



**Sioux Energy Center
Initial Closure Plan for
CCR Surface Impoundment
SCL4A**

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1.0 INTRODUCTION

SCL4A (Cell 4A) at the Sioux Energy Center is a 14.5 acre landfill cell used for managing CCR. SCL4A is one cell in the planned Sioux Energy Center utility waste landfill (UWL) which is permitted by the Missouri Solid Waste Disposal Area Construction Permit No. 0918301 (“MDNR Construction Permit”) issued by the Missouri Department of Natural Resources (MDNR) Solid Waste Management Program (SWMP). The UWL will be constructed in 3 phases, and Phase II includes 4 dry disposal areas denoted as Cell 4 (SCL4A is the first half of this cell), Cell 5, Cell 6, Cell 7, and Cell 8. To date, only SCL4A has been constructed.

2.0 CLOSURE PLAN

Pursuant to 40 CFR 257.102, a CCR landfill can be closed by either leaving the CCR material in place and installing a final cover system, or through removal of the CCR (i.e. “closure by removal”). SCL4A at the Sioux Energy Center will be closed by capping and leaving the CCR materials in place as contemplated and authorized by the regulations. Set forth herein is the process by which Ameren Missouri will close SCL4A at Sioux at the end of its useful life. In accordance with 257.102(b)(3), this initial written closure plan will be amended as required to meet the CCR Rules in effect at the time of closure.

SCL4A was constructed with a composite bottom liner system and leachate collection system in accordance with the MDNR Construction Permit, which complies with the liner design criteria in the CCR Rule. Closure of SCL4A will be accomplished by leaving CCR in place and constructing a final cover system in accordance with §257.102(d), *Closure performance standard when leaving CCR in place*. CCR material will be graded to create acceptable slope stability and positive drainage in accordance with the MDNR Construction Permit. The final cover system will then be installed in direct contact with the CCR. Stormwater drains, side slope benches and let downs will be graded and constructed in accordance with the MDNR Construction Permit. The surface of the final cover system will be stabilized to control erosion of the final cover system and the leachate collection system will be operated and maintained throughout the post-closure period.

3.0 PROPOSED FINAL COVER SYSTEM

The final design of the final cover system will comply with the MDNR Construction Permit, and with 10 CSR 80-11.010(14) and 40 CFR 257.102(d)(3). The final cover system will have a permeability less than or equal to the permeability of the bottom liner system, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less. Disruption of the final cover system will be minimized through a design that accommodates settling and subsidence.

The existing Sioux UWL closure approved in the MDNR Construction Permit includes an alternative final cover as defined by 257.102(d)(3). The current final cover system includes composite sections consisting of earthen fill and geomembrane liner on top, and other sections consisting of earthen fill only on the side slopes. The final cover will have a minimum 18-inch thick infiltration layer made of earthen fill, which will underlie a 6-inch thick layer of earthen material capable of sustaining plant growth or an alternative cover system. Ameren Missouri owns the property that contains the required quantity of soil suitable for construction of the final cover system. The final cover will be sloped a minimum of 1% to 2% on the uppermost “flat” area of the completed UWL, and between 25% and 33% on the exterior side slopes in accordance with the MDNR Construction Permit. A plan showing the final grading at closure of SCL4A is attached.

The CCR Rule authorizes the use of an alternative final cover system for closure, provided such system meets equivalent performance requirements. If an alternative final cover system is implemented, the final engineering design will include a demonstration of the equivalency of the proposed final cover system.

3.1 Stormwater and Erosion Controls

Stormwater that falls on SCL4A after closure will be controlled by a system of perimeter berms, letdown channels, side slope bench drainage ways and a perimeter ditch, all ultimately directing stormwater runoff to the Recycle Pond in accordance with the MDNR Construction Permit. Side slope benches and letdown structures will carry stormwater from the upper portion of the slopes of the CCR unit to the perimeter ditch and Recycle Pond.

To manage erosion of the final cover, the side slope benches, stormwater letdown structures, and perimeter ditches will be stabilized with vegetation, erosion control mats, limestone riprap, and/or an articulated concrete blanket in accordance with the MDNR Construction Permit.

3.2 Stability and Settlement

The CCR contained in SCL4A will be placed dry with no free liquids. The final grades and stability of SCL4A after closure, including both the CCR fill and final cover system, were designed to accommodate potential settlement, and were evaluated as a condition of the MDNR Construction Permit approval and have acceptable factors of safety for stability.

4.0 CCR UNIT INVENTORY AND AREA ESTIMATE

Set forth in Table 1 is Ameren Missouri's estimate of CCR material that will be deposited in SCL4A at the time of closure.

Table 1 - Estimated maximum CCR inventory and largest areas area of SCL4A.

CCR Unit	Maximum Estimated CCR Inventory (CY)	Estimated Final Cover Area (acres)
SCL4A	990,000	14.5 acres

5.0 CLOSURE SCHEDULE

SCL4A is an active unit that will continue to receive CCR until closure. Closure activities will not begin until the CCR in SCL4A has reached the grades approved by the MDNR Construction Permit. Ameren has developed preliminary work schedules based on project milestones and estimated completion dates that are reflected in Table 2.

Table 2 - Preliminary work schedules based on project milestones and estimated completion dates.

Closure Activity	Estimated Timeframe
Initial Written Closure Plan	October 17, 2016
Closure Activities Commence	2058
Agency Coordination and Permit Acquisition	
• Coordinate with state agencies for compliance	2058
• Acquiring state permits	2058
• Demonstration of alternative final cover	2058
Installation of Final Cover System	
• Grading final cover subgrade	2058
• Installation of final cover	2058
Closure Activities Complete	2058

6.0 POST-CLOSURE PLAN

For CCR units closed by capping the CCR material in place, post-closure care is required for a minimum of thirty years. The final cover systems will serve to minimize infiltration of rainfall into the landfill during the post-closure period and provide aesthetic value. Post-closure care will include performance of the following activities and those activities required by the MDNR Construction Permit:

- Maintenance of cover integrity, vegetative growth to protect the cover material, and the surface water control system
- Maintenance, sampling, testing and statistical analysis of the groundwater monitoring wells
- Operation and maintenance of the integrity and effectiveness of the leachate collection and removal system

6.1 Post-Closure Contact Information

Contact Name: Ameren Missouri
Contact Address: 1901 Chouteau Avenue
 St. Louis, MO 63103
Contact Phone Number: (800) 552-7583
Contact Email Address: CCR@ameren.com

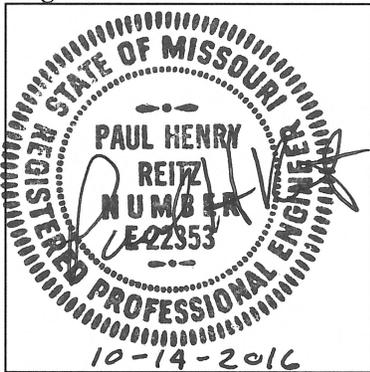
6.2 Post-Closure Land Use

The closure of SCL4A will include turf or native grasses, or an alternative erosion layer. Ameren Missouri's current intent is to maintain the closed the SCL4A as a passive, open space.

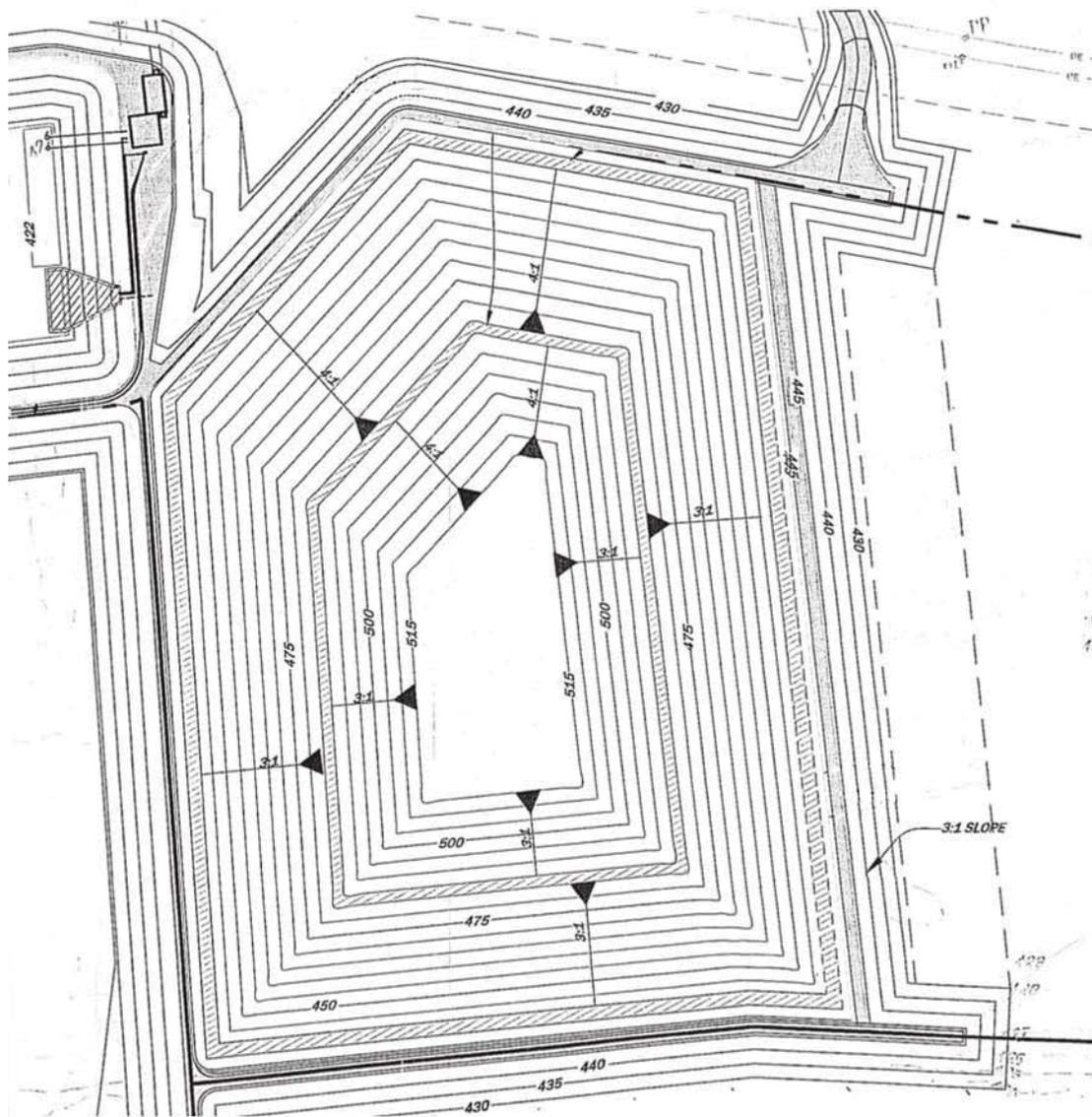
Engineering Certification – Closure and Post-Closure Plan

The Closure and Post-Closure Plans for active CCR landfill SCL4A at the Sioux Energy Center were prepared for MDNR SWMP Construction Permit No. 0918301, and will be amended to meet the requirements of 40 CFR 257.102(b) and 40 CFR 257.104(d) in effect at the time of closure. Engineering justification for this certification has been placed in the operating record.

Engineer's Seal



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Ameren Missouri
 Sioux Energy Center
 SCL4A Closure Schematic