

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



CONSTRUCTION PERMIT

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

CALVEY CREEK SEWER DISTRICT OF FRANKLIN COUNTY
CCSD Catawissa WWTF
0.1 miles NE of Frisco Dr and Somers Ave intersection
Catawissa, MO 63015

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

Construction of such proposed facilities shall be in accordance with the provisions of the Missouri Clean Water Law, Chapter 644, RSMo, and regulation promulgated thereunder, or this permit may be revoked by the Department of Natural Resources (department).

As the department does not examine structural features of design or the efficiency of mechanical equipment, the issuance of this permit does not include approval of these features.

A representative of the department may inspect the work covered by this permit during construction. Issuance of a permit to operate by the department will be contingent on the work substantially adhering to the approved plans and specifications.

This permit applies only to the construction of water pollution control components; it does not apply to other environmentally regulated areas.

January 6, 2025

Effective Date

January 5, 2027

Expiration Date

John Hoke, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

This is a **DEMONSTRATION** project and additional monitoring requirements are included in the operating permit in accordance with the Approval Process for Innovative Technology Factsheet and 10 CSR 20-6.010(5) for Calvey Creek Sewer District (CCSD) Catawissa WWTF. Construction includes installation of two baffles to create a total of four lagoon cells; installation of OPTAER FlexAir Magnum fine bubble, partial mix diffusers in cells one through three; addition of the EDI Foxtail™ submerged attached growth media modules in cell 3; and removal of existing Outfall 001. The design average flow will remain at 185,000 gallons per day (gpd).

This project will also include general site work appropriate to the scope and purpose of the project and all necessary appurtenances to make a complete and usable wastewater treatment facility.

II. COST ANALYSIS FOR COMPLIANCE

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

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

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

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 Terris L. Cates, P.E. with Bartlett & West, Inc. and as described in this permit.
3. The department must be contacted in writing prior to making any changes to the plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(11).
4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the department's Saint Louis Regional Office per 10 CSR 20-7.015(9)(G).
5. 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. 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)

- General. 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.
 - Aerated lagoons shall be capable of maintaining the design level of dissolved oxygen with a particular cell with one (1) unit in the cell out of service. 10 CSR 20-8.200(3)(A)2.A.
 - Aerated lagoons shall be capable of maintaining a minimum dissolved oxygen level of two milligrams per liter (2 mg/L) in the lagoon at all times. 10 CSR 20-8.200(3)(A)2.B.
 - Aerated lagoons shall be capable of delivering one and four tenths pounds of oxygen per pound of biochemical oxygen demand removed (1.4 lbs O₂/1 lb NH₃). 10 CSR 20-8.200(3)(A)2.C.
 - Aerated lagoons shall be capable of delivering an additional four and six tenths pounds of oxygen per pound of ammonia nitrogen removal (4.6 lbs O₂/1 lb NH₃). 10 CSR 20-8.200(3)(A)2.D.
8. Upon completion of construction:
- A. The CALVEY CREEK SEWER DISTRICT OF FRANKLIN COUNTY will become the continuing authority for operation and maintenance of these facilities;
 - B. Submit an electronic copy of the as built if the project was not constructed in accordance with previously submitted plans and specifications; and
 - C. Submit the 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 October 25, 2024 be issued. The operating permit modification fee of \$200 has been paid.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

The existing facility cannot consistently meet final effluent limits for Ammonia as Nitrogen of 1.4 mg/L in summer and 2.9 mg/L in winter which became effective September 1, 2023, as established in Operating Permit MO-0115410. The existing system does not have adequate means for ammonia reduction and this is the primary driver for the proposed improvements.

2. FACILITY DESCRIPTION

Wastewater is pumped into the system through an influent lift station. It enters a three-cell lagoon. The cells are separated by baffles and each cell is aerated. Following the third cell, the effluent flows either through a flow meter to discharge at Outfall 001 or through tablet chlorination and dechlorination tanks and a v-notch weir to discharge at Outfall 002.

The upgrade will be a **DEMONSTRATION** project for the OPTAER Foxtail Nitrification Process developed by Environmental Dynamics International. The upgrade will include installation of two baffles to create four lagoon cells; installation of OPTAER FlexAir Magnum fine bubble, partial mix diffusers in cells one through three; addition of the EDI Foxtail™ submerged attached growth media modules in cell 3; and removal of existing Outfall 001.

The CCSD Catawissa WWTF is located 0.1 miles northeast of Frisco Dr. and Somers Ave. intersection, Catawissa, in Franklin County, Missouri. The facility has a design average flow of 185,000 gpd and serves a hydraulic population equivalent of approximately 1,850 people.

3. COMPLIANCE PARAMETERS

The construction is to meet Ammonia as N effluent limits, effective January 1, 2025, as established in Operating Permit MO-0118410. As this is a demonstration project, for the two years of operation following construction, additional monitoring will be required at the lagoon influent pipe, inlet and outlet of the EDI Foxtail Module basin, and at the lagoon effluent pipe. Engineering evaluation reports will be required to be submitted on the operations for the first year and the full two-year demonstration period as required by the operating permit.

The interim limits for the two-year demonstration period following the completion of construction are as follows:

EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS		
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE
Biochemical Oxygen Demand ₅	mg/L		45	30
Total Suspended Solids	mg/L		45	30
Ammonia as N (Apr 1 – Sept 30)	mg/L	5.3		1.3
Ammonia as N (Oct 1 – Mar 31)	mg/L	10.9		2.7
Biochemical Oxygen Demand ₅ - Percent Removal	%			≥85
Total Suspended Solids - Percent Removal	%			≥85

The final limits following the two-year demonstration period following the completion of construction are as follows:

EFFLUENT PARAMETER(S)	UNITS	INTERIM EFFLUENT LIMITATIONS		
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE
Biochemical Oxygen Demand ₅	mg/L		45	30
Total Suspended Solids	mg/L		45	30
Ammonia as N (January)	mg/L	10.9		2.7
Ammonia as N (February)	mg/L	10.1		2.7
Ammonia as N (March)	mg/L	10.9		2.7
Ammonia as N (April)	mg/L	5.3		1.3
Ammonia as N (May)	mg/L	5.3		1.3
Ammonia as N (June)	mg/L	5.3		1.3
Ammonia as N (July)	mg/L	5.3		1.3
Ammonia as N (August)	mg/L	5.3		1.3
Ammonia as N (September)	mg/L	5.3		1.3
Ammonia as N (October)	mg/L	10.9		2.5
Ammonia as N (November)	mg/L	10.9		2.7
Ammonia as N (December)	mg/L	10.9		2.7
Biochemical Oxygen Demand ₅ - Percent Removal	%			≥85
Total Suspended Solids - Percent Removal	%			≥85

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

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

- Lagoon Cell Nos. 1 and 2 – Lagoon Cell Nos. 1 and 2 are partial mix aerated cells baffled by a curtain. Both cells have depth of 10 ft.
 - Cell No. 1 has a surface area of approx. 1.1 acres, 2 ft of freeboard, 9 ft of operating depth, and 1 ft of sludge depth providing a wastewater volume of 2,953,247 gallons and 15.9 days of retention time at the proposed design flow.
 - Cell No. 2 has a surface area of approx. 0.5 acres, 2 ft of freeboard, 9.5 ft of operating depth, and 0.5 ft of sludge depth providing a wastewater volume of 1,402,598 gallons and 7.6 days of retention time at the proposed design flow.
- Disinfection – Disinfection is the process of removal, deactivation, or killing of pathogenic microorganisms.

- Tablet Chlorinator – two Norweco Model LF4800 tablet feeders receiving clarified effluent and prior to the chlorine contact tank. Each tablet chlorinator has a design maximum flow of 400,000 gpd. The system dispenses hypochlorite as the wastewater comes into contact with the tablets.
- Chlorine Contact Tank – three–2,320-gallon chlorine contact basins in series. These tanks allow for a 15-minute contact time during a peak flow of 668,160 gpd. [The chlorine contact chamber also includes a sump pit to allow dewatering and maintenance of the tank.]
- Tablet Dechlorinator – two Norweco Model LF4800 tablet feeders receiving the chlorinated effluent and prior to Outfall No. 002. Each tablet dechlorinator has a design maximum flow of 400,000 gpd. The system dispenses sodium sulfite as the wastewater comes into contact with the tablets.
- V-notch Weir –A v-notch weir with a 60-degree notch (appropriate for flows between 17,000 gpd and 5,280,000 gpd) with an ultrasonic flow sensor measures the secondary treated and disinfected wastewater prior to discharge at Outfall No. 002.

Construction will cover the following items:

- Two curtain baffles to replace the baffle between cell 2 and cell 3 and to convert previous cell 3 into new cells 3 and 4. All cells have depth of 10 ft.
 - Cell No. 3 has a surface area of approx. 0.11 acres, 2 ft of freeboard, and 10 ft of operating depth providing a wastewater volume of 314,182 gallons and 2.2 days of retention time at the proposed design flow.
 - EDI Foxtail™ submerged media consisting of 114 modules, each 6.56 ft wide with 25 strands of 9 ft long Foxtail™ media, spaced 2.25 ft apart within two rows; each module has an active available surface area of 1,197 ft² for a total active available surface area of 136,458 ft², and an ammonia surface loading rate of 0.113 g/m², based on an ammonia influent concentration of 22 mg/L.
 - Cell No. 4 has a surface area of approx. 0.49 acres, 2 ft of freeboard, and 10 ft of operating depth providing a wastewater volume of 1,236,468 gallons and 6.7 days of retention time at the proposed design flow. The cell is non-aerated will serve as a settling basin.
- EDI OPTAER™ aeration system consisting of duplex 30 hp blowers, each capable of supplying a total of 574 scfm.
 - 294 scfm to 21 fine bubble diffusers in Cell No. 1.
 - 84 scfm to 6 fine bubble diffusers in Cell No. 2.
 - 196 scfm to 14 fine bubble diffusers in Cell No. 3.
- Outfall No. 001 currently only used during the non-recreational season is to be removed.

5. OPERATING PERMIT

Operating permit MO-0002432 will require a modification to reflect the construction activities. The combined renewal and modified CCSD Catawissa WWTF, MO-0002432, was successfully public noticed from October 25, 2024, to November 25, 2024, 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.

V. NOTICE OF RIGHT TO APPEAL

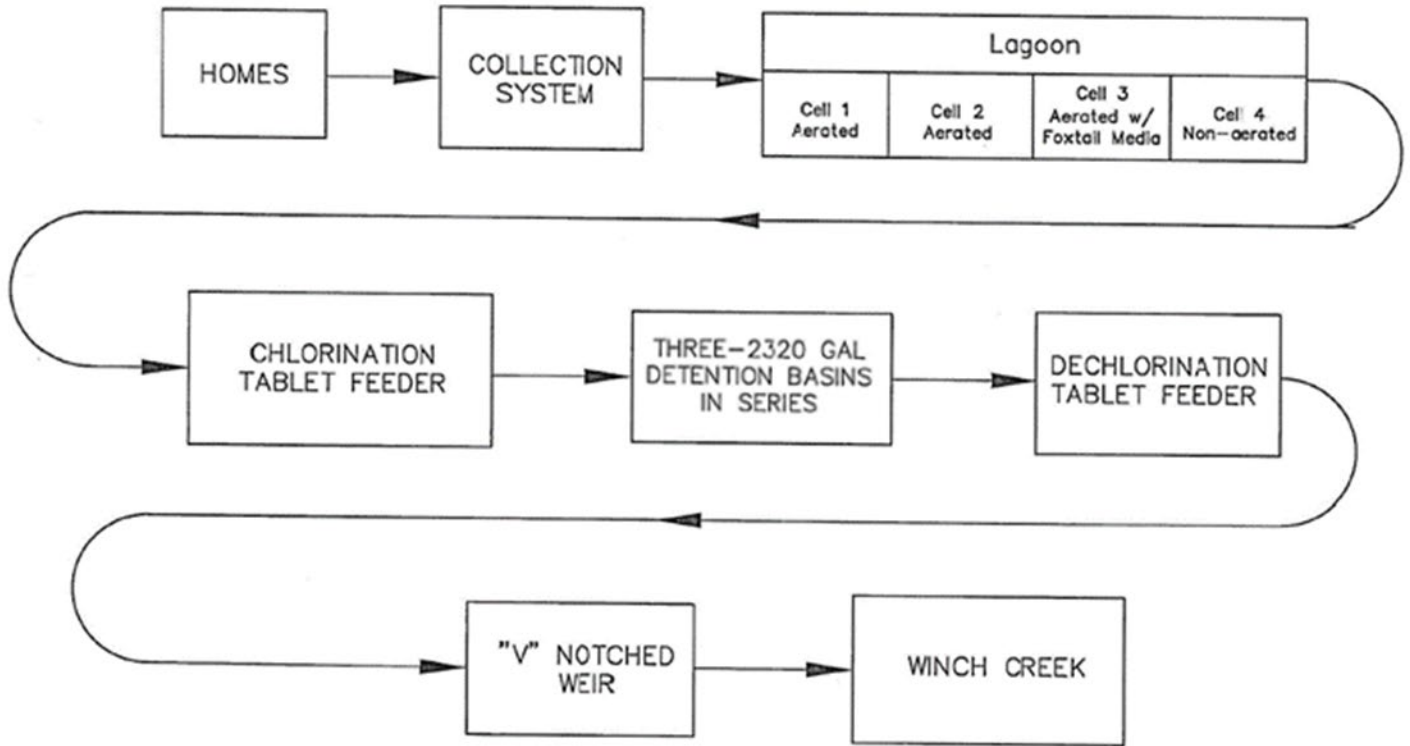
If you were adversely affected by this decision, you may be entitled to an appeal before the Administrative Hearing Commission (AHC) pursuant to Section 621.250 RSMo. To appeal, you must file a petition with the AHC within 30 days after the date this decision was mailed or the date it was delivered,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

Katrice Williams
Engineering Section
katrice.williams@dnr.mo.gov

Chia-Wei Young, P.E.
Engineering Section
chia-wei.young@dnr.mo.gov

APPENDIX A - PROCESS FLOW DIAGRAM:



APPENDIX B - CELL 3 LAYOUT:

Figure 1. Cell 3 Cross Section

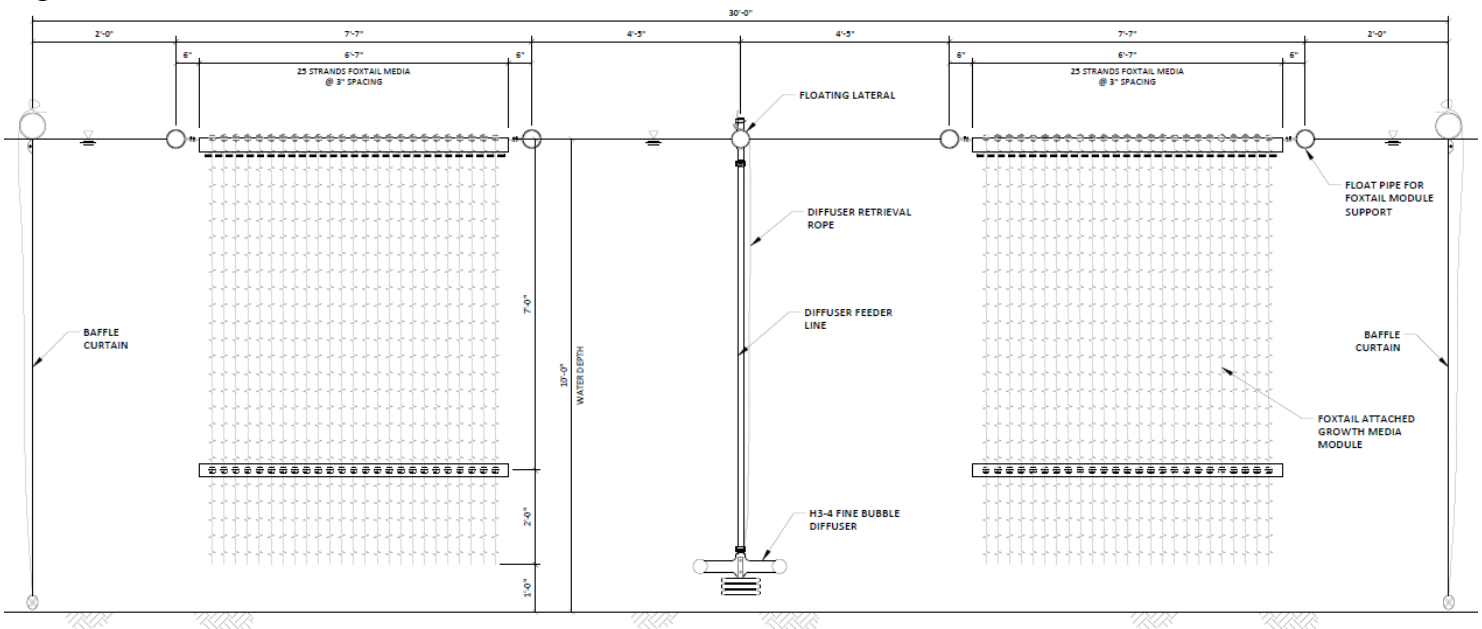
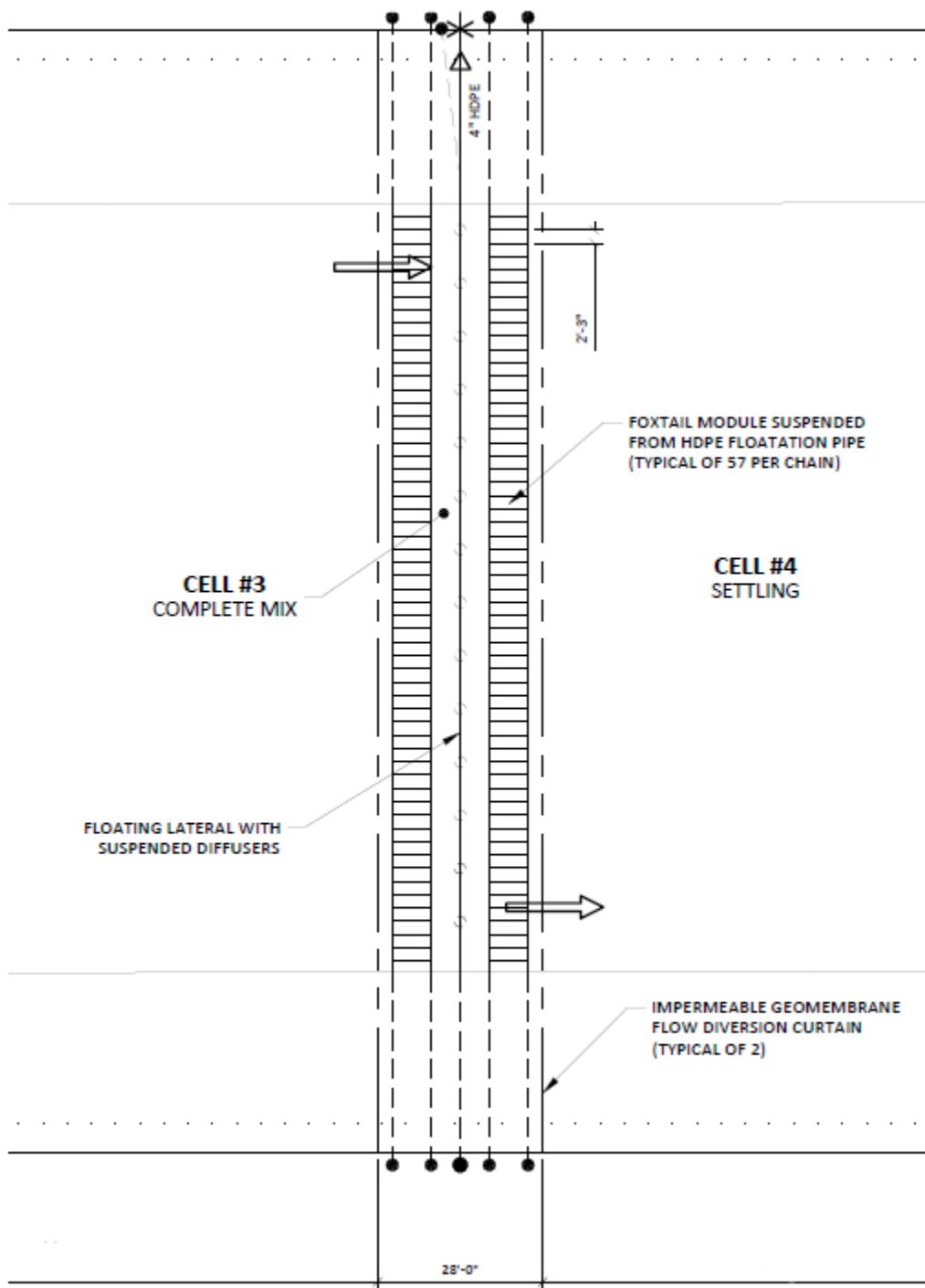
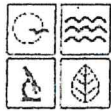


Figure 2. Cell 3 Aerial View





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: _____ N/A
- 1.3 Has the department approved the proposed project's facility plan*?
 YES Date of Approval: NA 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 Permit and Sch of Compliance requirement
- 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 Fixed film media, baffles and increased aeration	2.2 ESTIMATED PROJECT CONSTRUCTION COST \$ 496,000
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2.3 PROJECT DESCRIPTION
is being added to the lagoon facility to meet the DNR permit limits

2.4 SLUDGE HANDLING, USE AND DISPOSAL DESCRIPTION
Sludge is retained and degraded in the aerated lagoon cells

2.5 DESIGN INFORMATION
 A. Current population: 1630; Design population: 1850
 B. Actual Flow: 163 gpd; Design Average Flow: 185 gpd;
 Actual Peak Daily Flow: _____ gpd; Design Maximum Daily Flow: _____ gpd; Design Wet Weather Event: _____

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 CCSD, Catawissa WWTF		TELEPHONE NUMBER WITH AREA CODE (636) 257-9073		E-MAIL ADDRESS kcoughlin@calveycreeksd.org	
ADDRESS (PHYSICAL) FRISCO DR		CITY CATAWISSA	STATE MO	ZIP CODE 63015	COUNTY Franklin
Wastewater Treatment Facility: Mo- (Outfall Of)					
3.1 Legal Description: <u> </u> ¼, <u>NE</u> ¼, <u>NE</u> ¼, Sec. 34, T <u>43N</u> , R <u>2E</u> (Use additional pages if construction of more than one outfall is proposed.)					
3.2 UTM Coordinates Easting (X): <u>694265</u> Northing (Y): <u>4256018</u> For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)					
3.3 Name of receiving streams: <u>Winch Creek</u>					

4.0 PROJECT OWNER

NAME Calvey Creek Sewer District		TELEPHONE NUMBER WITH AREA CODE (636) 257-9073		E-MAIL ADDRESS kcoughlin@calveycreeksd.org	
ADDRESS 7380 Highway O		CITY Robertsville	STATE MO	ZIP CODE 63072	

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 Calvey Creek Sewer District		TELEPHONE NUMBER WITH AREA CODE (636) 257-9073		E-MAIL ADDRESS kcoughlin@calveycreeksd.org	
ADDRESS 7380 Highway O		CITY Robertsville	STATE MO	ZIP CODE 63072	

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 Terris L. Cates, PE, PLS/ Bartlett & West, Inc.		TELEPHONE NUMBER WITH AREA CODE (573) 341-2100		E-MAIL ADDRESS terris.cates@bartwest.com	
ADDRESS 1714 E. 10th Street		CITY Rolla	STATE MO	ZIP CODE 65401	

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

Karen Coughlin

PRINTED NAME Karen Coughlin		DATE 1-10-24
TITLE OR CORPORATE POSITION President		TELEPHONE NUMBER WITH AREA CODE (636) 257-9073
		E-MAIL ADDRESS kcoughlin@calveycreeksd.org

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.