Permit No. CP0001942

STATE OF MISSOURI

DEPARTMENT OF NATURAL RESOURCES

MISSOURI CLEAN WATER COMMISSION

CONSTRUCTION PERMIT

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

Ameren Missouri-Sioux Energy Center
8501 North State Route 94
West Alton, MO 63386

for the construction of (described facilities):

See attached.

Permit Conditions:

See attached.

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

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

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

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

April 17, 2018
Effective Date

January 22, 2020
Revised Date

Edward B. Galbraith, Director, Division of Environmental Quality

January 1, 2021
Expiration Date

Chris Wieberg, Director, Water Protection Program

CONSTRUCTION PERMIT

I. CONSTRUCTION DESCRIPTION

Ameren-Sioux Energy Center is required to change their existing process wastewater handling methods with the proposed closure of the ash pond due to the federal Coal Combustion Residuals Rule, 40 CFR 257, and the revised Steam Electric Generating Effluent Limit Guidelines, 40 CFR 423. With the closure of the ash pond, Ameren is proposing the construction of three basins to handle flows from the process and stormwater flows and rerouting internal flows at Sioux. The facility will construct 3 basins, two for settling and one for polishing. The two settling basins can act in series or parallel. The basins will be constructed on the bottom ash pond, which will be closed. The basins will be designed to handle flows from the 1 in 25 year, 24 hour storm event. The settling basins are part of the low volume waste treatment system and will provide sedimentation and additional settling to the wastewater. From the settling basin, flows will go into the polishing basin and then be piped to the Sioux Intake Channel for discharge into the Mississippi River. One new discharging outfall is established, Outfall #009 with a design average flow of 8.2 MGD. One emergency spillway outfall, Outfall #010 is established and a new internal outfall, Outfall #09A is established due to the rerouting of flows with the process changes.

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

II. COST ANALYSIS FOR COMPLIANCE

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

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

III. CONSTRUCTION PERMIT CONDITIONS

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

1. This construction permit does not authorize discharge.

2. All construction shall be in accordance with the plans and specifications submitted by Golder Associates, Inc. on October 2, 2018.

3. The Department must be contacted in writing prior to making any changes to the approved plans and specifications that would directly or indirectly have an impact on the capacity, flow, system layout, or reliability of the proposed wastewater treatment facilities or any design parameter that is addressed by 10 CSR 20-8, in accordance with 10 CSR 20-8.110(8).

4. State and federal law does not permit bypassing of raw wastewater, therefore steps must be taken to ensure that raw wastewater does not discharge during construction. If a sanitary sewer overflow or bypass occurs, report the appropriate information to the Department's St. Louis Regional Office per 10 CSR 20-7.015(9)(E)2.

5. This construction permit is invalid for projects required to comply with the requirements contained in 10 CSR 20-4, "Grants and Loans"

6. Wastewater treatment facility shall not be located within one hundred feet (100'), and preferably three hundred feet (300') of any water well or water supply structure.

7. Protection of drinking water supplies shall be in accordance with 10 CSR 20-8.120(10). "There shall be no physical connections between a public or private potable water supply system and a sewer, or appurtenance thereto which would permit the passage of any wastewater or polluted water into the potable supply. No water pipe shall pass through or come in contact with any part of a sewer manhole."

8. Sewers in relation to water works structures shall meet the requirements of 10 CSR 23-3.010 with respect to minimum distances from public water supply wells or other water supply sources and structures.

    A. Sewer mains shall be laid at least 10 feet horizontally from any existing or proposed water main. The distances shall be measured edge-to-edge. In cases where it is not practical to maintain a 10 foot separation, the Department may allow a deviation on a case-by-case basis, if supported by data from the design engineer. Such a deviation may allow installation of the sewer closer to a water main, provided that the water main is in a separate trench or on an undisturbed earth shelf located on either side of the sewer and at an elevation so the bottom of the water main is at least 18 inches above the top of the sewer. If it is impossible to obtain proper horizontal and vertical separation as described above for sewers, the sewer must be constructed of slip-on or mechanical joint pipe or continuously encased and be pressure tested to 150 pounds per square inch to assure water tightness.

B. Manholes should be located at least 10 feet horizontally from any existing or proposed water main.
C. Manholes shall be located with the top access at or above grade level.
D. Sewers crossing water mains shall be laid to provide a minimum vertical distance of 18 inches between the outside of the water main and the outside of the sewer. This shall be the case where the water main is either above or below the sewer. The crossing shall be arranged so that the sewer joints will be equidistant and as far as possible from the water main joints. Where a water main crosses under a sewer, adequate structural support shall be provided for the sewer to maintain line and grade. When it is impossible to obtain proper vertical separation as stipulated above, one of the following methods must be specified:

    a. The sewer shall be designed and constructed equal to the water pipe and shall be pressure tested to assure water tightness prior to backfilling; or
    b. Either the water main or sewer line may be continuously encased or enclosed in a watertight carrier pipe which extends 10 feet on both sides of the crossing, measured perpendicular to the water main. The carrier pipe shall be of materials approved by the Department for use in water main construction.

9. In addition to the requirements for a construction permit, 10 CSR 20-6.200 requires land disturbance activities of 1 acre or more to obtain a Missouri state operating permit to discharge stormwater. The permit requires best management practices sufficient to control runoff and sedimentation to protect waters of the state. Land disturbance permits will only be obtained by means of the Department's ePermitting system available online at dnr.mo.gov/env/wpp/epermit/help.htm. See dnr.mo.gov/env/wpp/stormwater/sw-land-disturb-permits.htm for more information.

10. A United States (U.S.) Army Corps of Engineers (COE) permit (404) and a Water Quality Certification (401) issued by the Department or permit waiver may be required for the activities described in this permit. This permit is not valid until these requirements are satisfied. If construction activity will disturb any land below the ordinary high water mark of jurisdictional waters of the U.S. then a 404/401 will be required. Since the COE makes determinations on what is jurisdictional, you must contact the COE to determine permitting requirements. You may call the Department's Water Protection Program at 573-751-1300 for more information. See dnr.mo.gov/env/wpp/401/ for more information.

11. Upon completion of construction:

    A. Ameren Missouri will become the continuing authority for operation, maintenance, and modernization of these facilities;
    B. Submit the enclosed form Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit modification be issued; and
    C. Submit an electronic copy of the as builts if the project was not constructed in accordance with previously submitted plans and specifications.

IV. REVIEW SUMMARY

1. CONSTRUCTION PURPOSE

Ameren-Sioux Energy Center is required to change their existing process wastewater handling methods with the proposed closure of the ash pond due to the federal Coal Combustion Residuals Rule, 40 CFR 257, and the revised Steam Electric Generating Effluent Limit Guidelines, 40 CFR 423.The proposed construction is the construction of new wastewater treatment systems to manage stormwater and process water generated at the Ameren Missouri Sioux Energy Center.

2. FACILITY DESCRIPTION

The Ameren Missouri – Sioux Energy Center is located at 8501 North State Route 94, West Alton in St. Charles County in the confluence area of the Mississippi and Missouri Rivers. Sioux is an electrical generating establishment primarily engaged in the generation of electricity for distribution and sale which results primarily form the processing of a fossil fuel (coal). The facility commenced operations in 1968 and the two coal-fired boilers produce steam for the generation of approximately 1,000 MWe.

- **Outfall #009-New Low Volume Wastewater Treatment Basins**
  - The low volume wastewater treatment will consist of a series of basins that will provide coagulation and settling prior to discharge. During normal operation, a single basin ("primary") will receive flows from the new North Area Sump and process wastewater from the new South Area Sump with a smaller basin ("secondary") serving to treat coal pile runoff and stormwater flows from the new South Area Sump. One or both of the basins can be operated to receive and treat wastewater for subsequent discharge via the Polishing Basin. Each of the basins will contain a separate rapid mix cell with the two basins designed to promote intimate solids/polymer contact with an integrated settling zone for solids settlement. After treatment in the two larger basins, treated water will gravity flow to a final polishing basin for additional settlement prior to gravity discharge into the Sioux Intake Canal on the Mississippi River.

- **Outfall #09A- Wastewater treatment plant**
  - This was previously Outfall #02A and is the domestic wastewater treatment plant. The wastewater treatment plant has flow equalization, extended aeration activated sludge, and sludge holding tank. The internal monitoring point, Outfall #09A will discharge through Outfall #009. There was no change to the existing treatment process, just a rerouting of flows. The treatment plant is designed for 39,000 gpd. The final effluent limits are already established in the operating permit and are not being changed as part of this construction project.

- **Outfall #010-Emergency Spillway from Low Volume Basins**
  - The emergency overflow is to provide berm protection during extreme events and as such, discharges are not expected from outfall #010. Based on the maximum hydraulic flows, the maximum discharge volume would be 25.1 MGD.

3. COMPLIANCE PARAMETERS

The construction of the new basins for the low volume waste treatment system is to provide treatment basins to treat process wastewater from plant operations for ultimate discharge through Outfall #009. Outfall #009 is the low volume treatment system, and is required to meet the effluent limit guidelines established in 40 CFR 423. Outfall #010 is an emergency spillway from the proposed basins and during extreme weather events, the basins may discharge and is required to meet the effluent limits listed below. The compliance limits listed below are related to the federal requirements in 40 CFR 423, which are part of the reason of construction. The other effluent limits are established in the operating permit.

Parameter	Units	Maximum Daily Limit	Average Monthly Limit
Total Suspended Solids	Mg/L	100	30
Oil & Grease	Mg/L	20	15
pH	SU	6.0	9.0

4. REVIEW of MAJOR TREATMENT DESIGN CRITERIA

- The Sioux Energy Center is located within the 100 year flood elevation according to FEMA for the Mississippi River (Zone AE); however the Sioux Energy Center is in an area of minimal flood hazard due to the levee system (Zone X). The settling basin will be protected from the 100 year flood elevation per 10 CSR 20-8.140(3)(A).
- The ordinary high water mark in the intake channel for Outfall #009 is at an elevation of 422.3 ft. The effluent pipe is expected to discharge on to riprap at an elevation of 432.9 ft.
- The settling basins will be constructed over part of the closed bottom ash pond. Between the ash pond and the settling basin, there will be 2 ft of earthen material cap, 1.5 ft liner head reduction system, 1.5 ft sand protective cover in settling basin 1 and the polishing basin (2ft of sand in settling basin 2), 2 layers of 60 mil HDPE geomembrane and 6 inch geoweb with concrete infill protective cover.
- Settling Basin 1
    - The settling basin is designed for an average flow of 1,947 gpm process flows and 4,151 gpm is the design flow including process and stormwater flows. The hydraulic maximum flow in settling basin 1 is 9,637 gpm.
    - The basin is approximately 50.1 ft wide at the beginning and then widens to 77 ft wide with a length of 162 feet.
    - The settling basin is not rectangular which is an approved deviation from 10 CSR 20-8.200(5)(F) as the shape is adjusted to fit the existing site constraints.
    - The interior and exterior slopes of the berms will be constructed with a 3:1 (H:V) slope, which meets the requirements of 10 CSR 20-.8.200(6)(A)3.
    - The slopes and the bottom of the settling basin will be covered by a 60 mil HDPE geomembrane liner system and a geosystemic clay liner.
    - The settling basin's liner is a 60-mil HDPE geomembrane, with an equivalent hydraulic conductivity of the liner lower than the requirements in 10 CSR 20-8.200(6)(C)1.
    - The pipe to the polishing basin is at elevation 452, making the depth of the basin to the pipe 7 feet (liner system is at elevation 445). From the pipe to the spillway to settling basin 2 is 4 ft., which provides 4 feet of freeboard for wave action per 10 CSR 20-8.200(6)(A)5.

- There is a spillway between settling basin 1 and settling basin 2 to facilitate flows to the other basin if flows are high or if necessary to take a basin offline for cleaning.

- Settling Basin 2
  - The majority of the stormwater will be managed through settling basin 2 during normal operations; however the settling basin can receive process flows when settling basin 1 is offline for cleaning or if flows are high through a spillway.
  - The settling basin is designed for an average flow of 40.4 gpm process flows and 1,526 gpm is the design flow including process and stormwater flows. The hydraulic maximum flow in settling basin 2 is 7,827 gpm.
  - The basin is approximately 31.6 ft wide at the beginning and then widens to 59 ft wide with a length of 139 feet.
  - The settling basin is not rectangular which is an approved deviation from 10 CSR 20-8.200(5)(F) as the shape is adjusted to fit the existing site constraints.
  - The interior and exterior slopes of the berms will be constructed with a 3:1 (H:V) slope, which meets the requirements of 10 CSR 20-.8.200(6)(A)3.
  - The slopes and the bottom of the settling basin will be covered by a 60 mil HDPE geomembrane liner system and a geosystemic clay liner.
  - The settling basin's liner is a 60-mil HDPE geomembrane, with an equivalent hydraulic conductivity of the liner lower than the requirements in 10 CSR 20-8.200(6)(C)1.
  - The pipe to the polishing basin is at elevation 452, making the depth of the basin to the pipe 7 feet (liner system is at elevation 445). From the pipe to the emergency spillway (Outfall #010) is 3 ft., which provides 3feet of freeboard for wave action per 10 CSR 20-8.200(6)(A)5.
- Polishing Basin
  - The pipes from the settling basins enter the polishing basin at 451.5 ft. The bottom of the polishing basin is at 445 ft.
  - The 36 inch effluent pipe will leave the polishing basin and be piped approximately 900 ft to the Sioux Intake Channel on the Mississippi River.
  - The polishing basin is rectangular, 10 CSR 20-8.200(5)(F).
  - The interior and exterior slopes of the berms will be constructed with a 3:1 (H:V) slope, which meets the requirements of 10 CSR 20-.8.200(6)(A)3.
  - The slopes and the bottom of the settling basin will be covered by a 60 mil HDPE geomembrane liner system and a geosystemic clay liner.
  - The polishing basin's liner is a 60-mil HDPE geomembrane, with an equivalent hydraulic conductivity of the liner lower than the requirements in 10 CSR 20-8.200(6)(C)1.
  - The polishing basin provides a location for treated water to be extracted for monitoring or use in the plant, such as for service water.

5. OPERATING PERMIT MODIFICATION

Upon construction completion, submit the Statement of Work Completed to the Department in accordance with 10 CSR 20-6.010(5)(D) and request the operating permit modification be issued. The modified Ameren Missouri-Sioux Energy Center, MO-0000353 was successfully public noticed from February 16, 2018 to March 19, 2018 with one comment letter from Ameren received correcting locational information on the outfalls. The locational information (UTM coordinates) has been updated on the draft modification. Comment responses will also be included in the modification when it is issued following construction.

6. CONSTRUCTION PERMIT MODIFICATION

This construction permit is being modified upon the request of the facility owner to extend the construction permit schedule. The construction permit will now expire on January 1, 2021.

Lease Meyers, EI
Engineering Section
lease.meyers@dnr.mo.gov

Cindy LePage, P.E.
Engineering Section
cindy.lepage@dnr.mo.gov

28234

RECEIVED
OCT 02 2017
Water Protection Program

MISSOURI DEPARTMENT OF NATURAL RESOURCES
WATER PROTECTION PROGRAM
FORM A – APPLICATION FOR NONDOMESTIC PERMIT UNDER MISSOURI CLEAN WATER LAW

FOR AGENCY USE ONLY	
CHECK NUMBER	1440781
DATE RECEIVED 10-2-17	FEE SUBMITTED #1250.00 JS.

Note ► PLEASE READ THE ACCOMPANYING INSTRUCTIONS BEFORE COMPLETING THIS FORM.

1. This application is for:

☐ An operating permit for a new or unpermitted facility:
Please indicate the original Construction Permit # _____

☐ An operating permit renewal:
Please indicate the permit # MO-_____ Expiration Date _____

☑ An operating permit modification:
Please indicate the permit # MO- 0000353 Modification Reason: new/modified outfalls & treatment

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

2. FACILITY

NAME		TELEPHONE NUMBER WITH AREA CODE / FAX	
Ameren Missouri Sioux Energy Center		(314) 554-4581 /	
ADDRESS (PHYSICAL)	CITY	STATE	ZIP CODE
8501 North State Route 94	West Alton	MO	63386

3. OWNER

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE / FAX	
Union Electric Company d/b/a Ameren Missouri	msmallwood@ameren.com	(314) 554-4581 /	
ADDRESS (MAILING)	CITY	STATE	ZIP CODE
PO Box 66149, MC602	St. Louis	MO	63166-6149

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

4. CONTINUING AUTHORITY

NAME	EMAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE / FAX	
Same as Owner		/	
ADDRESS (MAILING)	CITY	STATE	ZIP CODE

5. OPERATOR

NAME	CERTIFICATE NUMBER	TELEPHONE NUMBER WITH AREA CODE / FAX	
Same as Owner		/	
ADDRESS (MAILING)	CITY	STATE	ZIP CODE

6. FACILITY CONTACT

NAME	TITLE / E-MAIL ADDRESS	TELEPHONE NUMBER WITH AREA CODE / FAX
Matthew T. Wallace	Director, Sioux Energy Center /	(314) 992-6201 /

7. ADDITIONAL FACILITY INFORMATION

7.1 Legal Description of Outfalls. (Attach additional sheets if necessary.) see attached sheet

001 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _____ Northing (Y): _____
For Universal Transverse Mercator (UTM), Zone 15 North referenced to North American Datum 1983 (NAD83)

002 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _____ Northing (Y): _____

003 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _____ Northing (Y): _____

004 ____¼ ____¼ Sec ____ T ____ R ____ ____ County
UTM Coordinates Easting (X): _____ Northing (Y): _____

7.2 Primary Standard Industrial Classification (SIC) and Facility North American Industrial Classification System (NAICS) Codes.

001 – SIC 4911 and NAICS 221112 002 – SIC _____ and NAICS _____
003 – SIC _____ and NAICS _____ 004 – SIC _____ and NAICS _____

8. ADDITIONAL FORMS AND MAPS NECESSARY TO COMPLETE THIS APPLICATION
(Complete all forms that are applicable.)

A.	Is your facility a manufacturing, commercial, mining or silviculture waste treatment facility? If yes, complete Form C or 2F. (2F is the U.S. EPA's Application for Storm Water Discharges Associate with Industrial Activity.)	YES ☑	NO ☐
B.	Is application for storm water discharges only? If yes, complete Form C or 2F.	YES ☐	NO ☑
C.	Is your facility considered a "Primary Industry" under EPA guidelines: If yes, complete Forms C or 2F and D.	YES ☑	NO ☐
D.	Is wastewater land applied? If yes, complete Form I.	YES ☐	NO ☑
E.	Is sludge, biosolids, ash or residuals generated, treated, stored or land applied? If yes, complete Form R.	YES ☐	NO ☑
F.	If you are a Class IA CAFO, please disregard part D and E of this section. However, please attach any revision to your Nutrient Management Plan.		
F.	Attach a map showing all outfalls and the receiving stream at 1" = 2,000' scale.		

9. 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 timely, complete, accurate, and nationally consistent set of data. **One of the following must be checked in order for this application to be considered complete.** Please visit http://dnr.mo.gov/env/wpp/edmr.htm to access the Facility Participation Package.

☐ - You have completed and submitted with this permit application the required documentation to participate in the eDMR system.

☑ - You have previously submitted the required documentation to participate in the eDMR system and/or you are currently using the eDMR system.

☐ - You have submitted a written request for a waiver from electronic reporting. See instructions for further information regarding waivers.

10. DOWNSTREAM LANDOWNER(S) Attach additional sheets as necessary. See Instructions.
(PLEASE SHOW LOCATION ON MAP. SEE 8.D ABOVE).

NAME			
United States of America			
ADDRESS	**CITY**	**STATE**	**ZIP CODE**
1222 Spruce Street	St. Louis	MO	63103-2818

11. I certify that I am familiar with the information contained in the application, that to the best of my knowledge and belief such information is true, complete and accurate, and if granted this permit, I agree to abide by the Missouri Clean Water Law and all rules, regulations, orders and decisions, subject to any legitimate appeal available to applicant under the Missouri Clean Water Law to the Missouri Clean Water Commission.

NAME AND OFFICIAL TITLE (TYPE OR PRINT)	TELEPHONE NUMBER WITH AREA CODE
Matthew T. Wallace - Director, Sioux Energy Center	(314) 992-2601
SIGNATURE	**DATE SIGNED**
Matthew T. Wallace	09/28/2017

MO 780-1479 (09-16)

BEFORE MAILING, PLEASE ENSURE ALL SECTIONS ARE COMPLETED AND ADDITIONAL FORMS, IF APPLICABLE, ARE INCLUDED.

Submittal of an incomplete application may result in the application being returned.

HAVE YOU INCLUDED:

- ☑ Appropriate Fees?
- ☑ Map at 1" = 2000' scale?
- ☑ Signature?
- ☑ Form C or 2F, if applicable?
- ☑ Form D, if applicable?
- ☐ Form I (Irrigation), if applicable?
- ☐ Form R (Sludge), if applicable?
- ☐ Revised Nutrient Management Plan, if applicable?