

STATE OF MISSOURI
DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION



MISSOURI STATE OPERATING PERMIT

In compliance with the Missouri Clean Water Law (Chapter 644 RSMo, hereinafter, the Law), and the Federal Water Pollution Control Act (Public Law 92-500, 92nd Congress) as amended,

Permit No.	MO-0137896
Owner:	MDNR, Division of State Parks
Address:	P.O. Box 176, Jefferson City, MO 65102
Continuing Authority:	Same as above
Address:	Same as above
Facility Name:	MDNR, Echo Bluff State Park WWTP
Facility Address:	35244 Echo Bluff Drive, Eminence, MO 65466
Legal Description:	See Page 2
UTM Coordinates:	See Page 2
Receiving Stream:	See Page 2
First Classified Stream and ID:	See Page 2
USGS Basin & Sub-watershed No.:	See Page 2

authorizes activities pursuant to the terms and conditions of this permit in accordance with the Missouri Clean Water Law and/or the National Pollutant Discharge Elimination System; it does not apply to other regulated activities.

FACILITY DESCRIPTION

See Page 2

February 1, 2020
Effective Date

July 1, 2023
Modification Date

March 31, 2024
Expiration Date



John Hoke, Director, Water Protection Program

FACILITY DESCRIPTION (continued):

Permitted Feature #001 – Wastewater treatment system #1 – Large Filter

The use or operation of this facility shall be by or under the supervision of a Certified “D” Operator.

Septic tanks / recirculating sand filter / dosing tank / subsurface soil dispersal system / sludge hauled by contract hauler / biosolids are land applied by a permitted biosolids disposal facility.

Design population equivalent is 239.

Average design flow is 23,910 gallons per day (dry weather flows).

Design sludge production is 1.03 dry tons per year.

Legal Description:	NW ¼, SE ¼, Sec. 08, T30N, R04W, Shannon County
UTM Coordinates:	X = 641782, Y = 4130346
Receiving Stream:	Tributary to Sinking Creek
First Classified Stream and ID:	Sinking Creek (P) (2650)
USGS Basin & Sub-watershed No.:	(11010008-0303)

Permitted Feature #004 – Wastewater treatment system #1 – Subsurface Irrigation Field

Legal Description:	Sec. 08, T30N, R04W, Shannon County
UTM Coordinates:	X = 641771, Y = 4130268
Receiving Stream:	Tributary to Sinking Creek
First Classified Stream and ID:	Sinking Creek (P) (2650)
USGS Basin & Sub-watershed No.:	(11010008-0303)

Wastewater Irrigation Design Parameters:

Soil treatment area: 4.12 acres (179,330 sq. ft.)

Subsurface loading rate: 0.2 gallons per day per square foot

Field slopes: less than 18 percent

Equipment type: Low Pressure Pipe

Vegetation: Timber

Irrigation rate is based on: Hydraulic loading rate

Permitted Feature #002 – Wastewater treatment system #2 – Bluff Top Filter

The use or operation of this facility shall be by or under the supervision of a Certified “D” Operator.

Septic tanks / recirculating sand filter / dosing tank / subsurface soil dispersal system / sludge hauled by contract hauler / biosolids are land applied by a permitted biosolids disposal facility.

Design population equivalent is 15.

Average design flow is 1,500 gallons per day (dry weather flows).

Design sludge production is 0.09 dry tons per year.

Legal Description:	NW ¼, SW ¼, Sec. 08, T30N, R04W, Shannon County
UTM Coordinates:	X = 640940, Y = 4130202
Receiving Stream:	Tributary to Sinking Creek
First Classified Stream and ID:	Sinking Creek (P) (2650)
USGS Basin & Sub-watershed No.:	(11010008-0303)

Permitted Feature #005 – Wastewater treatment system #2 – Subsurface Irrigation Field

Legal Description:	Sec. 08, T30N, R04W, Shannon County
UTM Coordinates:	X = 640940, Y = 4130180
Receiving Stream:	Tributary to Sinking Creek
First Classified Stream and ID:	Sinking Creek (P) (2650)
USGS Basin & Sub-watershed No.:	(11010008-0303)

Wastewater Irrigation Design Parameters:

Soil treatment area: 0.17 acres (7,500 sq. ft.)
Subsurface loading rate: 0.2 gallons per day per square foot
Field slopes: average 10 percent
Equipment type: Low Pressure Pipe
Vegetation: Timber
Loading rate is based on: Hydraulic loading rate

Permitted Feature #003 – Wastewater treatment system #3 - Campground

The use or operation of this facility shall be by or under the supervision of a Certified “D” Operator.

Septic tanks / recirculating sand filter / dosing tank / subsurface soil dispersal system / sludge hauled by contract hauler / biosolids are land applied by a permitted biosolids disposal facility.

Design population equivalent is PE. 90
Average design flow is 9,019 gallons per day.
Design sludge production is 0.48 dry tons per year.

Legal Description:	NE ¼, NW ¼, Sec. 08, T30N, R04W, Shannon County
UTM Coordinates:	X = 641273, Y = 4131069
Receiving Stream:	Tributary to Sinking Creek
First Classified Stream and ID:	Sinking Creek (P) (2650)
USGS Basin & Sub-watershed No.:	(11010008-0303)

Permitted Feature #006– Wastewater treatment system #3 – Subsurface Irrigation Field

Legal Description:	Sec. 08, T30N, R04W, Shannon County
UTM Coordinates:	X = 641283, Y = 4131073
Receiving Stream:	Tributary to Sinking Creek
First Classified Stream and ID:	Sinking Creek (P) (2650)
USGS Basin & Sub-watershed No.:	(11010008-0303)

Wastewater Irrigation Design Parameters:

Soil treatment area: 1.54 acres (67,642 sq. ft.)
Subsurface loading rate: 0.2 gallons per day per square foot
Field slopes: less than 8 percent
Equipment type: Low Pressure Pipe
Vegetation: Timber
Loading rate is based on: Hydraulic loading rate

Permitted Feature #007 – Splash Pad

Splash pad is part of a playground and is not a wastewater treatment system but is a potential water contaminant source.

Estimated daily flow is 2,400 gallons per day.

Legal Description:	Sec. 08, T30N, R04W, Shannon County
UTM Coordinates:	X = 641154, Y = 4130425
Receiving Stream:	Tributary to Sinking Creek
First Classified Stream and ID:	Sinking Creek (P) (2650)
USGS Basin & Sub-watershed No.:	(11010008-0303)

A. STANDARD CONDITIONS

In addition to specified conditions stated herein, this permit is subject to the attached Parts I, II, & III standard conditions dated August 1, 2014, May 1, 2013, and August 1, 2019, and hereby incorporated as though fully set forth herein. Annual reports required per Standard Conditions Part III Section K shall be submitted online to the Department via the Department's eDMR system as an attachment. This supersedes Standard Conditions Part III Section K #4. EPA reports shall continue to be submitted online via the Central Data Exchange system.

B. SPECIAL CONDITIONS

1. Subsurface Soil Dispersal System.
 - (a) No-discharge facility requirements. Wastewater shall be dispersed in such a manner so that there is no discharge from the soil treatment area.
 - (b) General Requirements. The soil dispersal system shall provide uniform distribution throughout the soil treatment area at the design loading rates and shall not cause surfacing of wastewater.
 - (c) Set Backs. There shall be no subsurface soil dispersal system(s) within:
 - (1) 300 feet from any existing potable water supply well not located on the property. Adequate protection shall be provided for wells located on the application site;
 - (2) 10 feet of the property line or public road.
 - (d) Livestock, Crop and Access Restrictions. No livestock shall be allowed to use the area. Vegetation such as grasses or other non-food crops must be maintained over the system. The only equipment allowed on the area is equipment used to maintain the vegetation. Access from heavy vehicles must be controlled to prevent damage.
 - (e) Equipment Checks and Inspections. The soil treatment area shall be visually inspected at least once/month to check for equipment malfunctions, ponding and runoff from the area.
2. Bypasses are not authorized at this facility unless they meet the criteria in 40 CFR 122.41(m). If a bypass occurs, the permittee shall report in accordance to 40 CFR 122.41(m)(3), and with Standard Condition Part I, Section B, subsection 2. Bypasses are to be reported to the Southeast Regional Office during normal business hours or by using the online Sanitary Sewer Overflow/Facility Bypass Application located at: <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem> or the Environmental Emergency Response spill-line at 573-634-2436 outside of normal business hours. Once an electronic reporting system compliant with 40 CFR Part 127, the National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, is available all bypasses must be reported electronically via the new system. Blending, which is the practice of combining a partially-treated wastewater process stream with a fully-treated wastewater process stream prior to discharge, is not considered a form of bypass. If the permittee wishes to utilize blending, the permittee shall file an application to modify this permit to facilitate the inclusion of appropriate monitoring conditions.
3. Records of maintenance for subsurface systems must be maintained for at least five (5) years. These records shall be kept onsite and made available to department personnel upon request. The summarized annual report shall include the following:
 - (a) Record of maintenance and repairs performed during the year, average number of times per month the facility is checked to see if it is operating properly, and description of any unusual operating conditions encountered during the year;
4. Electronic Discharge Monitoring Report (eDMR) Submission System. Per 40 CFR Part 127 National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent monitoring data and any report required by the permit (unless specifically directed otherwise by the permit) shall be submitted by the permittee via an electronic system to ensure timely, complete, accurate, and nationally consistent set of data about the NPDES program. All reports uploaded into the system shall be reasonably named so they are easily identifiable, such as "WET Test Chronic Outfall 002 Jan 2023," or "Outfall 004 Daily Data Mar 2025."
 - (a) eDMR Registration Requirements. The permittee must register with the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before the first report is due. Registration and other information regarding MoGEM can be found at <https://dnr.mo.gov/data-e-services/missouri-gateway-environmental-management-mogem>. Information about the eDMR system can be found at <https://dnr.mo.gov/water/business-industry-other-entities/reporting/electronic-discharge-monitoring-reporting-system-edmr>. The first user shall register as an Organization Official and the association to the facility must be approved by the Department. Regarding Standard Conditions Part I, Section B, #7, the eDMR system is currently the only Department approved reporting method for this permit unless a waiver is granted by the Department. See paragraph (c) below.
 - (b) Electronic Submissions. To access the eDMR system, use the following link in your web browser: <https://apps5.mo.gov/mogems/welcome.action>. If you experience difficulties with using the eDMR system you may contact edmr@dnr.mo.gov or call 855-789-3889 or 573-526-2082 for assistance.

- (c) Waivers from Electronic Reporting. The permittee must electronically submit compliance monitoring data and reports unless a waiver is granted by the Department in compliance with 40 CFR Part 127. The permittee may obtain an electronic reporting waiver by first submitting an eDMR Waiver Request Form: <https://dnr.mo.gov/document-search/electronic-discharge-monitoring-report-waiver-request-form-mo-780-2692>. The Department will either approve or deny this electronic reporting waiver request within 120 calendar days.
5. It is a violation of the Missouri Clean Water Law to fail to pay fees associated with this permit (644.055 RSMo).
 6. All outfalls must be clearly marked in the field.
 7. The permittee shall develop, maintain and implement an Operation and Maintenance (O&M) Manual that includes all necessary items to ensure the operation and integrity of the waste handling and wastewater irrigation systems, including key operating procedures, an aerial or topographic site map with the permitted features, irrigation fields, and irrigation buffer zones marked, and a brief summary of the operation of the facility. The O&M manual shall be made available to the operator and shall be reviewed and updated at least every five years or when there is a change in equipment or irrigation sites.
 8. Access to the wastewater treatment systems and any associated soil treatment area equipment must be sufficiently restricted or secured to prevent entry by children, livestock and unauthorized persons as well as to protect the facility from vandalism.
 9. An all-weather access road shall be provided to the treatment facility.
 10. Soil Treatment Area. To add additional soil treatment areas or to convert any of the land to public-use-areas, a construction permit, geohydrologic evaluation, soils report, and permit modification may be required. The facility shall contact the Department for a written determination.
 11. Sludge treatment, storage, and disposal practices shall be conducted in accordance with Standard Conditions Part III.
 12. Permitted Feature #007. If the facility conducts a flush of the water lines to the splash pad, or if the facility expands the capacity of water that can flow to the splash pad, facility shall inform the Southeast Regional Office for review, prior to the expansion. If changes to the activities for Permitted Feature #007 are substantial, a new dye study may be required.
 13. The full implementation of this operating permit, which includes implementation of any applicable schedules of compliance, shall constitute compliance with all applicable federal and state statutes and regulations in accordance with §644.051.16, RSMo, and the Clean Water Act (CWA) section 402(k); however, this permit may be reopened and modified, or alternatively revoked and reissued:
 - (a) To comply with any applicable effluent standard or limitation issued or approved under Sections 301(b)(2)(C) and (D), 304(b)(2), and 307(a)(2) of the CWA, if the effluent standard or limitation so issued or approved:
 - (1) contains different conditions or is otherwise more stringent than any effluent limitation in the permit; or
 - (2) controls any pollutant not limited in the permit.
 - (b) To incorporate an approved pretreatment program or modification thereto pursuant to 40 CFR 403.8(c) pursuant to 40 CFR or 403.18(e), respectively.
 14. Subsurface dispersion systems under this permit are Class V wells if they have the capacity to serve 20 or more people and shall comply with the reporting requirements of 40 CFR 144.26. In addition, an inventory form shall be submitted to the Department of Natural Resources' Missouri Geological Survey for these wells, as required under Federal regulations. This form can be requested from the Geological Survey Program or can be found at the following website: <https://dnr.mo.gov/document-search/class-v-well-inventory-form-mo-780-1774>. Questions about whether a subsurface dispersion system is a Class V well can be directed to the Missouri Geological Survey's Energy Resources Unit at 573-368-2100.
 15. Subsurface dispersion is authorized during snow covered conditions, but subsurface systems shall not operate when soil is frozen at the depth of dispersion.
 16. All subsurface dischargers must comply with 40 CFR 144.82, which prohibits the movement of fluids containing any contaminant into underground sources of drinking water (USDWs) during the construction, maintenance, conversion, and plugging or closure of injection wells.
 17. Per 40 CFR 144.12(c) and 40 CFR 144.82(a)(2), if at any time the department learns that a Class V well may cause a violation of primary drinking water regulations under 40 CFR 142, the permittee shall complete one of the following actions upon instruction by the department:
 - (a) Take such actions as may be necessary to prevent the violation; or
 - (b) Comply with conditions imposed by the department during enforcement action.

C. NOTICE OF RIGHT TO APPEAL

If you were adversely affected by this decision, you may be entitled to pursue an appeal before the administrative hearing commission (AHC) pursuant to Sections 621.250 and 644.051.6 RSMo. To appeal, you must file a petition with the AHC within thirty 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>

MISSOURI DEPARTMENT OF NATURAL RESOURCES
STATEMENT OF BASIS
MO-0137896
MDNR, ECHO BLUFF STATE PARK WWTP

This Statement of Basis (Statement) gives pertinent information regarding modification(s) to the above listed operating permit. A Statement is not an enforceable part of a Missouri State Operating Permit.

Part I – Facility Information

Facility Type and Description: POTW – Three wastewater treatment facilities consisting of: Septic tanks / recirculating sand filter / dosing tank / subsurface soil dispersal system / sludge hauled by contract hauler / biosolids are land applied by a permitted biosolids disposal facility. Permitted Feature #007 is a splash pad in a playground and is not a wastewater treatment facility but is a potential water contaminant source.

Part II – Modification Rationale

This operating permit is hereby modified to reflect the addition of Permitted Feature #007 to represent a splash pad, located in a park playground. The Missouri Geological Survey conducted a dye trace study conducted from September 19, 2022 to November 15, 2022. The study found a rapid and direct hydrologic connection between the splash pad and Sinking Creek is not present; however, the flows from the splash pad do go subsurface and have potential to reach ground water or other waters of the state. Permitted Feature #007 is not a wastewater treatment facility; however, it is a potential water contaminant source due to human contact prior to going subsurface.

Other changes in this modification include updates to the owner, continuing authority, and facility name for consistency with other state parks permits and updated authorization language on the certification page which includes the move of the appeal language to Part C of the permit. The facility description was modified to include the addition of Permitted Feature #007 to represent the splash pad, the addition of Permitted Features #003, #004, and #005 to represent the subsurface irrigation fields for Permitted Features #001, #002, and #003, respectively, the final sludge disposal description and first classified stream name were updated for Permitted Features #001, #002, and #003, and coordinates for Permitted Feature #002 were updated to more accurately reflect the location of this sand filter. Information regarding annual reports as required by Standard Conditions Part III was added. Changes to special conditions include the revision of setback requirements, the revision of eDMR, the addition of condition 12 regarding Permitted Feature #007, the addition of condition 13 for the implementation of this permit, and the addition of conditions 14-17 for subsurface requirements.

No other changes were made at this time.

Changes to the fact sheet include the below:

Part I – Facility Information

- Facility description – updated.
- Permitted features table – updated.
- Comments – updated.

Part IV – Receiving Stream Information

- Receiving streams table – updated.
- Designated uses – updated.

Part V – Rationale and Derivation of Effluent Limitations & Permit Conditions

- Biosolids & Sewage Sludge – updated.
- Continuing Authority – added.
- Stormwater Pollution Prevention Plan (SWPPP) – removed as it is not applicable to this facility.

Appendices

- Missouri Geological Survey dye study – added.
- Map of permitted features by system – added.
- List of structures served by each wastewater system – added.

Part III – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

✓ The Public Notice period for this operating permit was from May 5, 2023 to June 5, 2023. No responses received.

DATE OF STATEMENT OF BASIS: APRIL 7, 2023

COMPLETED BY:

**ASHLEY KNEEMUELLER, ENVIRONMENTAL PROGRAM ANALYST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
(573) 526-1503
Ashley.Kneemueller@dnr.mo.gov**

**MISSOURI DEPARTMENT OF NATURAL RESOURCES
FACT SHEET
FOR THE PURPOSE OF RENEWAL,
OF
MO-0137896
MDNR, ECHO BLUFF STATE PARK WWTP**

The Federal Water Pollution Control Act ("Clean Water Act" Section 402 Public Law 92-500 as amended) established the National Pollutant Discharge Elimination System (NPDES) permit program. This program regulates the discharge of pollutants from point sources into the waters of the United States, and the release of stormwater from certain point sources. All such discharges are unlawful without a permit (Section 301 of the "Clean Water Act"). After a permit is obtained, a discharge not in compliance with all permit terms and conditions is unlawful. Missouri State Operating Permits (MSOPs) are issued by the Director of the Missouri Department of Natural Resources (Department) under an approved program, operating in accordance with federal and state laws (Federal "Clean Water Act" and "Missouri Clean Water Law" Section 644 as amended). MSOPs are issued for a period of five (5) years unless otherwise specified.

As per [40 CFR Part 124.8(a)] and [10 CSR 20-6.020(1)(A)2.] a Factsheet shall be prepared to give pertinent information regarding the applicable regulations, rationale for the development of effluent limitations and conditions, and the public participation process for the Missouri State Operating Permit (operating permit) listed below.

A Factsheet is not an enforceable part of an operating permit.

This Factsheet is for a Minor.

Part I – Facility Information

Facility Type: POTW – SIC 4952

Facility Description:

Three wastewater systems consisting of: Septic tanks / recirculating sand filter / dosing tank / subsurface soil dispersal system / sludge hauled by contract hauler / biosolids are land applied by a permitted biosolids disposal facility. Permitted Feature #007 is a splash pad in a playground and is not a wastewater treatment facility but is a potential water contaminant source.

The use or operation of the wastewater treatment systems shall be by or under the supervision of a Certified "D" Operator

Have any changes occurred at this facility or in the receiving water body that affects effluent limit derivation?

✓ No.

Application Date: 09/21/2018

Expiration Date: 03/31/2019

PERMITTED FEATURE(S) TABLE:

PERMITTED FEATURE	DESIGN FLOW (CFS)	TREATMENT LEVEL	EFFLUENT TYPE
#001, #002 & #003	0.05	recirculating sand filter with Subsurface Soil Dispersal	Domestic
#004, #005, & #006	<i>Subsurface Soil Dispersal Fields</i>		
#007	0.00372	NA	NA

Facility Performance History:

DMR reports from February 2015 to September 2019 were queried but none were found. The facility was last inspected on February 14, 2018 and was not in compliance with the permit conditions but returned to compliance after submitting operation and maintenance manual and started to document maintenance records.

Comments:

Information used in this permit including wastewater flows, population equivalents, design flows, loading rates, etc. was based on current regulations, application received and previously issued permits.

This permit has been modified to include two other wastewater treatment systems previously permitted under MO0137898 and MO0137901 are now represented by Permitted Feature #002 and #003, respectfully. Once this permit is issued the operating permits MO0137898 and MO0137901, shall be terminated by Water Protection Program, Water Pollution Control Branch staff. All three wastewater treatment systems are within the same operating location and operated by the same owner under the same continuing authority. There are no significant operational or monitoring changes made to this permit.

See Statement of Basis for applicable changes to this Fact Sheet since permit issuance on February 1, 2020.

Part II – Operator Certification Requirements

✓ This facility is required to have a certified operator.

As per [10 CSR 20-6.010(8) Terms and Conditions of a Permit], permittees shall operate and maintain facilities to comply with the Missouri Clean Water Law and applicable permit conditions and regulations. Operators or supervisors of operations at regulated wastewater treatment facilities shall be certified in accordance with [10 CSR 20-9.020(2)] and any other applicable state law or regulation. As per [10 CSR 20-9.020(2)(A)], requirements for operation by certified personnel shall apply to all wastewater treatment systems, if applicable, as listed below:

Owned or operated by a
X - State agency

The Department requires this facility to retain the services of a certified operator due to: having total a Population Equivalent greater than two hundred (200) and is a state agency.

This facility currently requires an operator with “D” Certification Level. Please see **Appendix - Classification Worksheet**. Modifications made to the wastewater treatment facility may cause the classification to be modified.

Operator’s Name: James J. Ficker, Jr.
Certification Number: 6371
Certification Level: D

The listing of the operator above only signifies that staff drafting this operating permit have reviewed appropriate Department records and determined that the name listed on the operating permit application has the correct and applicable Certification Level.

Part III– Operational Control Testing Requirements

Missouri Clean Water Commission regulation 10 CSR 20-9.010 requires certain publically owned treatment works and privately owned facilities regulated by the Public Service Commission to conduct internal operational control monitoring to further ensure proper operation of the facility and to be a safeguard or early warning for potential plant upsets that could affect effluent quality. This requirement is only applicable if the publically owned treatment works and privately owned facilities regulated by the Public Service Commission has a Population Equivalent greater than two hundred (200).

10 CSR 20-9.010(3) allows the Department to modify the monitoring frequency required in the rule based upon the Department’s judgement of monitoring needs for process control at the specified facility

✓ As per [10 CSR 20-9.010(4)], the facility is not required to conduct operational monitoring.

Part IV – Receiving Stream Information

While this facility is no discharge, a receiving stream is listed for the purposes of showing what stream would be affected in the event of a discharge due to an acute or chronic rain event.

RECEIVING STREAM(S) TABLE: PERMITTED FEATURE #001, #002, #003, #004, #005, #006, & #007

WATER-BODY NAME	CLASS	WBID	DESIGNATED USES*	12-DIGIT HUC
Unnamed Tributary to Sinking Creek	--	--	General Criteria	11010008-0303
Sinking Creek	P	2650	AHP (WWH, CLH), HHP, IRR, LWP, SCR, WBC-A	

*As per 10 CSR 20-7.031 Missouri Water Quality Standards, the Department defines the Clean Water Commission's water quality objectives in terms of "water uses to be maintained and the criteria to protect those uses." The receiving stream and 1st classified receiving stream's beneficial water uses to be maintained are in the receiving stream table in accordance with [10 CSR 20-7.031(1)(C)].

Uses found in the receiving streams table, above:

10 CSR 20-7.031(1)(C)1.:

AHP = Aquatic Habitat Protection - To ensure the protection and propagation of fish, shellfish, and wildlife. AHP is further subcategorized as:

WWH = Warm Water Habitat;

CLH = Cool Water Habitat;

CDH = Cold Water Habitat;

EAH = Ephemeral Aquatic Habitat;

MAH = Modified Aquatic Habitat;

LAH = Limited Aquatic Habitat.

This permit uses Aquatic Life Protection effluent limitations in 10 CSR 20-7.031 Table A for all aquatic habitat designations unless otherwise specified.

10 CSR 20-7.031(1)(C)2.: Recreation in and on the water

WBC = Whole Body Contact recreation where the entire body is capable of being submerged. WBC is further subcategorized as:

WBC-A = Whole body contact recreation that supports swimming uses and has public access;

WBC-B = Whole body contact recreation that supports swimming;

SCR = Secondary Contact Recreation (like fishing, wading, and boating).

10 CSR 20-7.031(1)(C)3. to 7.:

HHP = Human Health Protection as it relates to the consumption of fish;

IRR = Irrigation - Application of water to cropland or directly to cultivated plants that may be used for human or livestock consumption;

LWP = Livestock and wildlife protection - Maintenance of conditions in waters to support health in livestock and wildlife;

DWS = Drinking water supply;

IND = Industrial water supply

10 CSR 20-7.031(1)(C)8-11.: Wetlands (10 CSR 20-7.031 Table A currently does not have corresponding habitat use criteria for these defined uses)

WSA = Storm- and flood-water storage and attenuation;

WHP = Habitat for resident and migratory wildlife species;

WRC = Recreational, cultural, educational, scientific, and natural aesthetic values and uses;

WHC = Hydrologic cycle maintenance.

10 CSR 20-7.031(6):

GRW = Groundwater

RECEIVING STREAM MONITORING REQUIREMENTS:

No receiving water monitoring requirements recommended at this time.

Part V – Rationale and Derivation of Effluent Limitations & Permit Conditions

ALTERNATIVE EVALUATIONS FOR NEW FACILITIES:

As per [10 CSR 20-7.015(4)(A)], discharges to losing streams shall be permitted only after other alternatives including land application, discharges to a gaining stream and connection to a regional wastewater treatment facility have been evaluated and determined to be unacceptable for environmental and/or economic reasons.

- ✓ The facility does not discharge to a Losing Stream as defined by [10 CSR 20-2.010(40)] & [10 CSR 20-7.031(1)(O)], or is an existing facility.

ANTI-BACKSLIDING:

A provision in the Federal Regulations [CWA §303(d)(4); CWA §402(o); 40 CFR Part 122.44(l)] that requires a reissued permit to be as stringent as the previous permit with some exceptions.

- ✓ All limits in this operating permit are at least as protective as those previously established; therefore, backsliding does not apply.

ANTIDEGRADATION:

In accordance with Missouri's Water Quality Standard [10 CSR 20-7.031(3)], the Department is to document by means of Antidegradation Review that the use of a water body's available assimilative capacity is justified. Degradation is justified by documenting the socio-economic importance of a discharging activity after determining the necessity of the discharge.

- ✓ No degradation proposed and no further review necessary. Facility did not apply for authorization to increase pollutant loading or to add additional pollutants to their discharge.

AREA-WIDE WASTE TREATMENT MANAGEMENT & CONTINUING AUTHORITY:

As per [10 CSR 20-6.010(2)(C)], ...An applicant may utilize a lower preference continuing authority by submitting, as part of the application, a statement waiving preferential status from each existing higher preference authority, providing the waiver does not conflict with any area-wide management plan approved under section 208 of the Federal Clean Water Act or any other regional sewage service and treatment plan approved for higher preference authority by the Department.

BIOSOLIDS & SEWAGE SLUDGE:

Biosolids are solid materials resulting from domestic wastewater treatment that meet federal and state criteria for beneficial uses (i.e. fertilizer). Sewage sludge is solids, semi-solids, or liquid residue generated during the treatment of domestic sewage in a treatment works; including but not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment process; and a material derived from sewage sludge. Sewage sludge does not include ash generated during the firing of sewage sludge in a sewage sludge incinerator or grit and screening generated during preliminary treatment of domestic sewage in a treatment works.

- ✓ Permittee is not authorized to land apply biosolids. Sludge/biosolids are removed by contract hauler. If removal and disposal (landfill, land apply, haul to another permitted treatment facility, etc.) of sludge/biosolids is needed and that method is not listed in the current permit, the permittee must modify the operating permit to add any biosolids/sludge disposal method to the facility description of the operating permit. For time sensitive situations, the permittee may contact the Department to see about approval for a one-time removal and disposal of sludge or biosolids that are not identified in the facility description of the operating permit.

COMPLIANCE AND ENFORCEMENT:

Enforcement is the action taken by the Water Protection Program (WPP) to bring an entity into compliance with the Missouri Clean Water Law, its implementing regulations, and/or any terms and conditions of an operating permit. The primary purpose of the enforcement activity in the WPP is to resolve violations and return the entity to compliance.

- ✓ The permittee/facility is not currently under Water Protection Program enforcement action.

CONTINUING AUTHORITY:

Each application for an operating permit shall identify the person, as that term is defined in section 644.016(15), RSMo, that is the owner of, operator of, or area-wide management authority for a water contaminant source, point source, wastewater treatment facility, or sewer collection system. This person shall be designated as the continuing authority and shall sign the application. By doing so, the person designated as the continuing authority acknowledges responsibility for compliance with all permit conditions.

10 CSR 20-6.010(2) establishes preferential levels for continuing authorities: Levels 1 through 5 (with Level 1 as the highest level), and requires a higher preference continuing authority be utilized if available. A Level 3, 4, or 5 applicant may constitute a continuing authority by showing that the authorities listed under paragraphs (B)1.-2. of 10 CSR 20-6.010(2) are not available; do not have jurisdiction; are forbidden by state statute or local ordinance from providing service to the person; or that it has met one of the requirements listed in paragraphs (2)(C)1.-7. of 10 CSR 20-6.010(2). The seven options in paragraphs (2)(C)1.-7. for a lower-level authority to demonstrate that it is the valid continuing authority are:

1. A waiver from the existing higher authority declining the offer to accept management of the additional wastewater or stormwater;
2. A written statement or a demonstration of non-response from the higher authority;
3. A to-scale map showing all parts of the legal boundary of the facility's property are beyond 2000 feet from the collection (sewer) system operated by the higher preference authority;

4. A proposed connection or adoption charge by the higher authority that would equal or exceed what is economically feasible for the applicant, which may be in the range of one hundred twenty percent (120%) of the applicant's cost for constructing or operating a wastewater treatment system;
5. A proposed service fee on the users of the system by the higher authority that is above what is affordable for existing homeowners in that area;
6. Terms for connection or adoption by the higher authority that would require more than two (2) years to achieve full sewer service; or
7. A demonstration that the terms for connection or adoption by the higher authority are not viable or feasible to homeowners in the area.

Permit applicants that are Levels 3, 4, and 5 must, as part of their application, identify their method of compliance with this regulation. The following are the methods to comply.

- No higher level authorities are available to the facility;
- No higher level authorities have jurisdiction;
- Higher level authorities are forbidden by state statute or local ordinance from providing service to the person;
- The existing higher level authority is available to the facility, however the facility has proposed the use of a lower preference continuing authority and has submitted one of the following as part of their application (See Fact Sheet Appendix - Continuing Authority for more information on these options):
 - A waiver from the existing higher authority;
 - A written statement or a demonstration of non-response from the higher authority;
 - A to-scale map showing all parts of the legal boundary of the facility's property are beyond 2000 feet from the collection (sewer) system operated by the higher preference authority;
 - Documentation that the proposed connection or adoption charge by the higher authority would equal or exceed what is economically feasible for the applicant, which may be in the range of one hundred twenty percent (120%) of the applicant's cost for constructing or operating a wastewater treatment system;
 - Documentation that the proposed service fee on the users of the system by the higher authority is above what is affordable for existing homeowners in that area;
 - Documentation that the terms for connection or adoption by the higher authority would require more than two (2) years to achieve full sewer service;
 - A demonstration that the terms for connection or adoption by the higher authority are not viable or feasible to homeowners in the area;
- ✓ The continuing authority listed on the application is a person. The continuing authority is a Level 4 Authority. The applicant has shown that:
 - A higher level authority is not available to the facility.

ELECTRONIC DISCHARGE MONITORING REPORT (EDMR) SUBMISSION SYSTEM:

The U.S. Environmental Protection Agency (EPA) promulgated a final rule on October 22, 2015, to modernize Clean Water Act reporting for municipalities, industries, and other facilities by converting to an electronic data reporting system. This final rule requires regulated entities and state and federal regulators to use information technology to electronically report data required by the National Pollutant Discharge Elimination System (NPDES) permit program instead of filing paper reports. To comply with the federal rule, the Department is requiring all permittees to begin submitting discharge monitoring data and reports online. In an effort to aid facilities in the reporting of applicable information electronically, the Department has created several new forms including operational control monitoring forms and an I&I location and reduction form. These forms are for optional use and can be found on the Department's website at the following locations:

Operational Monitoring Mechanical: <http://dnr.mo.gov/forms/780-2800-f.pdf>

I&I Report: <http://dnr.mo.gov/forms/780-2690-f.pdf>

Per 40 CFR 127.15 and 127.24, permitted facilities may request a temporary waiver for up to 5 years or a permanent waiver from electronic reporting from the Department. To obtain an electronic reporting waiver, a permittee must first submit an eDMR Waiver Request Form: <http://dnr.mo.gov/forms/780-2692-f.pdf>. A request must be made for each facility. If more than one facility is owned or operated by a single entity, then the entity must submit a separate request for each facility based on its specific circumstances. An approved waiver is non-transferable.

The Department must review and notify the facility within 120 calendar days of receipt if the waiver request has been approved or rejected [40 CFR 124.27(a)]. During the Department review period as well as after a waiver is granted, the facility must continue submitting a hard-copy of any reports required by their permit. The Department will enter data submitted in hard-copy from those facilities allowed to do so and electronically submit the data to the EPA on behalf of the facility.

- ✓ The permittee/facility is currently using the eDMR data reporting system.

NUMERIC LAKE NUTRIENT CRITERIA

- ✓ This facility is not located within a lake watershed where numeric lake nutrient criteria are applicable, per 10 CSR 20-7.031(5)(N).

PRETREATMENT PROGRAM:

The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to or in lieu of discharging or otherwise introducing such pollutants into a Publicly Owned Treatment Works [40 CFR Part 403.3(q)].

Pretreatment programs are required at any POTW (or combination of POTW operated by the same authority) and/or municipality with a total design flow greater than 5.0 MGD and receiving industrial wastes that interfere with or pass through the treatment works or are otherwise subject to the pretreatment standards. Pretreatment programs can also be required at POTWs/municipals with a design flow less than 5.0 MGD if needed to prevent interference with operations or pass through.

Several special conditions pertaining to the permittee's pretreatment program may be included in the permit, and are as follows:

- Implementation and enforcement of the program,
- Annual pretreatment report submittal,
- Submittal of list of industrial users,
- Technical evaluation of need to establish local limitations, and
- Submittal of the results of the evaluation

- ✓ The permittee, at this time, is not required to have a Pretreatment Program or does not have an approved pretreatment program.

REMOVAL EFFICIENCY:

Removal efficiency is a method by which the Federal Regulations define Secondary Treatment and Equivalent to Secondary Treatment, which applies to Biochemical Oxygen Demand 5-day (BOD₅) and Total Suspended Solids (TSS) for publically owned treatment works (POTWs). See 40 CFR Part 133.102(a)(3) & (b)(3) and 40 CFR 133.105(a)(3)&(b)(3). This is a no-discharge facility, therefore removal efficiency is 100% and influent monitoring is not required.

SANITARY SEWER OVERFLOWS (SSO) AND INFLOW AND INFILTRATION (I&I):

Sanitary Sewer Overflows (SSOs) are defined as untreated sewage releases and are considered bypassing under state regulation [10 CSR 20-2.010(12)] and should not be confused with the federal definition of bypass. SSOs result from a variety of causes including blockages, line breaks, and sewer defects that can either allow wastewater to backup within the collection system during dry weather conditions or allow excess stormwater and groundwater to enter and overload the collection system during wet weather conditions. SSOs can also result from lapses in sewer system operation and maintenance, inadequate sewer design and construction, power failures, and vandalism. SSOs include overflows out of manholes, cleanouts, broken pipes, and other into waters of the state and onto city streets, sidewalks, and other terrestrial locations.

Inflow and Infiltration (I&I) is defined as unwanted intrusion of stormwater or groundwater into a collection system. This can occur from points of direct connection such as sump pumps, roof drain downspouts, foundation drains, and storm drain cross-connections or through cracks, holes, joint failures, faulty line connections, damaged manholes, and other openings in the collection system itself. I&I results from a variety of causes including line breaks, improperly sealed connections, cracks caused by soil erosion/settling, penetration of vegetative roots, and other sewer defects. In addition, excess stormwater and groundwater entering the collection system from line breaks and sewer defects have the potential to negatively impact the treatment facility.

Missouri RSMo §644.026.1.(13) mandates that the Department issue permits for discharges of water contaminants into the waters of this state, and also for the operation of sewer systems. Such permit conditions shall ensure compliance with all requirements as established by sections 644.006 to 644.141. Standard Conditions Part I, referenced in the permit, contains provisions requiring proper operation and maintenance of all facilities and systems of treatment and control. Missouri RSMo §644.026.1.(15) instructs the Department to require proper maintenance and operation of treatment facilities and sewer systems and proper disposal of residual waste from all such facilities. To ensure that public health and the environment are protected, any noncompliance which may endanger public health or the environment must be reported to the Department within 24 hours of the time the permittee becomes aware of the noncompliance. Standard Conditions Part I, referenced in the permit, contains the reporting requirements for the permittee when bypasses and upsets occur.

- ✓ This facility is not required to develop or implement a program for maintenance and repair of the collection system; however, it is a violation of Missouri State Environmental Laws and Regulations to allow untreated wastewater to discharge to waters of the state.

SCHEDULE OF COMPLIANCE (SOC):

Per 644.051.4 RSMo, a permit may be issued with a Schedule of Compliance (SOC) to provide time for a facility to come into compliance with new state or federal effluent regulations, water quality standards, or other requirements. Such a schedule is not allowed if the facility is already in compliance with the new requirement, or if prohibited by other statute or regulation. A SOC includes an enforceable sequence of interim requirements (actions, operations, or milestone events) leading to compliance with the Missouri Clean Water Law, its implementing regulations, and/or the terms and conditions of an operating permit. *See also* Section 502(17) of the Clean Water Act, and 40 CFR §122.2. For new effluent limitations, the permit includes interim monitoring for the specific parameter to demonstrate the facility is not already in compliance with the new requirement. Per 40 CFR § 122.47(a)(1), 10 CSR 20-7.015(9), and 10 CSR 20-7.031(11), compliance must occur as soon as possible. If the permit provides a schedule for meeting new water quality based effluent limits, a SOC must include an enforceable, final effluent limitation in the permit even if the SOC extends beyond the life of the permit.

A SOC is not allowed:

- For effluent limitations based on technology-based standards established in accordance with federal requirements, if the deadline for compliance established in federal regulations has passed. 40 CFR § 125.3.
- For a newly constructed facility in most cases. Newly constructed facilities must meet applicable effluent limitations when discharge begins, because the facility has installed the appropriate control technology as specified in a permit or antidegradation review. A SOC is allowed for a new water quality based effluent limit that was not included in a previously public noticed permit or antidegradation review, which may occur if a regulation changes during construction.
- To develop a TMDL, UAA, or other study that may result in site-specific criteria or alternative effluent limitations. A facility is not prohibited from conducting these activities, but a SOC may not be granted for conducting these activities.

In order to provide guidance to Permit Writers in developing SOC's, and attain a greater level of consistency, on April 9, 2015 the Department issued an updated policy on development of SOC's. This policy provides guidance to Permit Writers on the standard time frames for schedules for common activities, and guidance on factors that may modify the length of the schedule such as a Cost Analysis for Compliance.

- ✓ This permit does not contain a SOC.

SEWER EXTENSION AUTHORITY SUPERVISED PROGRAM:

In accordance with [10 CSR 20-6.010(6)(A)], the Department may grant approval of a permittee's Sewer Extension Authority Supervised Program. These approved permittees regulate and approve construction of sanitary sewers and pump stations, which are tributary to this wastewater treatment facility. The permittee shall act as the continuing authority for the operation, maintenance, and modernization of the constructed collection system. See <http://dnr.mo.gov/env/wpp/permits/sewer-extension.htm>.

- ✓ The permittee does not have a Department approved Sewer Extension Authority Supervised Program.

VARIANCE:

As per the Missouri Clean Water Law § 644.061.4, variances shall be granted for such period of time and under such terms and conditions as shall be specified by the commission in its order. The variance may be extended by affirmative action of the commission. In no event shall the variance be granted for a period of time greater than is reasonably necessary for complying with the Missouri Clean Water Law §§644.006 to 644.141 or any standard, rule or regulation promulgated pursuant to Missouri Clean Water Law §§644.006 to 644.141.

- ✓ This operating permit is not drafted under premises of a petition for variance.

40 CFR 122.41(M) - BYPASSES:

The federal Clean Water Act (CWA), Section 402 prohibits wastewater dischargers from "bypassing" untreated or partially treated sewage (wastewater) beyond the headworks. A bypass is defined as an intentional diversion of waste streams from any portion of a treatment facility, [40 CFR 122.41(m)(1)(i)]. Additionally, Missouri regulation 10 CSR 20-7.015(9)(G) states a bypass means the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending, to waters of the state. Only under exceptional and specified limitations do the federal regulations allow for a facility to bypass some or all of the flow from its treatment process. Bypasses are prohibited by the CWA unless a permittee can meet all of the criteria listed in 40 CFR 122.41(m)(4)(i)(A), (B), & (C). Any bypasses from this facility are subject to the reporting required in 40 CFR 122.41(l)(6) and per Missouri's Standard Conditions I, Section B, part 2.b. Additionally, Anticipated Bypasses include bypasses from peak flow basins or similar devices designed for peak wet weather flows.

- ✓ This facility does not anticipate bypassing.

Part VI – Permit Limits Determination

DISCHARGE PARAMETERS – BOD₅, TSS, Ammonia, pH, Oil & Grease, *E. coli*, and nitrite + nitrate are conventional pollutants found in domestic wastewater. These parameters shall be monitored at least once during the discharge event. Additional monitoring may be required by the Department on a case-by-case basis. All samples shall be collected as grab samples. pH samples cannot be preserved and must be sampled in the field.

OUTFALL #001, #002, & #003 – GENERAL CRITERIA CONSIDERATIONS:

In accordance with 40 CFR 122.44(d)(1), effluent limitations shall be placed into the permit for those pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality. The rule further states that pollutants which have been determined to cause, have the reasonable potential to cause, or contribute to an excursion above a narrative criterion within an applicable State water quality standard, the permit shall contain a numeric effluent limitation to protect that narrative criterion. In order to comply with this regulation, the permit writer will complete reasonable potential determinations on whether the discharge will violate any of the general criteria listed in 10 CSR 20-7.031(4). These specific requirements are listed below followed by derivation and discussion (the lettering matches that of the rule itself, under 10 CSR 20-7.031(4)). It should also be noted that Section 644.076.1, RSMo as well as Section D – Administrative Requirements of Standard Conditions Part I of this permit states that it shall be unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri that is in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law or any standard, rule or regulation promulgated by the commission.

- (A) Waters shall be free from substances in sufficient amounts to cause the formation of putrescent, unsightly or harmful bottom deposits or prevent full maintenance of beneficial uses. This facility utilizes irrigation of domestic wastewater to the subsurface and therefore does not discharge. Based upon a review of a recent Report of Compliance Inspection for the inspection conducted on February 14, 2018, no evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, there had been no indication to the Department that the stream has had issues maintaining beneficial uses as a result of the wastewater irrigation. Therefore, based on the information reviewed during the drafting of this permit, and the fact that the facility does not discharge, no reasonable potential to cause or contribute to an excursion of this criterion exists.
- (B) Waters shall be free from oil, scum and floating debris in sufficient amounts to be unsightly or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (C) Waters shall be free from substances in sufficient amounts to cause unsightly color or turbidity, offensive odor or prevent full maintenance of beneficial uses. Please see (A) above as justification is the same.
- (D) Waters shall be free from substances or conditions in sufficient amounts to result in toxicity to human, animal or aquatic life. Please see (A) above as justification is the same.
- (E) Waters shall provide for the attainment and maintenance of water quality standards downstream including waters of another state. Please see (D) above as justification is the same.
- (F) There shall be no significant human health hazard from incidental contact with the water. Please see (A) above as justification is the same.
- (G) There shall be no acute toxicity to livestock or wildlife watering. Please see (A) above as justification is the same.
- (H) Waters shall be free from physical, chemical or hydrologic changes that would impair the natural biological community. Please see (A) above as justification is the same.
- (I) Waters shall be free from used tires, car bodies, appliances, demolition debris, used vehicles or equipment and solid waste as defined in Missouri's Solid Waste Law, section 260.200, RSMo, except as the use of such materials is specifically permitted pursuant to section 260.200-260.247. The discharge from this facility is made up of treated domestic wastewater. No evidence of an excursion of this criterion has been observed by the Department in the past and the facility has not disclosed any other information related to the characteristics of the discharge on their permit application which has the potential to cause or contribute to an excursion of this narrative criterion. Additionally, any solid wastes received or produced at this facility are wholly contained in appropriate storage facilities, are not discharged, and are disposed of offsite. This discharge is subject to Standard Conditions Part III, which contains requirements for the management and disposal of sludge to prevent its discharge. Therefore, this discharge does not have reasonable potential to cause or contribute to an excursion of this criterion.

Part VII – 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.

- ✓ Not Applicable; The Department is not required to complete a cost analysis for compliance because the permit contains no new conditions or requirements that convey a new cost to the facility.

Part VIII – Administrative Requirements

On the basis of preliminary staff review and the application of applicable standards and regulations, the Department, as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions contained herein and within the operating permit. The proposed determinations are tentative pending public comment.

WATER QUALITY STANDARD REVISION:

In accordance with section 644.058, RSMo, the Department is required to utilize an evaluation of the environmental and economic impacts of modifications to water quality standards of twenty-five percent or more when making individual site-specific permit decisions.

- ✓ This operating permit does not contain requirements for a water quality standard that has changed twenty-five percent or more since the previous operating permit.

PERMIT SYNCHRONIZATION:

The Department of Natural Resources is currently undergoing a synchronization process for operating permits. Permits are normally issued on a five-year term, but to achieve synchronization many permits will need to be issued for less than the full five years allowed by regulation. The intent is that all permits within a watershed will move through the Watershed Based Management (WBM) cycle together and will all expire in the same fiscal year. This will allow further streamlining by placing multiple permits within a smaller geographic area on public notice simultaneously, thereby reducing repeated administrative efforts. This will also allow the Department to explore a watershed based permitting effort at some point in the future. Renewal applications must continue to be submitted within 180 days of expiration, however, in instances where effluent data from the previous renewal is less than 4 years old, that data may be re-submitted to meet the requirements of the renewal application. If the permit provides a schedule of compliance for meeting new water quality based effluent limits beyond the expiration date of the permit, the time remaining in the schedule of compliance will be allotted in the renewed permit. With permit synchronization, this permit will expire in the

PUBLIC NOTICE:

The Department shall give public notice that a draft permit has been prepared and its issuance is pending. Additionally, public notice will be issued if a public hearing is to be held because of a significant degree of interest in and water quality concerns related to a draft permit. No public notice is required when a request for a permit modification or termination is denied; however, the requester and permittee must be notified of the denial in writing. The Department must issue public notice of a pending operating permit or of a new or reissued statewide general permit. The public comment period is the length of time not less than 30 days following the date of the public notice which interested persons may submit written comments about the proposed permit. For persons wanting to submit comments regarding this proposed operating permit, then please refer to the Public Notice page located at the front of this draft operating permit. The Public Notice page gives direction on how and where to submit appropriate comments.

- ✓ The Public Notice period for this operating permit was from November 18, 2019 to December 20, 2019. No responses received.
- ✓ The Public Notice period for the modification of this operating permit was from May 5, 2023 to June 5, 2023. No responses received.

DATE OF FACT SHEET: DECEMBER 20, 2019

COMPLETED BY:

CHARLES HARWOOD, SOIL SCIENTIST
MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
OPERATING PERMITS SECTION - DOMESTIC WASTEWATER UNIT
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DATE OF REVISION: MARCH 28, 2023

REVISED BY:

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Appendices

APPENDIX - CLASSIFICATION WORKSHEET:

Item	Points Possible	Points Assigned
Maximum Population Equivalent (P.E.) served , peak day	1 pt./10,000 PE or major fraction thereof. (Max 10 pts.)	
Design Flow (avg. day) or peak month's flow (avg. day) whichever is larger	1 pt. / MGD or major fraction thereof. (Max 10 pts.)	
Effluent Discharge		
Missouri or Mississippi River	0	
All other stream discharges except to losing streams and stream reaches supporting whole body contact recreation	1	
Discharge to lake or reservoir outside of designated whole body contact recreational area	2	
Discharge to losing stream, or stream, lake or reservoir area supporting whole body contact recreation	3	
Direct reuse or recycle of effluent	6	6
Land Application/Irrigation		
Drip Irrigation	3	3
Land application/irrigation	5	
Overland flow	4	
Variation in Raw Wastes (highest level only)		
Variations do not exceed those normally or typically expected	0	0
Reoccurring deviations or excessive variations of 100 to 200 percent in strength and/or flow	2	
Reoccurring deviations or excessive variations of more than 200 percent in strength and/or flow	4	
Department-approved pretreatment program	6	
Preliminary Treatment		
STEP systems (operated by the permittee)	3	
Screening and/or comminution	3	
Grit removal	3	
Plant pumping of main flow	3	
Flow equalization	5	
Primary Treatment		
Primary clarifiers	5	
Chemical addition (except chlorine, enzymes)	4	
Secondary Treatment		
Trickling filter and other fixed film media with or without secondary clarifiers	10	
Activated sludge (including aeration, oxidation ditches, sequencing batch reactors, membrane bioreactors, and contact stabilization)	15	
Stabilization ponds without aeration	5	
Aerated lagoon	8	
Advanced Lagoon Treatment – Aerobic cells, anaerobic cells, covers, or fixed film	10	
Biological, physical, or chemical	12	
Carbon regeneration	4	
Total from page ONE (1)	----	9

APPENDIX - CLASSIFICATION WORKSHEET (CONTINUED):

ITEM	POINTS POSSIBLE	POINTS ASSIGNED
Solids Handling		
Sludge Holding	5	
Anaerobic digestion	10	
Aerobic digestion	6	
Evaporative sludge drying	2	
Mechanical dewatering	8	
Solids reduction (incineration, wet oxidation)	12	
Land application	6	6
Disinfection		
Chlorination or comparable	5	
On-site generation of disinfectant (except UV light)	5	
Dechlorination	2	
UV light	4	
Required Laboratory Control Performed by Plant Personnel (highest level only)		
Lab work done outside the plant	0	0
Push – button or visual methods for simple test such as pH, settleable solids	3	
Additional procedures such as DO, COD, BOD, titrations, solids, volatile content	5	
More advanced determinations, such as BOD seeding procedures, fecal coliform, nutrients, total oils, phenols, etc.	7	
Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph	10	
Total from page TWO (2)	----	6
Total from page ONE (1)	---	9
Grand Total	---	15

- ☐ - A: 71 points and greater
☐ - B: 51 points – 70 points
☐ - C: 26 points – 50 points
X - D: 0 points – 25 points

APPENDIX – ALTERNATIVE: Missouri Geological Survey – Echo Bluff State Park splash pad dye study.



Michael L. Parson
Governor

Dru Buntin
Director

MEMORANDUM

DATE: December 20, 2022
TO: Coy King,
Missouri State Parks
FROM: Sherri Stoner, R.G.
Environmental Geology Section
Missouri Geological Survey
SUBJECT: Echo Bluff State Park Water Trace



In September 2022, staff from the Missouri Geological Survey, Geological Survey Program (GSP) received a request from the Division of Environmental Quality (DEQ) to conduct a dye trace study on a splash pad located within Echo Bluff State Park.

On September 19, 2022, GSP staff meet with DEQ and Missouri State Park (MSP) staff at Echo Bluff State Park for a site visit and to discuss the applicability of a dye trace to determine if a hydrologic connection exists between the splash pad and Sinking Creek. During this initial visit it was decided to move forward with the day trace, and three monitoring locations were identified. Monitoring point #1 was located in Sinking Creek approximately 75 yards downstream of the discharge for the splash pad. Monitoring point #2 was Hiney Spring, and monitoring point #3 was approximately 75 yards upstream of Hiney Spring and Sinking Creek confluence.

Monitoring for dye was conducted by the placement of charcoal collection packets that adsorb the dye if exposed. The charcoal packets were subsequently analyzed in the Missouri Geological Survey Water Tracing Laboratory for the presence of dye in accordance with GSP Water Tracing Standard Operating Procedure. Initial background packets were placed at the three monitoring locations during the September 19, 2022 site visit. Background charcoal packets were collected and replaced on September 26, October 3, October 11 and October 17, 2022 prior to injection, and subsequently analyzed. Laboratory analysis indicated that no dye was present in the background samples.

On October 17, 2022, GSP staff met with MSP staff for the purpose of injecting dye. It was determined to allow the splash pad to run for approximately 90 minutes to duplicate the highest



Coy King
Page 2

water usage from the pad. The splash pad was put into operation at 10:00 am and ran until 11:30 am. The water from the splash pad entered the drainage and pooled approximately 30 yards downstream of the splash pad where surface water flowage then went to the subsurface. At approximately 10:45 am, one-half pound of fluorescein dye was placed into the pooled water location in the drainage. Following the placement of dye, a visual inspection was made in the downstream drainage way. No surfacing dye was observed.

Charcoal packets were collected and replaced at the three monitoring points on a weekly cycle for four weeks until November 15, 2022. Spectrometer fluorescence analysis did not detect the presence of dye at any of the three monitoring points for the four week period following dye injection. The information collected during this groundwater trace indicates that a rapid and direct hydrologic connection between the splash pad and Sinking Creek is not present.

c: Chris Wieberg, Water Protection Program
Jessica Gillespie, Missouri State Parks

APPENDIX – ALTERNATIVE: Location of Permitted Features.



Permitted Features:

- #001- sand filter to #004
- #004- subsurface irrigation
- #002- sand filter to #005
- #005- subsurface irrigation
- #003- sand filter to #006
- #006- subsurface irrigation
- #007- Splash Pad

APPENDIX – ALTERNATIVE: List of structures served by each wastewater system.

**Echo Bluff State Park
Waste Water Flow**

Sand Filter #1 (Big Sand filter)

Lodge
300's Cabins
400's Cabins
Amphitheater Restroom
Splash Pad Restroom

Sand Filter #2 (Bluff top)

Bluff top Restroom

Sand filter #3 (Campground)

Campground
Shop/Office



STANDARD CONDITIONS FOR NPDES PERMITS
ISSUED BY
THE MISSOURI DEPARTMENT OF NATURAL RESOURCES
MISSOURI CLEAN WATER COMMISSION
REVISED
AUGUST 1, 2014

These Standard Conditions incorporate permit conditions as required by 40 CFR 122.41 or other applicable state statutes or regulations. These minimum conditions apply unless superseded by requirements specified in the permit.

Part I – General Conditions

Section A – Sampling, Monitoring, and Recording

1. **Sampling Requirements.**
 - a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.
 - b. All samples shall be taken at the outfall(s) or Missouri Department of Natural Resources (Department) approved sampling location(s), and unless specified, before the effluent joins or is diluted by any other body of water or substance.
2. **Monitoring Requirements.**
 - a. Records of monitoring information shall include:
 - i. The date, exact place, and time of sampling or measurements;
 - ii. The individual(s) who performed the sampling or measurements;
 - iii. The date(s) analyses were performed;
 - iv. The individual(s) who performed the analyses;
 - v. The analytical techniques or methods used; and
 - vi. The results of such analyses.
 - b. If the permittee monitors any pollutant more frequently than required by the permit at the location specified in the permit using test procedures approved under 40 CFR Part 136, or another method required for an industry-specific waste stream under 40 CFR subchapters N or O, the results of such monitoring shall be included in the calculation and reported to the Department with the discharge monitoring report data (DMR) submitted to the Department pursuant to Section B, paragraph 7.
3. **Sample and Monitoring Calculations.** Calculations for all sample and monitoring results which require averaging of measurements shall utilize an arithmetic mean unless otherwise specified in the permit.
4. **Test Procedures.** The analytical and sampling methods used shall conform to the reference methods listed in 10 CSR 20-7.015 unless alternates are approved by the Department. The facility shall use sufficiently sensitive analytical methods for detecting, identifying, and measuring the concentrations of pollutants. The facility shall ensure that the selected methods are able to quantify the presence of pollutants in a given discharge at concentrations that are low enough to determine compliance with Water Quality Standards in 10 CSR 20-7.031 or effluent limitations unless provisions in the permit allow for other alternatives. A method is “sufficiently sensitive” when; 1) the method minimum level is at or below the level of the applicable water quality criterion for the pollutant or, 2) the method minimum level is above the applicable water quality criterion, but the amount of pollutant in a facility’s discharge is high enough that the method detects and quantifies the level of pollutant in the discharge, or 3) the method has the lowest minimum level of the analytical methods approved under 10 CSR 20-7.015. These methods are also required for parameters that are listed as monitoring only, as the data collected may be used to determine if limitations need to be established. A permittee is responsible for working with their contractors to ensure that the analysis performed is sufficiently sensitive.
5. **Record Retention.** Except for records of monitoring information required by the permit related to the permittee’s sewage sludge use and disposal activities, which shall be retained for a period of at least five (5) years (or longer as required by 40 CFR part 503), the permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by the permit, and records of all data used to complete the application for the permit, for a period of at least three (3) years from the date of the sample, measurement, report or application. This period may be extended by request of the Department at any time.

6. **Illegal Activities.**
 - a. The Federal Clean Water Act provides that any person who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under the permit shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than two (2) years, or both. If a conviction of a person is for a violation committed after a first conviction of such person under this paragraph, punishment is a fine of not more than \$20,000 per day of violation, or by imprisonment of not more than four (4) years, or both.
 - b. The Missouri Clean Water Law provides that any person or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than \$10,000, or by imprisonment for not more than six (6) months, or by both. Second and successive convictions for violation under this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.

Section B – Reporting Requirements

1. **Planned Changes.**
 - a. The permittee shall give notice to the Department as soon as possible of any planned physical alterations or additions to the permitted facility when:
 - i. The alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in 40 CFR 122.29(b); or
 - ii. The alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants which are subject neither to effluent limitations in the permit, nor to notification requirements under 40 CFR 122.42;
 - iii. The alteration or addition results in a significant change in the permittee’s sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan;
 - iv. Any facility expansions, production increases, or process modifications which will result in a new or substantially different discharge or sludge characteristics must be reported to the Department 60 days before the facility or process modification begins. Notification may be accomplished by application for a new permit. If the discharge does not violate effluent limitations specified in the permit, the facility is to submit a notice to the Department of the changed discharge at least 30 days before such changes. The Department may require a construction permit and/or permit modification as a result of the proposed changes at the facility.
2. **Non-compliance Reporting.**
 - a. The permittee shall report any noncompliance which may endanger health or the environment. Relevant information shall be provided orally or via the current electronic method approved by the Department, within 24 hours from the time the permittee becomes aware of the circumstances, and shall be reported to the appropriate Regional Office during normal business hours or the Environmental Emergency Response hotline at 573-634-2436 outside of normal business hours. A written submission shall also be provided within five (5) business days of the time the permittee becomes aware of the circumstances. The written submission shall contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.



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- b. The following shall be included as information which must be reported within 24 hours under this paragraph.
 - i. Any unanticipated bypass which exceeds any effluent limitation in the permit.
 - ii. Any upset which exceeds any effluent limitation in the permit.
 - iii. Violation of a maximum daily discharge limitation for any of the pollutants listed by the Department in the permit required to be reported within 24 hours.
 - c. The Department may waive the written report on a case-by-case basis for reports under paragraph 2. b. of this section if the oral report has been received within 24 hours.
3. **Anticipated Noncompliance.** The permittee shall give advance notice to the Department of any planned changes in the permitted facility or activity which may result in noncompliance with permit requirements. The notice shall be submitted to the Department 60 days prior to such changes or activity.
 4. **Compliance Schedules.** Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date. The report shall provide an explanation for the instance of noncompliance and a proposed schedule or anticipated date, for achieving compliance with the compliance schedule requirement.
 5. **Other Noncompliance.** The permittee shall report all instances of noncompliance not reported under paragraphs 2, 3, and 6 of this section, at the time monitoring reports are submitted. The reports shall contain the information listed in paragraph 2. a. of this section.
 6. **Other Information.** Where the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or in any report to the Department, it shall promptly submit such facts or information.
 7. **Discharge Monitoring Reports.**
 - a. Monitoring results shall be reported at the intervals specified in the permit.
 - b. Monitoring results must be reported to the Department via the current method approved by the Department, unless the permittee has been granted a waiver from using the method. If the permittee has been granted a waiver, the permittee must use forms provided by the Department.
 - c. Monitoring results shall be reported to the Department no later than the 28th day of the month following the end of the reporting period.
- b. Notice.
 - i. Anticipated bypass. If the permittee knows in advance of the need for a bypass, it shall submit prior notice, if possible at least 10 days before the date of the bypass.
 - ii. Unanticipated bypass. The permittee shall submit notice of an unanticipated bypass as required in Section B – Reporting Requirements, paragraph 5 (24-hour notice).
 - c. Prohibition of bypass.
 - i. Bypass is prohibited, and the Department may take enforcement action against a permittee for bypass, unless:
 1. Bypass was unavoidable to prevent loss of life, personal injury, or severe property damage;
 2. There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and
 3. The permittee submitted notices as required under paragraph 2. b. of this section.
 - ii. The Department may approve an anticipated bypass, after considering its adverse effects, if the Department determines that it will meet the three (3) conditions listed above in paragraph 2. c. i. of this section.
3. **Upset Requirements.**
 - a. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with such technology based permit effluent limitations if the requirements of paragraph 3. b. of this section are met. No determination made during administrative review of claims that noncompliance was caused by upset, and before an action for noncompliance, is final administrative action subject to judicial review.
 - b. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - i. An upset occurred and that the permittee can identify the cause(s) of the upset;
 - ii. The permitted facility was at the time being properly operated; and
 - iii. The permittee submitted notice of the upset as required in Section B – Reporting Requirements, paragraph 2. b. ii. (24-hour notice).
 - iv. The permittee complied with any remedial measures required under Section D – Administrative Requirements, paragraph 4.
 - c. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

Section C – Bypass/Upset Requirements

1. **Definitions.**
 - a. *Bypass*: the intentional diversion of waste streams from any portion of a treatment facility, except in the case of blending.
 - b. *Severe Property Damage*: substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
 - c. *Upset*: an exceptional incident in which there is unintentional and temporary noncompliance with technology based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
2. **Bypass Requirements.**
 - a. Bypass not exceeding limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provisions of paragraphs 2. b. and 2. c. of this section.

Section D – Administrative Requirements

1. **Duty to Comply.** The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Missouri Clean Water Law and Federal Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.
 - a. The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the CWA within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
 - b. The Federal Clean Water Act provides that any person who violates section 301, 302, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any such sections in a permit issued under section 402, or any requirement imposed in a pretreatment program approved under sections 402(a)(3) or 402(b)(8) of the Act, is subject to a civil penalty not to exceed \$25,000 per day for each violation. The Federal Clean Water Act provides that any person who negligently violates sections 301, 302, 306, 307, 308, 318, or 405 of the Act, or any condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, or any requirement



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- imposed in a pretreatment program approved under section 402(a)(3) or 402(b)(8) of the Act, is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one (1) year, or both. In the case of a second or subsequent conviction for a negligent violation, a person shall be subject to criminal penalties of not more than \$50,000 per day of violation, or by imprisonment of not more than two (2) years, or both. Any person who knowingly violates such sections, or such conditions or limitations is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three (3) years, or both. In the case of a second or subsequent conviction for a knowing violation, a person shall be subject to criminal penalties of not more than \$100,000 per day of violation, or imprisonment of not more than six (6) years, or both. Any person who knowingly violates section 301, 302, 303, 306, 307, 308, 318 or 405 of the Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of the Act, and who knows at that time that he thereby places another person in imminent danger of death or serious bodily injury, shall, upon conviction, be subject to a fine of not more than \$250,000 or imprisonment of not more than 15 years, or both. In the case of a second or subsequent conviction for a knowing endangerment violation, a person shall be subject to a fine of not more than \$500,000 or by imprisonment of not more than 30 years, or both. An organization, as defined in section 309(c)(3)(B)(iii) of the CWA, shall, upon conviction of violating the imminent danger provision, be subject to a fine of not more than \$1,000,000 and can be fined up to \$2,000,000 for second or subsequent convictions.
- c. Any person may be assessed an administrative penalty by the EPA Director for violating section 301, 302, 306, 307, 308, 318 or 405 of this Act, or any permit condition or limitation implementing any of such sections in a permit issued under section 402 of this Act. Administrative penalties for Class I violations are not to exceed \$10,000 per violation, with the maximum amount of any Class I penalty assessed not to exceed \$25,000. Penalties for Class II violations are not to exceed \$10,000 per day for each day during which the violation continues, with the maximum amount of any Class II penalty not to exceed \$125,000.
- d. It is unlawful for any person to cause or permit any discharge of water contaminants from any water contaminant or point source located in Missouri in violation of sections 644.006 to 644.141 of the Missouri Clean Water Law, or any standard, rule or regulation promulgated by the commission. In the event the commission or the director determines that any provision of sections 644.006 to 644.141 of the Missouri Clean Water Law or standard, rules, limitations or regulations promulgated pursuant thereto, or permits issued by, or any final abatement order, other order, or determination made by the commission or the director, or any filing requirement pursuant to sections 644.006 to 644.141 of the Missouri Clean Water Law or any other provision which this state is required to enforce pursuant to any federal water pollution control act, is being, was, or is in imminent danger of being violated, the commission or director may cause to have instituted a civil action in any court of competent jurisdiction for the injunctive relief to prevent any such violation or further violation or for the assessment of a penalty not to exceed \$10,000 per day for each day, or part thereof, the violation occurred and continues to occur, or both, as the court deems proper. Any person who willfully or negligently commits any violation in this paragraph shall, upon conviction, be punished by a fine of not less than \$2,500 nor more than \$25,000 per day of violation, or by imprisonment for not more than one year, or both. Second and successive convictions for violation of the same provision of this paragraph by any person shall be punished by a fine of not more than \$50,000 per day of violation, or by imprisonment for not more than two (2) years, or both.
2. **Duty to Reapply.**
- a. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee must apply for and obtain a new permit.
- b. A permittee with a currently effective site-specific permit shall submit an application for renewal at least 180 days before the expiration date of the existing permit, unless permission for a later date has been granted by the Department. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
- c. A permittee with currently effective general permit shall submit an application for renewal at least 30 days before the existing permit expires, unless the permittee has been notified by the Department that an earlier application must be made. The Department may grant permission for a later submission date. (The Department shall not grant permission for applications to be submitted later than the expiration date of the existing permit.)
3. **Need to Halt or Reduce Activity Not a Defense.** It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.
4. **Duty to Mitigate.** The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal in violation of this permit which has a reasonable likelihood of adversely affecting human health or the environment.
5. **Proper Operation and Maintenance.** The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.
6. **Permit Actions.**
- a. Subject to compliance with statutory requirements of the Law and Regulations and applicable Court Order, this permit may be modified, suspended, or revoked in whole or in part during its term for cause including, but not limited to, the following:
- i. Violations of any terms or conditions of this permit or the law;
- ii. Having obtained this permit by misrepresentation or failure to disclose fully any relevant facts;
- iii. A change in any circumstances or conditions that requires either a temporary or permanent reduction or elimination of the authorized discharge; or
- iv. Any reason set forth in the Law or Regulations.
- b. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
7. **Permit Transfer.**
- a. Subject to 10 CSR 20-6.010, an operating permit may be transferred upon submission to the Department of an application to transfer signed by the existing owner and the new owner, unless prohibited by the terms of the permit. Until such time the permit is officially transferred, the original permittee remains responsible for complying with the terms and conditions of the existing permit.
- b. The Department may require modification or revocation and reissuance of the permit to change the name of the permittee and incorporate such other requirements as may be necessary under the Missouri Clean Water Law or the Federal Clean Water Act.
- c. The Department, within 30 days of receipt of the application, shall notify the new permittee of its intent to revoke or reissue or transfer the permit.
8. **Toxic Pollutants.** The permittee shall comply with effluent standards or prohibitions established under section 307(a) of the Federal Clean Water Act for toxic pollutants and with standards for sewage sludge use or disposal established under section 405(d) of the Federal Clean Water Act within the time provided in the regulations that establish these standards or prohibitions or standards for sewage sludge use or disposal, even if the permit has not yet been modified to incorporate the requirement.
9. **Property Rights.** This permit does not convey any property rights of any sort, or any exclusive privilege.



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10. **Duty to Provide Information.** The permittee shall furnish to the Department, within a reasonable time, any information which the Department may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit or to determine compliance with this permit. The permittee shall also furnish to the Department upon request, copies of records required to be kept by this permit.
11. **Inspection and Entry.** The permittee shall allow the Department, or an authorized representative (including an authorized contractor acting as a representative of the Department), upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;
 - c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit; and
 - d. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the Federal Clean Water Act or Missouri Clean Water Law, any substances or parameters at any location.
12. **Closure of Treatment Facilities.**
 - a. Persons who cease operation or plan to cease operation of waste, wastewater, and sludge handling and treatment facilities shall close the facilities in accordance with a closure plan approved by the Department.
 - b. Operating Permits under 10 CSR 20-6.010 or under 10 CSR 20-6.015 are required until all waste, wastewater, and sludges have been disposed of in accordance with the closure plan approved by the Department and any disturbed areas have been properly stabilized. Disturbed areas will be considered stabilized when perennial vegetation, pavement, or structures using permanent materials cover all areas that have been disturbed. Vegetative cover, if used, shall be at least 70% plant density over 100% of the disturbed area.
13. **Signatory Requirement.**
 - a. All permit applications, reports required by the permit, or information requested by the Department shall be signed and certified. (See 40 CFR 122.22 and 10 CSR 20-6.010)
 - b. The Federal Clean Water Act provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or non-compliance shall, upon conviction, be punished by a fine of not more than \$10,000 per violation, or by imprisonment for not more than six (6) months per violation, or by both.
 - c. The Missouri Clean Water Law provides that any person who knowingly makes any false statement, representation or certification in any application, record, report, plan, or other document filed or required to be maintained pursuant to sections 644.006 to 644.141 shall, upon conviction, be punished by a fine of not more than ten thousand dollars, or by imprisonment for not more than six months, or by both.
14. **Severability.** The provisions of the permit are severable, and if any provision of the permit, or the application of any provision of the permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of the permit, shall not be affected thereby.



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PART II - SPECIAL CONDITIONS – PUBLICLY OWNED
TREATMENT WORKS
SECTION A – INDUSTRIAL USERS

1. Definitions

Definitions as set forth in the Missouri Clean Water Laws and approved by the Missouri Clean Water Commission shall apply to terms used herein.

Significant Industrial User (SIU). Except as provided in the *General Pretreatment Regulation* 10 CSR 20-6.100, the term Significant Industrial User means:

1. All Industrial Users subject to Categorical Pretreatment Standards; and
2. Any other Industrial User that: discharges an average of 25,000 gallons per day or more of process wastewater to the Publicly-Owned Treatment Works (POTW) (excluding sanitary, noncontact cooling and boiler blowdown wastewater); contributes a process wastestream which makes up 5 percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Control Authority on the basis that the Industrial User has a reasonable potential for adversely affecting the POTW's or for violating any Pretreatment Standard or requirement.

Clean Water Act (CWA) is the the federal Clean Water Act of 1972, 33 U.S.C. § 1251 et seq. (2002).

2. Identification of Industrial Discharges

Pursuant to 40 CFR 122.44(j)(1), all POTWs shall identify, in terms of character and volume of pollutants, any Significant Industrial Users discharging to the POTW subject to Pretreatment Standards under section 307(b) of the CWA and 40 CFR 403.

3. Application Information

Applications for renewal or modification of this permit must contain the information about industrial discharges to the POTW pursuant to 40 CFR 122.21(j)(6)

4. Notice to the Department

Pursuant to 40 CFR 122.42(b), all POTWs must provide adequate notice of the following:

1. Any new introduction of pollutants into the POTW from an indirect discharger which would be subject to section 301 or 306 of CWA if it were directly discharging these pollutants; and
2. Any substantial change into the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit.
3. For purposes of this paragraph, adequate notice shall include information on:
 - i. the quality and quantity of effluent introduced into the POTW, and
 - ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

For POTWs without an approved pretreatment program, the notice of industrial discharges which was not included in the permit application shall be made as soon as practicable. For POTWs with an approved pretreatment program, notice is to be included in the annual pretreatment report required in the special conditions of this permit. Notice may be sent to:

Missouri Department of Natural Resources
Water Protection Program
Attn: Pretreatment Coordinator
P.O. Box 176
Jefferson City, MO 65102

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PART III – BIOSOLIDS AND SLUDGE FROM DOMESTIC TREATMENT FACILITIES

SECTION A – GENERAL REQUIREMENTS

1. PART III Standard Conditions pertain to biosolids and sludge requirements under the Missouri Clean Water Law and regulations for domestic and municipal wastewater and also incorporates federal sludge disposal requirements under 40 CFR Part 503 for domestic wastewater. The Environmental Protection Agency (EPA) has principal authority for permitting and enforcement of the federal sludge regulations under 40 CFR Part 503 for domestic biosolids and sludge.
2. PART III Standard Conditions apply only to biosolids and sludge generated at domestic wastewater treatment facilities, including public owned treatment works (POTW) and privately owned facilities.
3. Biosolids and Sludge Use and Disposal Practices:
 - a. The permittee is authorized to operate the biosolids and sludge generating, treatment, storage, use, and disposal facilities listed in the facility description of this permit.
 - b. The permittee shall not exceed the design sludge/biosolids volume listed in the facility description and shall not use biosolids or sludge disposal methods that are not listed in the facility description, without prior approval of the permitting authority.
 - c. For facilities operating under general operating permits that incorporate Standard Conditions PART III, the facility is authorized to operate the biosolids and sludge generating, treatment, storage, use and disposal facilities identified in the original operating permit application, subsequent renewal applications or subsequent written approval by the department.
4. Biosolids or Sludge Received from other Facilities:
 - a. Permittees may accept domestic wastewater biosolids or sludge from other facilities as long as the permittee's design sludge capacity is not exceeded and the treatment facility performance is not impaired.
 - b. The permittee shall obtain a signed statement from the biosolids or sludge generator or hauler that certifies the type and source of the sludge
5. Nothing in this permit precludes the initiation of legal action under local laws, except to the extent local laws are preempted by state law.
6. This permit does not preclude the enforcement of other applicable environmental regulations such as odor emissions under the Missouri Air Pollution Control Law and regulations.
7. This permit may (after due process) be modified, or alternatively revoked and reissued, to comply with any applicable biosolids or sludge disposal standard or limitation issued or approved under Section 405(d) of the Clean Water Act or under Chapter 644 RSMo.
8. In addition to Standard Conditions PART III, the Department may include biosolids and sludge limitations in the special conditions portion or other sections of a site specific permit.
9. Exceptions to Standard Conditions PART III may be authorized on a case-by-case basis by the Department, as follows:
 - a. The Department may modify a site-specific permit following permit notice provisions as applicable under 10 CSR 20-6.020, 40 CFR § 124.10, and 40 CFR § 501.15(a)(2)(ix)(E).
 - b. Exceptions cannot be granted where prohibited by the federal sludge regulations under 40 CFR Part 503.

SECTION B – DEFINITIONS

1. Best Management Practices are practices to prevent or reduce the pollution of waters of the state and include agronomic loading rates (nitrogen based), soil conservation practices, spill prevention and maintenance procedures and other site restrictions.
2. Biosolids means organic fertilizer or soil amendment produced by the treatment of domestic wastewater sludge.
3. Biosolids land application facility is a facility where biosolids are spread onto the land at agronomic rates for production of food, feed or fiber. The facility includes any structures necessary to store the biosolids until soil, weather, and crop conditions are favorable for land application.
4. Class A biosolids means a material that has met the Class A pathogen reduction requirements or equivalent treatment by a Process to Further Reduce Pathogens (PFRP) in accordance with 40 CFR Part 503.
5. Class B biosolids means a material that has met the Class B pathogen reduction requirements or equivalent treatment by a Process to Significantly Reduce Pathogens (PSRP) in accordance with 40 CFR Part 503.
6. Domestic wastewater means wastewater originating from the sanitary conveniences of residences, commercial buildings, factories and institutions; or co-mingled sanitary and industrial wastewater processed by a (POTW) or a privately owned facility.
7. Feed crops are crops produced primarily for consumption by animals.
8. Fiber crops are crops such as flax and cotton.
9. Food crops are crops consumed by humans which include, but is not limited to, fruits, vegetables and tobacco.
10. Industrial wastewater means any wastewater, also known as process wastewater, not defined as domestic wastewater. Per 40 CFR Part 122.2, process wastewater means any water which, during manufacturing or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product. Land application of industrial wastewater, residuals or sludge is not authorized by Standard Conditions PART III.
11. Mechanical treatment plants are wastewater treatment facilities that use mechanical devices to treat wastewater, including, sand filters, extended aeration, activated sludge, contact stabilization, trickling filters, rotating biological contact systems, and other similar facilities. It does not include wastewater treatment lagoons or constructed wetlands for wastewater treatment.
12. Plant Available Nitrogen (PAN) is nitrogen that will be available to plants during the growing seasons after biosolids application.
13. Public contact site is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.
14. Sludge is the solid, semisolid, or liquid residue removed during the treatment of wastewater. Sludge includes septage removed from septic tanks or equivalent facilities. Sludge does not include carbon coal byproducts (CCBs), sewage sludge incinerator ash, or grit/screenings generated during preliminary treatment of domestic sewage.
15. Sludge lagoon is part of a mechanical wastewater treatment facility. A sludge lagoon is an earthen or concrete lined basin that receives sludge that has been removed from a wastewater treatment facility. It does not include a wastewater treatment lagoon or sludge treatment units that are not a part of a mechanical wastewater treatment facility.
16. Septage is the sludge pumped from residential septic tanks, cesspools, portable toilets, Type III marine sanitation devices, or similar treatment works such as sludge holding structures from residential wastewater treatment facilities with design populations of less than 150 people. Septage does not include grease removed from grease traps at a restaurant or material removed from septic tanks and other similar treatment works that have received industrial wastewater. The standard for biosolids from septage is different from other sludges. See Section H for more information.

SECTION C – MECHANICAL WASTEWATER TREATMENT FACILITIES

1. Biosolids or sludge shall be routinely removed from wastewater treatment facilities and handled according to the permit facility description and the requirements of Standard Conditions PART III or in accordance with Section A.3.c., above.
2. The permittee shall operate storage and treatment facilities, as defined by Section 644.016(23), RSMo, so that there is no biosolids or sludge discharged to waters of the state. Agricultural storm water discharges are exempt under the provisions of Section 644.059, RSMo.
3. Mechanical treatment plants shall have separate biosolids or sludge storage compartments in accordance with 10 CSR 20, Chapter 8. Failure to remove biosolids or sludge from these storage compartments on the required design schedule is a violation of this permit.

SECTION D – BIOSOLIDS OR SLUDGE DISPOSED AT OTHER TREATMENT FACILITY OR BY CONTRACT HAULER

1. Permittees that use contract haulers, under the authority of their operating permit, to dispose of biosolids or sludge, are responsible for compliance with all the terms of this permit. Contract haulers that assume the responsibility of the final disposal of biosolids or sludge, including biosolids land application, must obtain a Missouri State Operating Permit unless the hauler transports the biosolids or sludge to another permitted treatment facility.
2. Testing of biosolids or sludge, other than total solids content, is not required if biosolids or sludge are hauled to a permitted wastewater treatment facility, unless it is required by the accepting facility.

SECTION E – INCINERATION OF SLUDGE

1. Please be aware that sludge incineration facilities may be subject to the requirements of 40 CFR Part 503 Subpart E, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Permittee may be authorized under the facility description of this permit to store incineration ash in lagoons or ash ponds. This permit does not authorize the disposal of incineration ash. Incineration ash shall be disposed in accordance with 10 CSR 80; or, if the ash is determined to be hazardous, with 10 CSR 25.
3. In addition to normal sludge monitoring, incineration facilities shall report the following as part of the annual report, mass of sludge incinerated and mass of ash generated. Permittee shall also provide the name of the ash disposal facility and permit number if applicable.

SECTION F – SURFACE DISPOSAL SITES AND BIOSOLIDS AND SLUDGE LAGOONS

1. Please be aware that surface disposal sites of biosolids or sludge from wastewater treatment facilities may be subject to other laws including the requirements in 40 CFR Part 503 Subpart C, Missouri Air Conservation Commission regulations under 10 CSR 10, and solid waste management regulations under 10 CSR 80, as applicable.
2. Biosolids or sludge storage lagoons are temporary facilities and are not required to obtain a permit as a solid waste management facility under 10 CSR 80. In order to maintain biosolids or sludge storage lagoons as storage facilities, accumulated biosolids or sludge must be removed routinely, but not less than once every two years unless an alternate schedule is approved in the permit. The amount of biosolids or sludge removed will be dependent on biosolids or sludge generation and accumulation in the facility. Enough biosolids or sludge must be removed to maintain adequate storage capacity in the facility.
 - a. In order to avoid damage to the lagoon seal during cleaning, the permittee may leave a layer of biosolids or sludge on the bottom of the lagoon, upon prior approval of the Department; or
 - b. Permittee shall close the lagoon in accordance with Section I.

SECTION G – LAND APPLICATION OF BIOSOLIDS

1. The permittee shall not land apply biosolids unless land application is authorized in the facility description, the special conditions of the issued NPDES permit, or in accordance with Section A.3.c., above.
2. This permit only authorizes “Class A” or “Class B” biosolids derived from domestic wastewater to be land applied onto grass land, crop land, timber, or other similar agricultural or silviculture lands at rates suitable for beneficial use as organic fertilizer and soil conditioner.
3. Class A Biosolids Requirements: Biosolids shall meet Class A requirements for application to public contact sites, residential lawns, home gardens or sold and/or given away in a bag or other container.
4. Class B biosolids that are land applied to agricultural and public contact sites shall comply with the following restrictions:
 - a. Food crops that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application of biosolids.
 - b. Food crops below the surface of the land shall not be harvested for 20 months after application of biosolids when the biosolids remain on the land surface for four months or longer prior to incorporation into the soil.
 - c. Food crops below the surface of the land shall not be harvested for 38 months after application of biosolids when the biosolids remain on the land surface for less than four months prior to incorporation into the soil.
 - d. Animal grazing shall not be allowed for 30 days after application of biosolids.
 - e. Food crops, feed crops, and fiber crops shall not be harvested for 30 days after application of biosolids.
 - f. Turf shall not be harvested for one year after application of biosolids if used for lawns or high public contact sites in close proximity to populated areas such as city parks or golf courses.
 - g. After Class B biosolids have been land applied to public contact sites with high potential for public exposure, as defined in 40 CFR § 503.31, such as city parks or golf courses, access must be restricted for 12 months.
 - h. After Class B biosolids have been land applied public contact sites with low potential for public exposure as defined in 40 CFR § 503.31, such as a rural land application or reclamation sites, access must be restricted for 30 days.
5. Pollutant limits
 - a. Biosolids shall be monitored to determine the quality for regulated pollutants listed in Table 1, below. Limits for any pollutants not listed below may be established in the permit.
 - b. The number of samples taken is directly related to the amount of biosolids or sludge produced by the facility (See Section J, below). Samples should be taken only during land application periods. When necessary, it is permissible to mix biosolids with lower concentrations of biosolids as well as other suitable Department approved material to achieve pollutant concentration below those identified in Table 1, below.
 - c. Table 1 gives the ceiling concentration for biosolids. Biosolids which exceed the concentrations in Table 1 may not be land applied.

TABLE 1

Biosolids ceiling concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	75
Cadmium	85
Copper	4,300
Lead	840
Mercury	57
Molybdenum	75
Nickel	420
Selenium	100
Zinc	7,500

- d. Table 2 below gives the low metal concentration for biosolids. Because of its higher quality, biosolids with pollutant concentrations below those listed in Table 2 can safely be applied to agricultural land, forest, public contact sites, lawns, home gardens or be given away without further analysis. Biosolids containing metals in concentrations above the low metals concentrations but below the ceiling concentration limits may be land applied but shall not exceed the annual loading rates in Table 3 and the cumulative loading rates in Table 4. The permittee is required to track pollutant loading onto application sites for parameters that have exceeded the low metal concentration limits.

TABLE 2

Biosolids Low Metal Concentration	
Pollutant	Milligrams per kilogram dry weight
Arsenic	41
Cadmium	39
Copper	1,500
Lead	300
Mercury	17
Nickel	420
Selenium	100
Zinc	2,800

- e. Annual pollutant loading rate.

Table 3

Biosolids Annual Loading Rate	
Pollutant	Kg/ha (lbs./ac) per year
Arsenic	2.0 (1.79)
Cadmium	1.9 (1.70)
Copper	75 (66.94)
Lead	15 (13.39)
Mercury	0.85 (0.76)
Nickel	21 (18.74)
Selenium	5.0 (4.46)
Zinc	140 (124.96)

- f. Cumulative pollutant loading rates.

Table 4

Biosolids Cumulative Pollutant Loading Rate	
Pollutant	Kg/ha (lbs./ac)
Arsenic	41 (37)
Cadmium	39 (35)
Copper	1500 (1339)
Lead	300 (268)
Mercury	17 (15)
Nickel	420 (375)
Selenium	100 (89)
Zinc	2800 (2499)

6. Best Management Practices. The permittee shall use the following best management practices during land application activities to prevent the discharge of biosolids to waters of the state.
- Biosolids shall not be applied to the land if it is likely to adversely affect a threatened or endangered species listed under § 4 of the Endangered Species Act or its designated critical habitat.
 - Apply biosolids only at the agronomic rate of nitrogen needed (see 5.c. of this section).
 - The applicator must document the Plant Available Nitrogen (PAN) loadings, available nitrogen in the soil, and crop

nitrogen removal when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kgTN; or 2) When biosolids are land applied at an application rate greater than two dry tons per acre per year.

- i. PAN can be determined as follows:
(Nitrate + nitrite nitrogen) + (organic nitrogen x 0.2) + (ammonia nitrogen x volatilization factor¹).
¹ Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
- ii. Crop nutrient production/removal to be based on crop specific nitrogen needs and realistic yield goals. **NOTE:** There are a number of reference documents on the Missouri Department of Natural Resources website that are informative to implement best management practices in the proper management of biosolids, including crop specific nitrogen needs, realistic yields on a county by county basis and other supporting references.
- iii. Biosolids that are applied at agronomic rates shall not cause the annual pollutant loading rates identified in Table 3 to be exceeded.
- d. Buffer zones are as follows:
 - i. 300 feet of a water supply well, sinkhole, water supply reservoir or water supply intake in a stream;
 - ii. 300 feet of a losing stream, no discharge stream, stream stretches designated for whole body contact recreation, wild and scenic rivers, Ozark National Scenic Riverways or outstanding state resource waters as listed in the Water Quality Standards, 10 CSR 20-7.031;
 - iii. 150 feet of dwellings or public use areas;
 - iv. 100 feet (35 feet if biosolids application is down-gradient or the buffer zone is entirely vegetated) of lake, pond, wetlands or gaining streams (perennial or intermittent);
 - v. 50 feet of a property line. Buffer distances from property lines may be waived with written permission from neighboring property owner.
 - vi. For the application of dry, cake or liquid biosolids that are subsurface injected, buffer zones identified in 5.d.i. through 5.d.iii above, may be reduced to 100 feet. The buffer zone may be reduced to 35 feet if the buffer zone is permanently vegetated. Subsurface injection does not include methods or technology reflective of combination surface/shallow soil incorporation.
- e. Slope limitation for application sites are as follows:
 - i. For slopes less than or equal to 6 percent, no rate limitation;
 - ii. Applied to a slope 7 to 12 percent, the applicator may apply biosolids when soil conservation practices are used to meet the minimum erosion levels;
 - iii. Slopes > 12 percent, apply biosolids only when grass is vegetated and maintained with at least 80 percent ground cover at a rate of two dry tons per acre per year or less.
 - iv. Dry, cake or liquid biosolids that are subsurface injected, may be applied on slopes not to exceed 20 percent. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation.
- f. No biosolids may be land applied in an area that it is reasonably certain that pollutants will be transported into waters of the state.
- g. Biosolids may be land applied to sites with soil that are snow covered, frozen, or saturated with liquid when site restrictions or other controls are provided to prevent pollutants from being discharged to waters of the state during snowmelt or stormwater runoff. During inclement weather or unfavorable soil conditions use the following management practices:
 - i. A maximum field slope of 6% and a minimum 300 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be utilized for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
 - ii. A maximum field slope of 2% and 100 feet grass buffer between the application site and waters of the state. A 35 feet grass buffer may be used for the application of dry, cake or liquid biosolids that are subsurface injected. Subsurface injection does not include the use of methods or technology reflective of combination surface/shallow soil incorporation;
 - iii. Other best management practices approved by the Department.

SECTION H – SEPTAGE

1. Haulers that land apply septage must obtain a state permit. An operating permit is not required for septage haulers who transport septage to another permitted treatment facility for disposal.
2. Do not apply more than 30,000 gallons of septage per acre per year or the volume otherwise stipulated in the operating permit.
3. Septic tanks are designed to retain sludge for one to three years which will allow for a larger reduction in pathogens and vectors, as compared to mechanical treatment facilities.
4. Septage must comply with Class B biosolids regarding pathogen and vector attraction reduction requirements before it may be applied to crops, pastures or timberland. To meet required pathogen and vector reduction requirements, mix 50 pounds of hydrated lime for every 1,000 gallons of septage and maintain a septage pH of at least 12 pH standard units for 30 minutes or more prior to application.
5. Lime is to be added to the pump truck and not directly to the septic tanks, as lime would harm the beneficial bacteria of the septic tank.
6. As residential septage contains relatively low levels of metals, the testing of metals in septage is not required.

SECTION I– CLOSURE REQUIREMENTS

1. This section applies to all wastewater facilities (mechanical and lagoons) and sludge or biosolids storage and treatment facilities. It does not apply to land application sites.
2. Permittees of a domestic wastewater facility who plan to cease operation must obtain Department approval of a closure plan which addresses proper removal and disposal of all sludges and/or biosolids. Permittee must maintain this permit until the facility is closed in accordance with the approved closure plan per 10 CSR 20 – 6.010 and 10 CSR 20 – 6.015.
3. Biosolids or sludge that are left in place during closure of a lagoon or earthen structure or ash pond shall not exceed the agricultural loading rates as follows:
 - a. Biosolids and sludge shall meet the monitoring and land application limits for agricultural rates as referenced in Section G, above.
 - b. If a wastewater treatment lagoon has been in operation for 15 years or more without sludge removal, the sludge in the lagoon qualifies as a Class B biosolids with respect to pathogens due to anaerobic digestion, and testing for fecal coliform is not required. For other lagoons, testing for fecal coliform is required to show compliance with Class B biosolids limitations. In order to reach Class B biosolids requirements, fecal coliform must be less than 2,000,000 colony forming units or 2,000,000 most probable number. All fecal samples must be presented as geometric mean per gram.
 - c. The allowable nitrogen loading that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. For a grass cover crop, the allowable PAN is 300 pounds/acre. Alternative, site-specific application rates may be included in the closure plan for department consideration.
 - i. PAN can be determined as follows:
$$(\text{Nitrate} + \text{nitrite nitrogen}) + (\text{organic nitrogen} \times 0.2) + (\text{ammonia nitrogen} \times \text{volatilization factor}^1).$$
¹ Volatilization factor is 0.7 for surface application and 1 for subsurface application. Alternative volatilization factors and mineralization rates can be utilized on a case-by-case basis.
4. Domestic wastewater treatment lagoons with a design treatment capacity less than or equal to 150 persons, are “similar treatment works” under the definition of septage. Therefore the sludge within the lagoons may be treated as septage during closure activities. See Section B, above. Under the septage category, residuals may be left in place as follows:
 - a. Testing for metals or fecal coliform is not required.
 - b. If the wastewater treatment lagoon has been in use for less than 15 years, mix lime with the sludge at a rate of 50 pounds of hydrated lime per 1000 gallons (134 cubic feet) of sludge.
 - c. The amount of sludge that may be left in the lagoon shall be based on the plant available nitrogen (PAN) loading. 100 dry tons/acre of sludge may be left in the basin without testing for nitrogen. If 100 dry tons/acre or more will be left in the lagoon, test for nitrogen and determine the PAN using the calculation above. Allowable PAN loading is 300 pounds/acre.
5. Biosolids or sludge left within the domestic lagoon shall be mixed with soil on at least a 1 to 1 ratio, and unless otherwise approved, the lagoon berm shall be demolished, and the site shall be graded and contain $\geq 70\%$ vegetative density over 100% of the site so as to avoid ponding of storm water and provide adequate surface water drainage without creating erosion. Alternative biosolids or sludge and soil mixing ratios may be included in the closure plan for department consideration.
6. Lagoon and earthen structure closure activities shall obtain a storm water permit for land disturbance activities that equal or exceed one acre in accordance with 10 CSR 20-6.200.
7. When closing a mechanical wastewater plant, all biosolids or sludge must be cleaned out and disposed of in accordance with the Department approved closure plan before the permit for the facility can be terminated.
 - a. Land must be stabilized which includes any grading, alternate use or fate upon approval by the Department, remediation, or other work that exposes sediment to stormwater per 10 CSR 20-6.200. The site shall be graded and contain $\geq 70\%$ vegetative density over 100% of the site, so as to avoid ponding of storm water and provide adequate

- surface water drainage without creating erosion.
- b. Hazardous Waste shall not be land applied or disposed during mechanical plant closures unless in accordance with Missouri Hazardous Waste Management Law and Regulations pursuant to 10 CSR 25.
 - c. After demolition of the mechanical plant, the site must only contain clean fill defined in Section 260.200.1(6) RSMo as uncontaminated soil, rock, sand, gravel, concrete, asphaltic concrete, cinderblocks, brick, minimal amounts of wood and metal, and inert solids as approved by rule or policy of the Department for fill, reclamation, or other beneficial use. Other solid wastes must be removed.
8. If biosolids or sludge from the domestic lagoon or mechanical treatment plant exceeds agricultural rates under Section G and/or I, a landfill permit or solid waste disposal permit must be obtained if the permittee chooses to seek authorization for on-site sludge disposal under the Missouri Solid Waste Management Law and regulations per 10 CSR 80, and the permittee must comply with the surface disposal requirements under 40 CFR Part 503, Subpart C.

SECTION J – MONITORING FREQUENCY

1. At a minimum, biosolids or sludge shall be tested for volume and percent total solids on a frequency that will accurately represent sludge quantities produced and disposed. Please see the table below.

TABLE 5

Biosolids or Sludge produced and disposed (Dry Tons per Year)	Monitoring Frequency (See Notes 1, and 2)		
	Metals, Pathogens and Vectors, Total Phosphorus, Total Potassium	Nitrogen TKN, Nitrogen PAN ¹	Priority Pollutants ²
319 or less	1/year	1 per month	1/year
320 to 1650	4/year	1 per month	1/year
1651 to 16,500	6/year	1 per month	1/year
16,501+	12/year	1 per month	1/year

¹ Calculate plant available nitrogen (PAN) when either of the following occurs: 1) when biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.

² Priority pollutants (40 CFR 122.21, Appendix D, Tables II and III) are required only for permit holders that must have a pre-treatment program. Monitoring requirements may be modified and incorporated into the operating permit by the Department on a case-by-case basis.

Note 1: Total solids: A grab sample of sludge shall be tested one per day during land application periods for percent total solids. This data shall be used to calculate the dry tons of sludge applied per acre.

Note 2: Table 5 is not applicable for incineration and permit holders that landfill their sludge.

2. Permittees that operate wastewater treatment lagoons, peak flow equalization basins, combined sewer overflow basins or biosolids or sludge lagoons that are cleaned out once a year or less, may choose to sample only when the biosolids or sludge is removed or the lagoon is closed. Test one composite sample for each 319 dry tons of biosolids or sludge removed from the lagoon during the reporting year or during lagoon closure. Composite sample must represent various areas at one-foot depth.
3. Additional testing may be required in the special conditions or other sections of the permit.
4. Biosolids and sludge monitoring shall be conducted in accordance with federal regulation 40 CFR § 503.8, Sampling and analysis.

SECTION K – RECORD KEEPING AND REPORTING REQUIREMENTS

1. The permittee shall maintain records on file at the facility for at least five years for the items listed in Standard Conditions PART III and any additional items in the Special Conditions section of this permit. This shall include dates when the biosolids or sludge facility is checked for proper operation, records of maintenance and repairs and other relevant information.
2. Reporting period
 - a. By February 19th of each year, applicable facilities shall submit an annual report for the previous calendar year period for all mechanical wastewater treatment facilities, sludge lagoons, and biosolids or sludge disposal facilities.
 - b. Permittees with wastewater treatment lagoons shall submit the above annual report only when biosolids or sludge are removed from the lagoon during the report period or when the lagoon is closed.
3. Report Form. The annual report shall be prepared on report forms provided by the Department or equivalent forms approved by the Department.
4. Reports shall be submitted as follows:
Major facilities, which are those serving 10,000 persons or more or with a design flow equal to or greater than 1 million gallons per day or that are required to have an approved pretreatment program, shall report to both the Department and EPA if the facility land applied, disposed of biosolids by surface disposal, or operated a sewage sludge incinerator. All other facilities shall maintain their biosolids or sludge records and keep them available to Department personnel upon request. State reports shall be submitted to the address listed as follows:

DNR regional or other applicable office listed in the
permit (see cover letter of permit)
ATTN: Sludge Coordinator

Reports to EPA must be electronically submitted online via the Central Data Exchange at: <https://cdx.epa.gov/> Additional information is available at: <https://www.epa.gov/biosolids/compliance-and-annual-reporting-guidance-about-clean-water-act-laws>

5. Annual report contents. The annual report shall include the following:
 - a. Biosolids and sludge testing performed. If testing was conducted at a greater frequency than what is required by the permit, all test results must be included in the report.
 - b. Biosolids or sludge quantity shall be reported as dry tons for the quantity produced and/or disposed.
 - c. Gallons and % solids data used to calculate the dry ton amounts.
 - d. Description of any unusual operating conditions.
 - e. Final disposal method, dates, and location, and person responsible for hauling and disposal.
 - i. This must include the name and address for the hauler and sludge facility. If hauled to a municipal wastewater treatment facility, sanitary landfill, or other approved treatment facility, give the name of that facility.
 - ii. Include a description of the type of hauling equipment used and the capacity in tons, gallons, or cubic feet.
 - f. Contract Hauler Activities:

If using a contract hauler, provide a copy of a signed contract from the contractor. Permittee shall require the contractor to supply information required under this permit for which the contractor is responsible. The permittee shall submit a signed statement from the contractor that he has complied with the standards contained in this permit, unless the contract hauler has a separate biosolids or sludge use permit.
 - g. Land Application Sites:
 - i. Report the location of each application site, the annual and cumulative dry tons/acre for each site, and the landowners name and address. The location for each spreading site shall be given as a legal description for nearest ¼, ¼, Section, Township, Range, and county, or UTM coordinates. The facility shall report PAN when either of the following occurs: 1) When biosolids are greater than 50,000 mg/kg TN; or 2) when biosolids are land applied at an application rate greater than two dry tons per acre per year.
 - ii. If the “Low Metals” criteria are exceeded, report the annual and cumulative pollutant loading rates in pounds per acre for each applicable pollutant, and report the percent of cumulative pollutant loading which has been reached at each site.
 - iii. Report the method used for compliance with pathogen and vector attraction requirements.
 - iv. Report soil test results for pH and phosphorus. If no soil was tested during the year, report the last date when tested and the results.



MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
**FORM B: APPLICATION FOR OPERATING PERMIT FOR
FACILITIES THAT RECEIVE PRIMARILY DOMESTIC WASTE AND
HAVE A DESIGN FLOW LESS THAN OR EQUAL TO 100,000
GALLONS PER DAY**

FOR AGENCY USE ONLY

CHECK NUMBER

DATE RECEIVED

FEE SUBMITTED

JETPAY CONFIRMATION NUMBER

READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM**1. THIS APPLICATION IS FOR:**

- ☐ An operating permit for a new or unpermitted facility. Construction Permit # _____
(Include completed antidegradation review or request for antidegradation review, see instructions)
- ☐ A new site-specific operating permit formerly general permit #MOG _____
- ☐ A site-specific operating permit renewal: Permit #MO- _____ Expiration Date _____
- ☒ A site-specific operating permit modification: Permit #MO- 0137896 Reason: add features
- ☐ General permit (NON-POTWs) (MOGD –discharging < 50,000 GPD or MOG823 – Land Application of Domestic Wastewater):
Permit #MO- _____ Expiration Date _____

1.1 Is the appropriate fee included with the application (see instructions for appropriate fee)? ☐ YES ☐ NO

2. FACILITY

NAME: MDNR, Echo Bluff State Park TELEPHONE NUMBER WITH AREA CODE: 573-751-5135

ADDRESS (PHYSICAL): 35224 Echo Bluff Drive CITY: Eminence STATE: MO ZIP CODE: 65466

2.1 Legal description: Sec. 8, T 30, R 04W County Shannon

2.2 UTM Coordinates Easting (X): 641782 Northing (Y): 4130346
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

2.3 Name of receiving stream: Tributary to Sinking Creek

2.4 Number of outfalls: 5 Wastewater outfalls: 5 Stormwater outfalls: Instream monitoring sites:

3. OWNER:

NAME: MDNR, Division of State Parks EMAIL ADDRESS: coy.king@dnr.mo.gov TELEPHONE NUMBER WITH AREA CODE: 573-522-6380

ADDRESS: PO Box 176 CITY: Jefferson City STATE: MO ZIP CODE: 65102

3.1 Request review of draft permit prior to public notice? ☒ YES ☐ NO

3.2 Are you a publicly owned treatment works? ☐ YES ☒ NO
If yes, please attach the Financial Questionnaire. See: <https://dnr.mo.gov/forms/780-2511-f.pdf>

3.3 Are you a privately owned treatment works? ☐ YES ☒ NO

3.4 Are you a privately owned treatment facility regulated by the Public Service Commission? ☐ YES ☒ NO

4. CONTINUING AUTHORITY:

NAME: Same as Owner EMAIL ADDRESS: TELEPHONE NUMBER WITH AREA CODE:

ADDRESS: CITY: STATE: ZIP CODE:

If the continuing authority is different than the owner, include a copy of the contract agreement between the two parties and a description of the responsibilities of both parties within the agreement.

5. OPERATOR

NAME: Charles Reese TITLE: Trade Worker CERTIFICATE NUMBER: 15939

EMAIL ADDRESS: TELEPHONE NUMBER WITH AREA CODE: 573-751-5135

6. FACILITY CONTACT

NAME: Jessica Gillespie TITLE: Park Superintendent

EMAIL ADDRESS: jessica.gillespie@dnr.mo.gov TELEPHONE NUMBER WITH AREA CODE: 573-751-5135

ADDRESS: 35224 Echo Bluff Drive CITY: Eminence STATE: MO ZIP CODE: 65466

7. DESCRIPTION OF FACILITY

7.1 Process Flow Diagram or Schematic: Provide a diagram showing the processes of the treatment plant. Show all of the treatment units, including disinfection (e.g. – chlorination and dechlorination), influents, and outfalls. Specify where samples are taken. Indicate any treatment process changes in the routing of wastewater during dry weather and peak wet weather. Include a brief narrative description of the diagram.

Attach sheets as necessary.

Attached

7.2 Attach an aerial photograph or USGS topographic map showing the location of the facility and outfall.

Please see the following website:

<https://modnr.maps.arcgis.com/apps/webappviewer/index.html?id=1d81212e0854478ca0dae87c33c8c5ce>

Attached

8. ADDITIONAL FACILITY INFORMATION		
8.1	Number of people presently connected or population equivalent (P.E.)	Design P.E. 341
8.2	Connections to the facility: Number of units presently connected: Residential: _____ Commercial: _____ Industrial: _____	
8.3	Design flow: 36, 829	Actual flow: _____
8.4	Will discharge be continuous through the year? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Discharge will occur during the following months: _____ How many days of the week will discharge occur? _____	
8.5	Is industrial wastewater discharged to the facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, attach a list of the industries that discharge to your facility	
8.6	Does the facility accept or process leachate from landfills? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
8.7	Is wastewater land applied? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, attach Form I. See: https://dnr.mo.gov/forms/780-1686-f.pdf	
8.8	Does the facility discharge to a losing stream or sinkhole? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
8.9	Has a wasteload allocation study been completed for this facility? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
9. LABORATORY CONTROL INFORMATION		
LABORATORY WORK CONDUCTED BY PLANT PERSONNEL		
Lab work conducted outside of plant. <input type="checkbox"/> Yes <input type="checkbox"/> No Push-button or visual methods for simple test such as pH, settleable solids. <input type="checkbox"/> Yes <input type="checkbox"/> No Additional procedures such as dissolved oxygen, chemical oxygen demand, biological oxygen demand, titrations, solids, volatile content. <input type="checkbox"/> Yes <input type="checkbox"/> No More advanced determinations, such as BOD seeding procedures, fecal coliform/ <i>E. coli</i> , nutrients (including Ammonia), Oil & Grease, \ total oils, phenols, etc. <input type="checkbox"/> Yes <input type="checkbox"/> No Highly sophisticated instrumentation, such as atomic absorption and gas chromatograph. <input type="checkbox"/> Yes <input type="checkbox"/> No		
10. COLLECTION SYSTEM		
10.1 Are there any municipal satellite collection systems connected to this facility? <input type="checkbox"/> Yes <input type="checkbox"/> No If yes, please list all connected to this facility, contact phone number and length of each collection system		
FACILITY NAME	CONTACT PHONE NUMBER	LENGTH OF SYSTEM (FEET OR MILES)
10.2 Length of pipe in the sewer collection system? (If available, include totals from satellite collection systems) _____ Feet, or _____ Miles (either unit is appropriate)		
10.3 Does significant infiltration occur in the collection system? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No If yes, briefly explain any steps underway or planned to minimize inflow and infiltration:		

11. BYPASSINGDoes any bypassing occur in the collection system or at the treatment facility? ☐ Yes ☒ No

If yes, explain:

12. SLUDGE HANDLING, USE AND DISPOSAL**12.1** Is the sludge a hazardous waste as defined by 10 CSR 25? ☐ Yes ☒ No**12.2** Sludge production, including sludge received from others: _____ Design dry tons/year 1.6 Actual dry tons/year**12.3** Capacity of sludge holding structures:

Sludge storage provided: _____ cubic feet; _____ days of storage; _____ average percent solids of sludge;

☐ No sludge storage is provided. ☐ Sludge is stored in lagoon.☒ Septic Tanks**12.4** Type of Storage:☐ Holding tank☐ Building☐ Basin☐ Lagoon☐ Concrete Pad☒ Other (Describe) Septic Tanks**12.5** Sludge Treatment:☐ Anaerobic Digester☐ Lagoon☐ Composting☐ Storage Tank☐ Aerobic Digester☒ Other (Attach description)☐ Lime Stabilization☐ Air or Heat Drying**12.6** Sludge Use or Disposal:☐ Land Application☐ Surface Disposal (Sludge Disposal Lagoon, Sludge held for more than two years)☒ Contract Hauler☐ Hauled to Another treatment facility☐ Incineration☐ Sludge Retained in Wastewater treatment lagoon☐ Solid waste landfill**12.7** Person responsible for hauling sludge to disposal facility:☐ By applicant☒ By others (complete below)

NAME

EMAIL ADDRESS

Contract as necessary

ADDRESS

CITY

STATE

ZIP CODE

CONTACT PERSON

TELEPHONE NUMBER WITH AREA CODE

PERMIT NO.
MO-**12.8** Sludge use or disposal facility☐ By applicant☒ By others (Complete below.)

NAME

EMAIL ADDRESS

Contract as necessary

ADDRESS

CITY

STATE

ZIP CODE

CONTACT PERSON

TELEPHONE NUMBER WITH AREA CODE

PERMIT NO.
MO-**12.9** Does the sludge or biosolids disposal comply with federal sludge regulations under 40 CFR 503?☒ Yes ☐ No (Explain)

13. ELECTRONIC DISCHARGE MONITORING REPORT (eDMR) SUBMISSION SYSTEM

Per 40 CFR Part 127, National Pollutant Discharge Elimination System (NPDES) Electronic Reporting Rule, reporting of effluent limits and monitoring shall be submitted by the permittee via an electronic system to ensure a timely, complete, accurate, and nationally- consistent set of data. One of the following options must be checked in order for this application to be considered complete. Visit <https://dnr.mo.gov/env/wpp/edmr.htm> to for information on the Department's eDMR system and how to register.

- ☒ I will register an account online to participate in the Department's eDMR system through the Missouri Gateway for Environmental Management (MoGEM) before any reporting is due, in compliance with the Electronic Reporting Rule.
- ☐ I have already registered an account online to participate in the Department's eDMR system through MoGEM.
- ☐ I have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.
- ☐ The permit I am applying for does not require the submission of discharge monitoring reports.

14. JETPAY

Permit fees may be paid online by credit card or eCheck through a system called JetPay. Use the URL provided to access JetPay and make an online payment.

New Site Specific Permit: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/591/>

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

Modification Fee: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/596/>

New General Domestic WW: <https://magic.collectorsolutions.com/magic-ui/payments/mo-natural-resources/772/>

15. CERTIFICATION

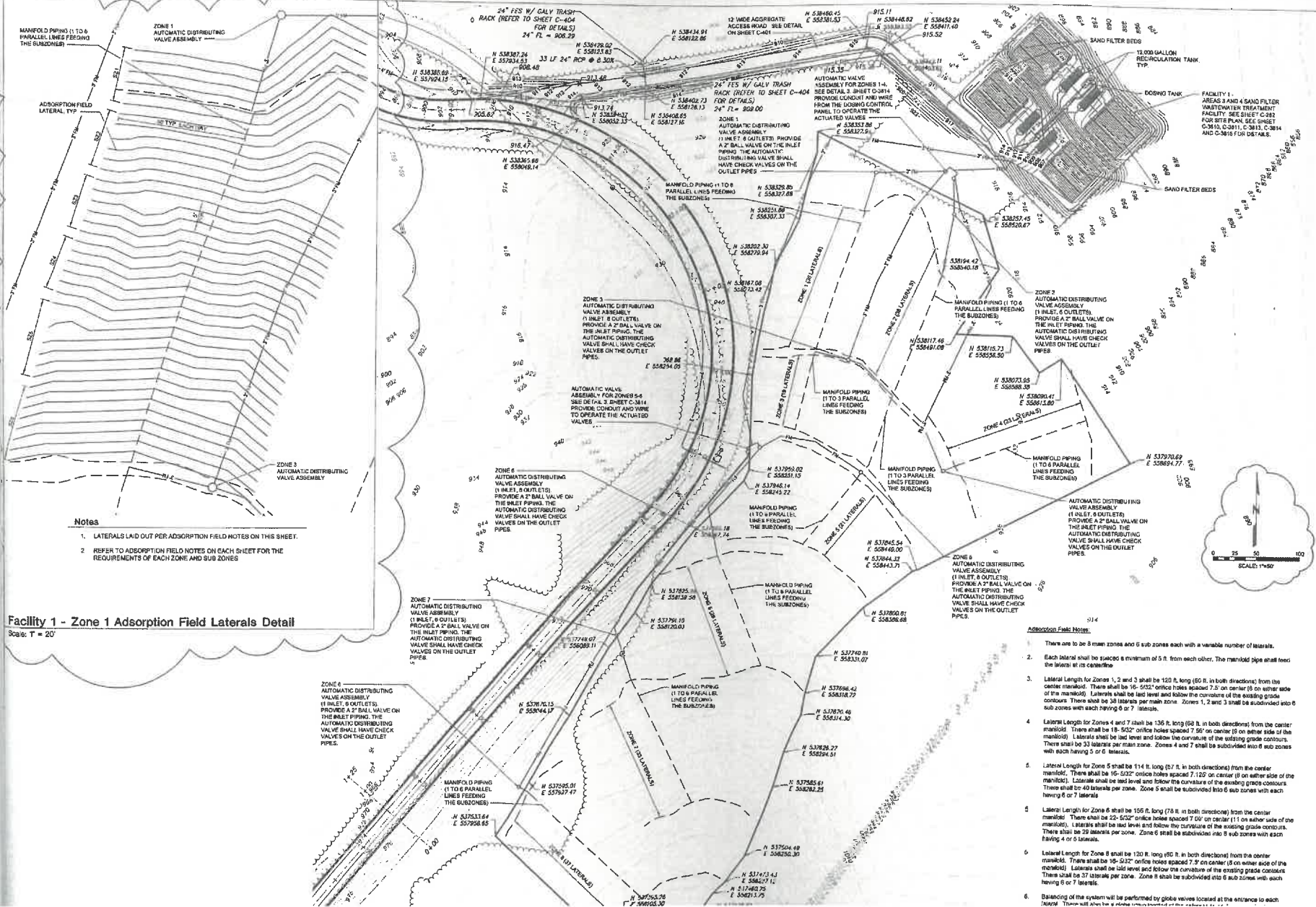
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage 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.

NAME (TYPE OR PRINT)	OFFICIAL TITLE	TELEPHONE NUMBER WITH AREA CODE
Coy King	Environmental Program Specialist	573-522-6380
SIGNATURE		DATE SIGNED
		1/6/2023

ECHO BLUFF WASTEWATER FEATURES – MO0137896



WWTF #1



STATE OF MISSOURI
JEREMIAH W. (JAY) NIX
GOVERNOR



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Farnsworth Group, Inc.
Missouri State Certificate of Authority 0001301

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT,
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE
PARKS

SITE GRADING AND
SEWERS
NEW STATE PARK
SHANNON COUNTY,
MISSOURI

PROJECT # X1414-05
SITE # 4233
FACILITY # 50147

REVISION 1-ADDENDUM #2
DATE: 02/20/2015
REVISION:
DATE:
REVISION:
DATE:
ISSUE DATE: 12/18/2014

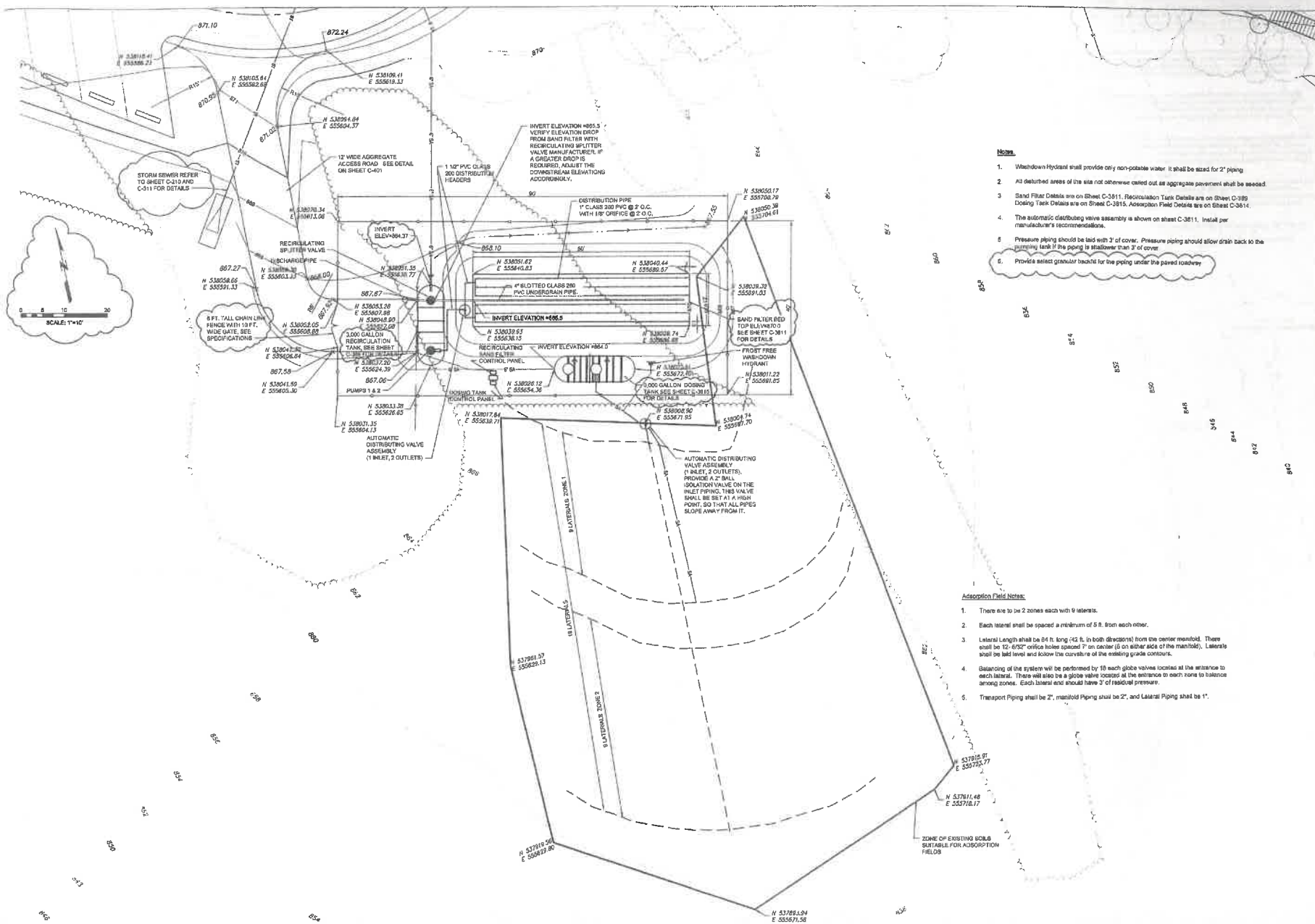
CAD DWG FILE:
DRAWN BY: J. NIX
CHECKED BY: M. K. NIX
DESIGNED BY: M. K. NIX

SHEET TITLE:
Sanitary Treatment Facility
Adsorption Field

Area 8

- Adsorption Field Notes:**
1. There are to be 8 main zones and 6 sub zones each with a variable number of laterals.
 2. Each lateral shall be spaced a minimum of 5 ft. from each other. The manifold pipe shall face the laterals at its centerline.
 3. Lateral Length for Zones 1, 2 and 3 shall be 120 ft. long (60 ft. in both directions) from the center manifold. There shall be 16-5/32" orifice holes spaced 7.5' on center (8' on either side of the manifold). Laterals shall be laid level and follow the curvature of the existing grade contours. There shall be 38 laterals per main zone. Zones 1, 2 and 3 shall be subdivided into 6 sub zones with each having 6 or 7 laterals.
 4. Lateral Length for Zones 4 and 7 shall be 135 ft. long (60 ft. in both directions) from the center manifold. There shall be 16-5/32" orifice holes spaced 7.5' on center (8' on either side of the manifold). Laterals shall be laid level and follow the curvature of the existing grade contours. There shall be 33 laterals per main zone. Zones 4 and 7 shall be subdivided into 6 sub zones with each having 5 or 6 laterals.
 5. Lateral Length for Zone 5 shall be 114 ft. long (57 ft. in both directions) from the center manifold. There shall be 16-5/32" orifice holes spaced 7.5' on center (8' on either side of the manifold). Laterals shall be laid level and follow the curvature of the existing grade contours. There shall be 40 laterals per zone. Zone 5 shall be subdivided into 6 sub zones with each having 6 or 7 laterals.
 6. Lateral Length for Zone 6 shall be 155 ft. long (78 ft. in both directions) from the center manifold. There shall be 16-5/32" orifice holes spaced 7.5' on center (8' on either side of the manifold). Laterals shall be laid level and follow the curvature of the existing grade contours. There shall be 28 laterals per zone. Zone 6 shall be subdivided into 6 sub zones with each having 4 or 5 laterals.
 7. Lateral Length for Zone 8 shall be 120 ft. long (60 ft. in both directions) from the center manifold. There shall be 16-5/32" orifice holes spaced 7.5' on center (8' on either side of the manifold). Laterals shall be laid level and follow the curvature of the existing grade contours. There shall be 37 laterals per zone. Zone 8 shall be subdivided into 6 sub zones with each having 6 or 7 laterals.
 8. Balancing of the system will be performed by globe valves located at the entrance to each manifold. There will also be 2 globe valves located at the entrance to each lateral.

WWTF #2



- Notes:**
1. Washdown Hydrant shall provide only non-potable water. It shall be sized for 2" piping.
 2. All disturbed areas of the site not otherwise called out as aggregate pavement shall be seeded.
 3. Sand Filter Details are on Sheet C-3811. Recirculation Tank Details are on Sheet C-389. Dosing Tank Details are on Sheet C-3815. Adsorption Field Details are on Sheet C-3814.
 4. The automatic distributing valve assembly is shown on sheet C-3811. Install per manufacturer's recommendations.
 5. Pressure piping should be laid with 3' of cover. Pressure piping should allow drain back to the existing tank if the piping is shallower than 3' of cover.
 6. Provide select granular backfill for the piping under the paved roadway.

- Adsorption Field Notes:**
1. There are to be 2 zones each with 8 laterals.
 2. Each lateral shall be spaced a minimum of 5 ft. from each other.
 3. Lateral Length shall be 84 ft. long (42 ft. in both directions) from the center manifold. There shall be 12 45° office holes spaced 7" on center (6 on either side of the manifold). Laterals shall be laid level and follow the curvature of the existing grade contours.
 4. Balancing of the system will be performed by 10 each globe valves located at the entrance to each lateral. There will also be a globe valve located at the entrance to each zone to balance among zones. Each lateral and should have 3' of residual pressure.
 5. Transport Piping shall be 2", manifold Piping shall be 2", and Lateral Piping shall be 1".

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JEREMIAH W. (JAY) NIXON
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OFFICE OF ADMINISTRATIVE
DIVISION OF FACILITIES
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DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE
PARKS

SITE GRADING AND
SEWERS
NEW STATE PARK
SHANNON COUNTY,
MISSOURI

PROJECT # X1414-05
SITE # 4233
FACILITY # 50147

REVISION: 1-ADDENDUM #2
DATE: 02/02/2015
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 12/18/2014

CAD DWG FILE: _____
DRAWN BY: NDH/SIB
CHECKED BY: MRL/KSH
DESIGNED BY: MRL

SHEET TITLE:
Sanitary Treatment Facility
2 Recirculation Sand Filter
and Adsorption Field
Area 1

SHEET NUMBER:
002

STATE OF MISSOURI
JEREMIAH W. (JAY)
GOVERNOR



PROFESSIONAL



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Missouri State Certificate of

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DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE
PARKS

**SITE GRADING AND
SEWERS
NEW STATE PARK
SHANNON COUNTY
MISSOURI**

PROJECT # X1414
SITE # 4233
FACILITY # 50147

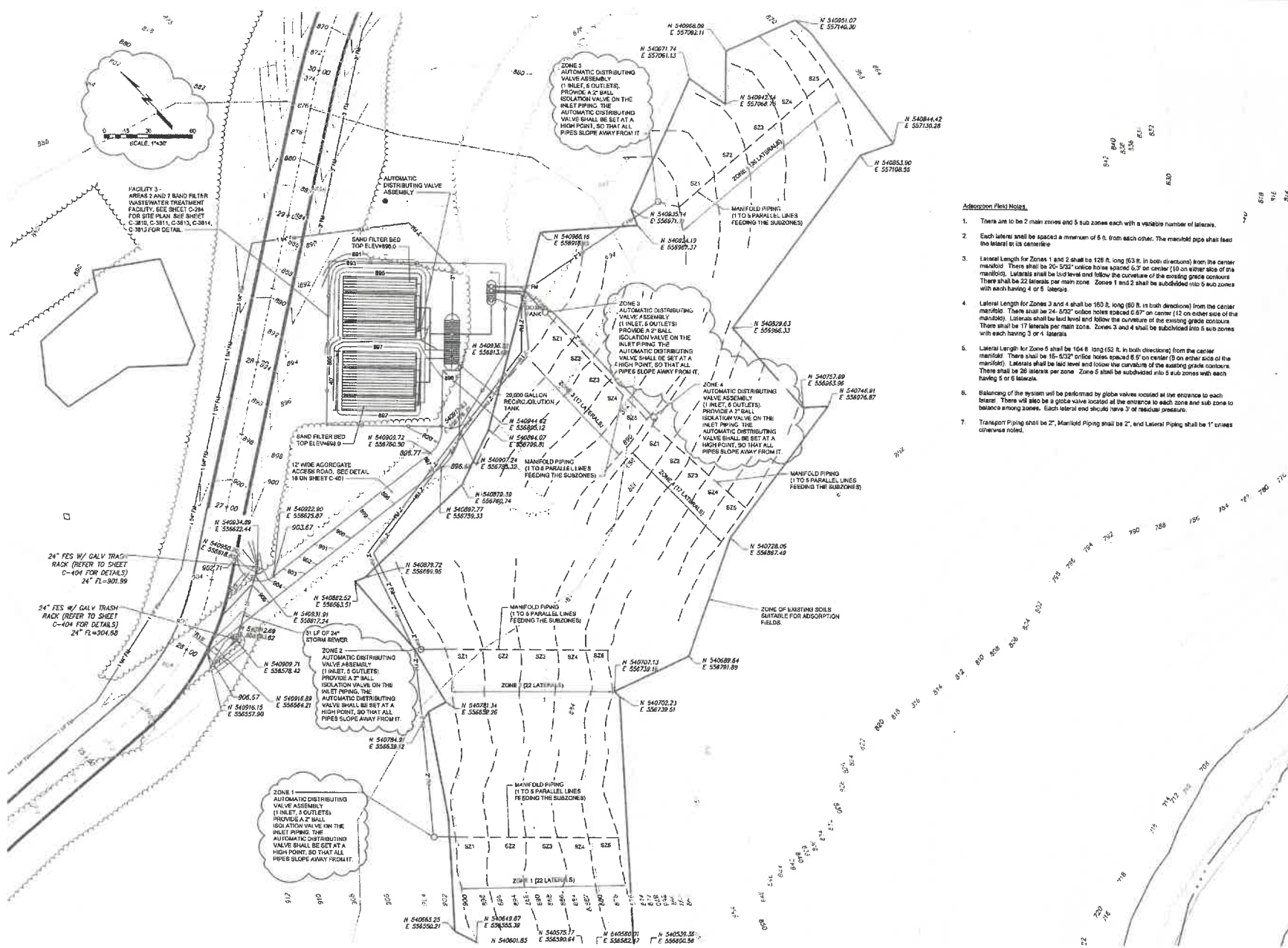
REVISION: _____
DATE: 01/02/2015
REVISION: _____
DATE: _____
REVISION: _____
DATE: _____
ISSUE DATE: 12/18/2014

CAD DWG FILE:
DRAWN BY:
CHECKED BY:
DESIGNED BY:

SHEET TITLE:
Sanitary Treatment
Adsorption Field

Area 8

SHEET NUMBER:



Splash Pad



A - ENLARGEMENT PLAN - A
1" = 10'

NOTES: 1. SEE SHEET L-1422 FOR EQUIPMENT SPECIFICATIONS.
2. SEE SHEET L-1422 FOR EQUIPMENT SPECIFICATIONS.

PLAYGROUND EQUIPMENT LEGEND

- A** LARGE MONOLITHIC CLIMBING ROCK WITH ROPE ATTACHMENTS.
DESCRIPTION: ARTIFICIAL STONE CLIMBER WITH SCAMPER FOOT AND HAND-OLD AND CABLE RING END WITH ROPE CONNECTIONS TO STONE CLIMBER B.
DIMENSIONS: 17'0" x 8'0" x 8'0"
MATERIAL: POLYESTER
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION
- B** CLIMBING ROCK WITH TREE ACCENT AND ROPE ATTACHMENTS.
DESCRIPTION: ARTIFICIAL STONE CLIMBER WITH SCAMPER FOOT AND HAND-OLD AND CABLE RING END WITH ROPE CONNECTIONS TO STONE CLIMBER A.
DIMENSIONS: 17'0" x 8'0" x 8'0"
MATERIAL: POLYESTER
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION
- C** CLIMBING ROCK WITH ROPE ATTACHMENTS.
DESCRIPTION: ARTIFICIAL STONE CLIMBER WITH SCAMPER FOOT AND HAND-OLD AND CABLE RING END WITH ROPE CONNECTIONS TO STONE CLIMBER A.
DIMENSIONS: 17'0" x 8'0" x 8'0"
MATERIAL: POLYESTER
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION

- D** LARGE MONOLITHIC CLIMBING ROCK.
DESCRIPTION: ARTIFICIAL STONE CLIMBER WITH SCAMPER FOOT AND HAND-OLD AND CABLE RING END WITH ROPE CONNECTIONS TO STONE CLIMBER A.
DIMENSIONS: 17'0" x 8'0" x 8'0"
MATERIAL: POLYESTER
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION
- E** LARGE MONOLITHIC CLIMBING ROCK.
DESCRIPTION: ARTIFICIAL STONE CLIMBER WITH SCAMPER FOOT AND HAND-OLD AND CABLE RING END WITH ROPE CONNECTIONS TO STONE CLIMBER A.
DIMENSIONS: 17'0" x 8'0" x 8'0"
MATERIAL: POLYESTER
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION
- F** SEAMLESS STEEL EMBANKMENT SLIDE.
DESCRIPTION: FLAT BOTTOM STEEL EMBANKMENT SLIDE WITH 1/2" THICK PLATE AT 1/2" RADIUS.
DIMENSIONS: 17'0" x 8'0" x 8'0"
MATERIAL: GALVALUM
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION

- G** THREE HORIZONTAL UNIFORM BARS.
DESCRIPTION: FOUR VERTICAL POSTS WITH THREE PARALLEL BARS AT DIFFERING HEIGHTS ALLOWING FOR CLIMBING AND SWINGING.
DIMENSIONS: 15'0" x 8'0" x 8'0"
MATERIAL: GALVALUM
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION
- H** TEETERING PARTNER BENCH.
DESCRIPTION: TWO 12'0" x 12'0" x 12'0" SUSPENDED FROM RUBBER-COATED CHAINS WHICH ARE CONNECTED TO A STEEL PIPE WITH AN ALUMINUM BALL ATTACHED TO EITHER END.
DIMENSIONS: 15'0" x 8'0" x 8'0"
MATERIAL: GALVALUM
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION
- I** HEAVY-DUTY TWO BEATER BENCH.
DIMENSIONS: 17'0" x 8'0" x 8'0"
MATERIAL: GALVALUM
COLOR: BLACK
AGES: 5-12
CAPACITY: 10
NOTES: PER MANUFACTURER SPECIFICATION

- NOTES:**
1. CONTRACTOR TO PROVIDE OUT SHEETS, MANUFACTURER'S INSTALLATION AND MAINTENANCE RECOMMENDATIONS FOR EACH PLAY STRUCTURE FOR REVIEW AND APPROVAL.
2. CONTRACTOR TO INSTALL PLAY STRUCTURES PER MANUFACTURER'S RECOMMENDATIONS.
3. PLAY STRUCTURES AND SURROUNDING TO BE REVIEWED AND APPROVED BY PLAY STRUCTURE REPRESENTATIVE UPON INSTALLATION.
- ROBINSO CONSTRUCTION**

AS BUILT
ROBINSO CONSTRUCTION

SCALE: 1" = 10'

STATE OF MISSOURI
JEREMIAH W. GAY (INXON)
GOVERNOR



PROFESSIONAL SEAL



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Engineers & Architects

Missouri State Council of Professional Engineers
Missouri State Council of Professional Architects

OFFICE OF ADMINISTRATIVE
DIVISION OF STATE PARKS
MANAGEMENT
DESIGN: 10/11/2018

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE
PARKS

PARK BUILDINGS, SITE
AND LANDSCAPING
NEW STATE PARK
SHANNON COUNTY,
MISSOURI

PROJECT: A-1414-07
SHEET: 421
CATCHY: 7014

REVISION: 001 013
DATE: 10/11/2018
REVISION: 001 013
DATE: 10/11/2018
REVISION: 001 013
DATE: 10/11/2018

LAND USE FILE
CHECKED BY: J. G. GAY
DESIGNED BY: J. G. GAY

SHEET: 421
Enlargement Plan
Area B

Area 4 - Day Use

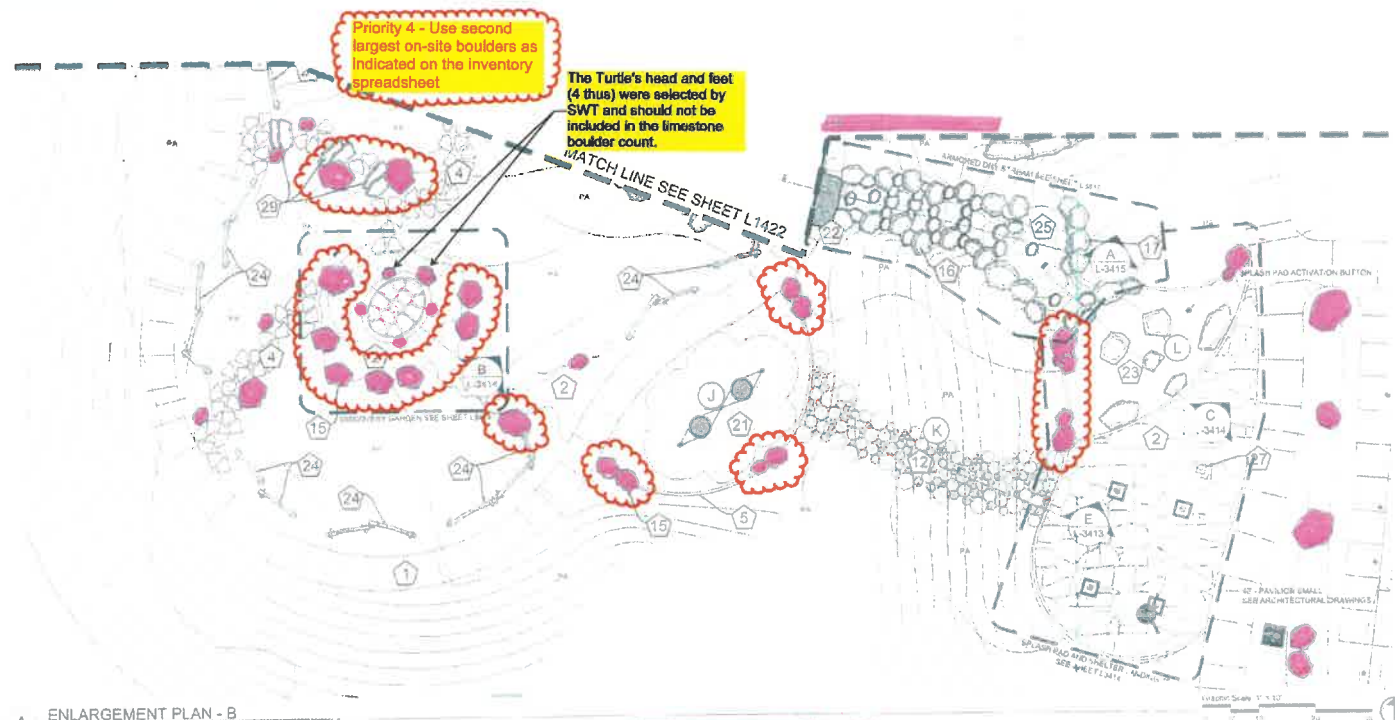
SHEET: 421

L-1421

SHEET: 421
DATE: 01/11/2018
FOR PROJECT NO. 0171254

SWT DESIGN
7722 Big Bend Blvd.
St. Louis, MO 63119
T: 314-644-5700
F: 314-644-6378

Splash Pad



A - ENLARGEMENT PLAN - B
1" = 10'

PLAYGROUND EQUIPMENT LEGEND

- (J) DOUBLE BRIDGE WITH SWING**
DESCRIPTION: SWING WITH SAFETY SEAT SUSPENDED WITH ROPES TO PIVOT BEARINGS ON ALUMINUM BALLS ON THE TOP OF TWO STEEL POSTS
DIMENSIONS: 12'5" x 7'5" x 4'5" WITH NUMBER OF POSTS: 2
SEAT: DIA. 1 1/2" GALVANIZED STEEL RING COVERED WITH SHOCK-ABSORBING MATERIAL AND WRAPPED WITH RUBBER ROPES 3/4" DIA. DAMPING MATERIAL. A TIGHT-KNOT NET MADE OF LONG-LIFE 7/8" DIA. ROPE STRANDED BRANDED WITH POLYESTER-KNOWN CONNECTORS MADE OF AISI 304
SUSPENSION ROPES: ROUND STRAND ROPES WITH STEEL CORES 7/8" DIA. WITH GALVANIZED WIRE INTERNAL STRANDS COVERED WITH NON-ABRASIVE POLYURETHANE POLYESTER-KNOWN
SWING BEARINGS: BALL BEARINGS WITH LIFETIME LUBRICATION AT TOP BOWLS
BALLS: ALUMINUM BALLS 5 1/2" DIA. ANTICORROSION TREATMENT AND COLOR FINISH (SILICATE-BASED AND EPOXY POLYURETHANE) (NON-TOXIC)
STEEL POSTS: STEEL 6" DIA. MIN. WALL THICKNESS OF 1/2" ANTICORROSION TREATMENT AND COLOR FINISH (SANDBLASTED) AND EPOXY POLYURETHANE (NON-TOXIC)
COLOR: BLACK
ASIS 54
- (K) WOODEN UNIFORM HILL STEPPERS**
DESCRIPTION: SEE MATERIAL LEGEND SHEET L-1422
DETAIL: SEE DETAIL L-1422

- (L) SPLASH PAD**
DESCRIPTION: SPLASH PAD INCLUDING EQUIPMENT TO BE LEGISLATE-BUILD PROCESS. CONTRACTOR TO FOLLOW DESIGN INTENT LAYOUT
DESCRIPTION: NATURAL LIMESTONE BOLDER FIELD PLAY AREA WITH BUTTON ACTIVATED WATER FEATURES. UPON ACTIVATION WATER FEATURES TO SPRAY WATER FROM THE TOP OF EACH STONE. PRESSURES TO FOLLOW STANDARD WATER FEATURE SAFETY STANDARDS FOR SPLASH PADS. WATER SUPPLY TO BE POTABLE WATER FROM PARK WATER SUPPLY. 1" BODY THRU PLUMBS TO TAKE WATER PRESSURE TO LEVELS NEEDED
WATER FEATURES: LIMESTONE BOLDERS TO BE SELECTED BY LANDSCAPE ARCHITECT. SEE VARIATION LARGE STONE (3-4" AVG DIA. 4-5' HEIGHT), MEDIUM STONE (5-6" AVG DIA. 4-20" HEIGHT), SMALL STONE (3-4" AVG DIA. 4-14" HEIGHT) EACH BOLDER TO HAVE PRESSURE CONTROL VALVE ALONG THE ADJUSTMENT OF THE WATER FEATURE PRESSURES WITHIN INDUSTRY STANDARD SAFE OPERATING RANGES. WATER FEATURE TO BE SUPPLIED BY POTABLE WATER SUPPLY LINE ON SITE
ACTIVATION BUTTON: PEDIESTAL MOUNTED BUTTON WITH PROGRAMMABLE AUTOMATIC SHUT OFF - PRE-PROGRAMMED TO ACTIVATE FEATURE FOR 2 MINUTES
WATER FLOW: 10 GPM
CONTRACTOR TO PROVIDE VAULT AND DRAIN VALVE TO ALLOW FOR WINTERIZATION OF WATER FEATURE SYSTEM. DRAIN LINE TO BE SANITIZED INTO DRY STREAM. VAULT TO BE LOCATED WITHIN LANDSCAPE AREA
AUTOMATIC ITEMS:
- CONTRACTOR TO SUPPLY SHOP DRAWINGS AND CUT SHEETS FOR ACTIVATION SHOP DRAWINGS AND CUT SHEETS TO BE PROVIDED INCLUDING BUT NOT LIMITED TO THE FOLLOWING ITEMS:
- VAULT
- DRAIN VALVE
- PRESSURE REGULATORS
- VALVES
- PIPING
- ACTIVATION SWITCH
- SPRAY NOZZLES
- CONTRACTOR TO COORDINATE THE LOCATION OF EQUIPMENT VAULT WITH LANDSCAPE ARCHITECT
- CONTRACTOR TO PROVIDE ALL ELECTRICAL AND POTABLE WATER CONNECTIONS TO SPLASH PAD
- CONTRACTOR IS RESPONSIBLE FOR INITIAL STARTUP
- CONTRACTOR TO PROVIDE PARK STAFF WITH ON SITE TRAINING FOR STARTUP AND SHUTDOWN PROCEDURES. TRAINING MAY OCCUR AT TIME OF INITIAL STARTUP. CONTRACTOR TO COORDINATE TIME WITH PARK STAFF
- CONTRACTOR SHALL PROVIDE OPERATIONS & MAINTENANCE MANUAL TO PARK STAFF AT TIME OF TRAINING

- NOTES:**
1. CONTRACTOR TO PROVIDE CUT SHEETS, MANUFACTURER'S INSTALLATION AND MAINTENANCE RECOMMENDATIONS FOR EACH PLAY HILL, FOR REVIEW AND APPROVAL
2. CONTRACTOR TO INSTALL PLAY STRUCTURE PER MANUFACTURER'S RECOMMENDATIONS
3. PLAY STRUCTURES AND SURFACING TO BE REVIEWED AND APPROVED BY PLAY STRUCTURE REPRESENTATIVE UPON INSTALLATION

AS BUILT
ROBINSON CONSTRUCTION

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St. Louis, MO 63119
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F: 314-644-5778

STATE OF MISSOURI
JEREMIAH W. NIXON, GOVERNOR



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ST. LOUIS, MO 63102
(314) 644-5778

Engineers: J. Farnsworth, J. Farnsworth, J. Farnsworth
Architects: J. Farnsworth, J. Farnsworth, J. Farnsworth

OFFICE OF ADMINISTRATION
DIVISION OF FACILITIES
MANAGEMENT
DESIGN AND CONSTRUCTION

DEPARTMENT OF
NATURAL RESOURCES
DIVISION OF STATE
PARKS
PARK BUILDINGS, SITE
AND LANDSCAPING
NEW STATE PARK
SHANNON COUNTY,
MISSOURI

PROJECT # A14144
SITE # 4233
FACILITY # 5004

REVISION: 001/013
DATE: 10/01/2015
BY: J. Farnsworth
CHECKED BY: J. Farnsworth
DESIGNED BY: J. Farnsworth
DATE: 01/20/17

LAD DWG FILES
DRAWN BY: J. Farnsworth
CHECKED BY: J. Farnsworth
DESIGNED BY: J. Farnsworth

SHEET TITLE
Enlargement Plan -
Area B

Area 4 - Day Use

SHEET NUMBER

L-1422

SHEET SIZE: 24
DATE: 01/20/17
1.0. PROJECT: NEW STATE PARK



NOTIFY LANDSCAPE ARCHITECT IMMEDIATELY IN EVENT OF
DISCREPANCIES, OMISSIONS, AND/OR CONFLICTS IN THE DRAWINGS OR
SPECIFICATIONS. THE CONTRACTOR IS NOT AUTHORIZED TO SCALE THE
DRAWINGS. ALL QUESTIONS IN REFERENCE TO CONTRACT DOCUMENTS
SHALL BE IMMEDIATELY DIRECTED TO THE LANDSCAPE ARCHITECT.

Wastewater Permit Evaluation

Echo Bluff State Park

Service Location	Type	# of Bedrooms	Office Users	CG Sites w/ Shower House	# of CG w/ sewer h/u	RR (# of users)	RR (# of Sinks)	RR (# of Toilets)	CG w/ Shower House	CG sites w/ Shower	CG w/ Sewer	Other Known	Estimated Design Flows gpd
WWTF 1	Recirc. sand filter											23,910	23,910
WWTF 2	Recirc. sand filter											1,500	1,500
WWTF 3	Recirc. sand filter											9,019	9,019
Splash Pad	Subsurface - BMPs											2,400	2,400
												TOTAL	36,829

WATER DATA

NOTES

No other systems on-site.

0

GPD AVG

DESIGN STANDARDS

Flow	Facility Type	Standard	Flow	Facility Type	Standard
120	Residential/bedroom	DHSS	216	Restrooms toilets/fixture	P&D
25	Office or Maintenance/user	DHSS	90	Restroom Sinks/fixture	P&D
5	Public Park - Toilets/user	DHSS	84	CG w/ Shower House/site	P&D
100	CG w/ showerhouse/site	DHSS	100	CG w/ Sewer hook up/site	DNR
120	Campground w/ sewer h/u /site	DHSS	5	Toilets only/user	DNR

- 1.) Flow volumes used which most likely represent design at the time of installation.
- 2.) Other knowns include existing design data or other supporting documentation.
- 3.) When available, water use or other data will be used as estimated design flow.

ECHO BLUFF -**WELLS 3&4****Serves:**

Day Use (2 water spigots, 2 restrooms, and splashpad),

Lodge (restaurant, 5 restrooms, 20 guest rooms, 13 cabins)

SPLASH PAD WATER USE ESTIMATES

A comparison of water use records during known splash pad operating and non-operating periods between 2018-2022

	2018	2019	2020	2021	2022
Jan.		97000	102000	147000	147000
Feb.		86000	100000	93000	85000
Mar.		135000	80000	154000	142000
Apr.		128000	37000	229000	171000
May		371000	163000	368000	245000
Jun		386000	271000	381000	445000
Jul	653000	562000	335000	430000	582000
Aug.	467000	422000	257000	404000	393000
Sept.	329000	299000	217000	329000	
Oct.	226000	169000	191000	296000	
Nov.	117000	122000	125000	139000	
Dec.	105000	99000	143000	114000	
TOTAL	1897000	2876000	2021000	3084000	2210000
GPD	5197	7879	5537	8449	6055

Yellow highlight - splash pad in service

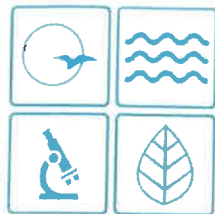
Green Highlight - splash pad not in service

Blue Highlight - splash pad not in service, COVID Visitor Impact

Orange Highlight - Average GPD includes all services locations

Difference In Water Use during Operations 2018-2022				
		Days		GPD
Sum of In Use	5154000	368		14005
Not In Use	1912000	153		12497
			TOTAL	1509
Assume 80% difference goes to Splash Pad				1207

Water Records and Projections During Periods of High Demand					
	2018	2019	2020	2021	2022
1-Jul	20000	28000	8000	15000	10000
2-Jul	20000	13000	9000	17000	11000
3-Jul	25000	18000	11000	17000	15000
4-Jul	29000	23000	10000	17000	19000
5-Jul	21000	22000	5000	15000	14000
GPD	23000	20800	8600	16200	13800
	Gallons	GPD Avg.			
In Use	57600	19200			
Not In Use	16200	16200			
Difference		3000			
Assume 80% difference goes to splash pad		2400			



MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

Michael L. Parson
Governor

Dru Buntin
Director

MEMORANDUM

DATE: December 20, 2022

TO: Coy King,
Missouri State Parks

FROM: Sherri Stoner, R.G.
Environmental Geology Section
Missouri Geological Survey

SUBJECT: Echo Bluff State Park Water Trace



12-20-2022
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In September 2022, staff from the Missouri Geological Survey, Geological Survey Program (GSP) received a request from the Division of Environmental Quality (DEQ) to conduct a dye trace study on a splash pad located within Echo Bluff State Park.

On September 19, 2022, GSP staff meet with DEQ and Missouri State Park (MSP) staff at Echo Bluff State Park for a site visit and to discuss the applicability of a dye trace to determine if a hydrologic connection exists between the splash pad and Sinking Creek. During this initial visit it was decided to move forward with the day trace, and three monitoring locations were identified. Monitoring point #1 was located in Sinking Creek approximately 75 yards downstream of the discharge for the splash pad. Monitoring point #2 was Hiney Spring, and monitoring point #3 was approximately 75 yards upstream of Hiney Spring and Sinking Creek confluence.

Monitoring for dye was conducted by the placement of charcoal collection packets that adsorb the dye if exposed. The charcoal packets were subsequently analyzed in the Missouri Geological Survey Water Tracing Laboratory for the presence of dye in accordance with GSP Water Tracing Standard Operating Procedure. Initial background packets were placed at the three monitoring locations during the September 19, 2022 site visit. Background charcoal packets were collected and replaced on September 26, October 3, October 11 and October 17, 2022 prior to injection, and subsequently analyzed. Laboratory analysis indicated that no dye was present in the background samples.

On October 17, 2022, GSP staff met with MSP staff for the purpose of injecting dye. It was determined to allow the splash pad to run for approximately 90 minutes to duplicate the highest



water usage from the pad. The splash pad was put into operation at 10:00 am and ran until 11:30 am. The water from the splash pad entered the drainage and pooled approximately 30 yards downstream of the splash pad where surface water flowage then went to the subsurface. At approximately 10:45 am, one-half pound of fluorescein dye was placed into the pooled water location in the drainage. Following the placement of dye, a visual inspection was made in the downstream drainage way. No surfacing dye was observed.

Charcoal packets were collected and replaced at the three monitoring points on a weekly cycle for four weeks until November 15, 2022. Spectrometer fluorescence analysis did not detect the presence of dye at any of the three monitoring points for the four week period following dye injection. The information collected during this groundwater trace indicates that a rapid and direct hydrologic connection between the splash pad and Sinking Creek is not present.

c: Chris Wieberg, Water Protection Program
Jessica Gillespie, Missouri State Parks