1, 'the affected y that are expect	raphical are t community ed to direct	a in which to should ind y or indirect	the waters dude those tly benefit
a customers of the	City of wentzvin	0.		
economic condi	tions of the affe	cted comm	unity:	
the Antidegradatio	n Implementatio	n Procedure	Section II.	E.1., but
2000 and expects 12% between 201 at additional capac	this growth to co 7 and 2037. At th city may be need	ntinue into t ils rate of gr ed at the Wi	he foresee owth, the p RC as soo	able future. The rojected annua n as 2020.
ent associated wi	th the project:			
ent should be site nued growth in the	specific and in a City.	coordance v	vith the An	tidegradation
Semation Center (WRC, M	3-40935930 to address ro	cent and anticipal	od growth in the	area. The City's com
; with the Plant's current m ily 2.7 miles upstream from	avinum month to average the Big Creak confluence	e day ratio this eq o. McCoy Crock is	ourrently const	al average day capaci lered a Tier 2 waterbo
In average flow of 6.96 MG IMGD.	D by the year 2032. This	report document	n the results of t	he City's antidegradat
er the increased discharge $\phi_i$ , and two less-degrading my practicable, economica- natrates that the organision	In recommery and import alternatives (BNR and EP ity efficient, and affordate project is necessary to a	ant. The adarmstiv VPL: Persetts of the to treatment above commodate exists commodate exists	es analysis indi- alternatives pr- ative. Therefore ling and anticip:	aled an ovaluation of alysis indicated that th , it is the preferred aled population growth
documentation.	This is a technica	il document,	which mu	st be signed,
all attached report entation Procedu	s and documenta re and current sta	ation. The c ate and fede	onclusion ral regulat	proposed is ons.
Loo		7/3/20	18	
HD	R Engineering, I	nc.		
cm St.	Y Louis		STATE MO	ZIP CODE 63101
	E-MAIL ADDRESS	hdrinc.com		
s and agree with t	his submittal.			
		DATE	1/6/18	
prepared docume	nts and agree wit	h this subm	ttal.	
		OATE	7/2/1	0,
	EFERRED ALTEF n, then it must be plementation Proc inity that will occu      (B) as the commu cedure Section II.     a in the communit      I customers of the     economic condi     he Antidegradatio 2000 and expects 2% between 201 2% betwee	EFERRED ALTERNATIVE  n, then it must be demonstrated th plementation Procedure Section II nity that will occur from any activit  (B) as the community 'in the geogle cedure Section II.E.1, 'the affected a in the community that are expect I customers of the City of Wentzvill  economic conditions of the affet he Antidegradation Implementation 2000 and expects this growth to co 12% between 2017 and 2037. At th at additional capacity may be need  nt associated with the project: ent should be site specific and in a vued growth in the City.  hermitise Caster (WRC, NO-6035999) to address re with the Plan's current maintain ment to average y 2.7 miss upstower from the Big Creat cartage p 2.7 miss upstower from the Big Creat cartage in average from of 6.50 MGD by the year 2032. This MGD.  at the increased discharge is receasery and import by and that the reports and document entation Procedure and current sta  COMPANY NAME HDR Regime in this submittal, prepared documents and agree with	Seconomic conditions of the affected community in the community that are expected to directly codures of the City of Wentzville.  Community that are expected to directly community and 2037. At this rate of gra at additional capacity may be needed at the Wi nue growth in the City.   Annals Context (WRC, MO-6003609) to address recent and anticpat with the Plan's current maximum month to average day rate this exp y 2.7 mike upstant maximum month to average day rate this exp y 2.7 mike upstant maximum month to average day rate this exp y 2.7 mike upstant for the Bg Creat confluence. McCy Creates is no average flow of 6.90 MGD by the year 2032. This report document documentation. This is a technical document, lissouri.  all attached reports and document state and fede DATE COMPANY NAME HDR Plants and Chapter and current state and fede DATE COMPANY NAME HDR Plants and Coursent state and fede DATE COMPANY NAME HDR Plants and Coursent state and fede DATE COMPANY NAME HDR Plants and account and current state and fede DATE COMPANY NAME HDR Plants and account and current state and fede DATE COMPANY NAME HDR Plants and Coursent state and fede DATE COMPANY NAME HDR Plants and account and current state and fede DATE COMPANY NAME HDR Plants and account and the submittal. DATE DATE DATE DATE DATE DATE DATE DATE	EFERRED ALTERNATIVE  n, then it must be demonstrated that it will allow importar plementation Procedure Section II.E. Social and Econom mity that will occur from any activity involving a new or ex- (B) as the community 'in the geographical area in which i cedure Section II.E.1, 'the affected community should inc a in the community that are expected to directly or indirect I customers of the City of Wentzville.  economic conditions of the affected community: he Antidegradation Implementation Procedure Section II. 2000 and expects this growth to continue into the foresee 12% between 2017 and 2037. At this rate of growth, the p at additional capacity may be needed at the WRC as soor nt associated with the project: ent should be site specific and in accordance with the An wed growth in the City.  heradise Caster (NRC, MD 4003999) to address recent and enfotpated growth in the with the plant's current materian month to average the caster to an any ity Plant's upwards out a full constant of the affected currents with the An wed growth in the City.  heradise Caster (NRC, MD 4003999) to address recent and enfotpated growth in the with the plant's current materian month to average the caster to an any ity Plant's upwards out to the specific and in accordance with the An wed growth in the City.  heradise Caster (NRC, MD 4003999) to address recent and enfotpated growth in the full to address the the tag Constant and anticipated growth in the intervent to address the the tag Constant and anticipated growth in the full to address the the tag Constant and and the full to address the treated to the full to address the the tag Constant and anticipated growth in the intervent address to a the full to address the treated to the full to address the the tag Constant and address the treated to the full to address the the tag Constant and the full to address the treated to the full to address the the tag Constant and address to address the treated to the full to address the the tag Constant address the the to address the treated to

RECEIVED
MISSOURI DEPARTMENT OF NATURAL RESOURCES WATER PROTECTION PROGRAM APPLICATION FOR CONSTRUCTION PERMIT - WASTEWATER TREATMENT FACILITY Water Protection Water Protection Protection
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 Z 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:       12/2018         ☑ N/A
<ul> <li>1.3 Has the department approved the proposed project's facility plan*?</li> <li>✓ YES Date of Approval: 1/2019 □ NO (If No, complete No. 1.4.)</li> </ul>
<ul> <li>I.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?</li> <li>YES NO Exempt because</li> </ul>
1.5 Is a copy of the appropriate plans* and specifications* included with this application? ✓ YES Denote which form is submitted: ☑ Hard copy
1.6 Is a summary of design* included with this application?  YES NO See Facility Plan
<ul> <li>I.7 Has the appropriate operating permit application (A, B, or B2) been submitted to the department?</li> <li>YES Date of submittal:</li> <li>✓ Enclosed is the appropriate operating permit application and fee submittal. Denote which form: A B B2</li> <li>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</li> </ul>
1.8 Is the facility currently under enforcement with the department or the Environmental Protection Agency? 🔲 YES 🖉 NO
I.9 Is the appropriate fee or JetPay confirmation included with this application? Z YES □ NO See Section 7.0
Must be affixed with a Missouri registered professional engineer's seal, signature and date.
2.0 PROJECT INFORMATION
1 NAME OF PROJECT 22 ESTIMATED PROJECT CONSTRUCTION COST
ventzville vvRC Phase 3 Expansion $\Psi$ 6,146,000
Expansion of the plant ADF Design Capacity from 5.3 MGD to 7.0 MGD via the construction of a new Aeration Basin, Conversion of Treatment Unit to entirely Aerobic Digestion and modifications to Influent Flow Splitter Structure.
4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
ludge is dewatered and stored in a cake storage building and land applied or hauled to landfill.
5 DESIGN INFORMATION
Current population: <u>36K</u> ; Design population: <u>41.8K</u>
<ol> <li>Actual Flow: <u>4.3M</u> gpd; Design Average Flow: <u>5.3 M</u> gpd;</li> <li>Actual Peak Daily Flow: <u>13.9M</u> gpd; Design Maximum Daily Flow: <u>13.9M</u> gpd; Design Wet Weather Event:</li> </ol>
6 ADDITIONAL INFORMATION
A. Is a topographic map attached? I YES INO
J. Is a process flow diagram attached? ☑ YES □ NO
780-2189 (02-19) Page 1 of 3

3.0 WASTEWATER TREATMENT FACILI	TΥ					
NAME TELEPHONE NUMBER WITH AREA CO			REA CODE	E-MAIL ADDRESS		
Wentzville Water Reclamation Center	enter 636-639-7541			Ryan.Peasel@w	entzvillemo.org	
ADDRESS (PHYSICAL)	CITY	1-	STATE	ZIP CODE	COUNTY	
2455 Mette Rd	Wentzville MO			63385	St Charles	
Wastewater Treatment Facility: Mo- 009359	99 (Outfal	1#003 Of )				
3.1 Legal Description: <u>SW</u> ¼, <u>SE</u> ½ (Use additional pages if construction of more	than one of	¼, Sec. 2, T_47N utfall is proposed.)	_, R_ <u>1E</u>			
3.2 UTM Coordinates Easting (X): 684740 For Universal Transverse Mercator (UTM), Zu	Northin one 15 North	g (Y): <u>43036</u> 18 h referenced to North Amer	ican Datum 19	983 (NAD83)		
3.3 Name of receiving streams: McCoy	/ Creek (C)	i				
4.0 PROJECT OWNER		(0				
NAME City of Montrullo	TEL (G2)		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS	
		STATE		susan.spiegei@w	/entzvillemo.org	
1001 Schroeder Creek Boulevard	Wentzvill	Ventzville MO		63385		
5.0 CONTINUING AUTHORITY: A continu and/or ensuring compliance with the permit i	ing authori requiremer	ly is a company, busines Its.	s, entity or p	person(s) that will be	operating the facility	
NAME		TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS		
City of Wentzville/Susan Spiegel	(636) 639-2049			susan.spiegel@wentzvillemo.org		
ADDRESS 1001 Schroeder Creek Boulevard	Wentzvill	e	STATE	ZIP CODE 63385		
5.1 A letter from the continuing authority if	tifferent the	an the owner is included	with this an			
5.2 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHO	DRITY IS A MIS	SOURI PUBLIC SERVICE COMMIS	SION REGULATE			
A. Is a copy of the certificate of convenience	and nece	ssity included with this a	pplication?	YES NO		
5.3 COMPLETE THE FOLLOWING IF THE CONTINUING AUTHO	DRITY IS A PRO	PERTY OWNERS ASSOCIATION.				
A. Is a copy of the as-filed restrictions and c	ovenants i	ncluded with this applica	tion? 🗌 Y	'ES 🗌 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 assoc	iation inclu	ded with this application	? 🗌 YES	🗔 NO		
C. Is a copy of the as-filed legal instrument (	typically th	e plat) that provides the	association	with valid easement	s for all sewers	
Included with this application?		Et corporation andificati	Included wi	the this complication ()		
D. Is a copy of the missouri Secretary of Sta	te s nonpro	micorporation certificate	e included wi	an unis application?		
ENGINEER NAME / COMPANY NAME		TELEPHONE NUMBER WITH AR	EA CODE	E-MAIL ADDRESS		
David Bunch / HDR Inc.	(314) 425-8323			david.bunch@hdrinc.com		
ADDRESS	CITY	STATE		ZIP CODE		
10450 Holmes Rd., #60Ò	Kansas C	ity	MO	64131		
7.0 APPLICATION FEE						
CHECK NUMBER		JETPAY CONFIRMATION NUMB	ER			
8.0 PROJECT OWNER: I certify under pena	alty of law I	hat this document and a	ill attachmen	ts were prepared ur	nder my direction or	
supervision in accordance with a system des	igned to as	sure that qualified perso	nnel properi	y gather and evalua	te 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						
knowing violations	subimung	aise monnation, includi	ng me possi	unity of the and mp	IISOIIIIIERE IO	
PROJECT OWNER SIGNATURE						
Sugar Sprigel						
PRINTED NAME				DATE		
Susan Spiegel			7/22/2020			
TITLE OR CORPORATE POSITION	TELEPHONE NUMBER WITH AREA CODE		E-MAIL ADDRESS			
Director of Public Works		636-639-2030		susan.spiegei@we	intzvillemo.org	
Mail completed copy to: MISSOURI WATER PF P.O. BOX 1 JEFFERSO	ed 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 OV	ERVIEW	O DETERMINE WHET	HER PART	B NEEDS TO BE C	OMPLETE.	
					Page 2 of 3	