SUMMARY OF CORRECTIVE MEASURES

Ameren Missouri Sioux Energy Center SCPA

Alternative	Remedial Alternative Description	THRESHOLD CRITERIA					BALANCING CRITERIA		
		Be Protective of Human Health and the Environment	Attain the Groundwater Protective Standard	Control the Source of Releases	Remove as much material from the environment released from the CCR unit as is feasible	Management of waste all applicable RCRA requirements	CATEGORY 1 Long- and Short Term Effectiveness, Protectiveness and Certainty of Success	CATEGORY 2 Effectiveness in Controlling the Source to Reduce Further Releases	CATEGORY 3 The Ease or Difficulty of Implementation
1	Closure In Place (CIP) with Capping and Monitored Natural Attenuation (MNA)	✓	✓	✓	✓	✓	• No current risk • Low permeability cap isolates CCR and reduces infiltration • Long-term GW monitoring and cap maintenance • No external community impacts; traffic safety concerns • Minimal barriers to implementation • Long-term reliability	• Low permeability cap decreases infiltration • No active groundwater treatment required	• Minimal barriers to implementation • Proven approach • Straightforward permitting/regulatory approvals • No specialty equipment • No removal and off-site disposal
2	CIP with In-Situ Stabilization (ISS), Capping and MNA	✓	✓	✓	✓	✓	• No current risk • ISS isolates CCR • Low permeability cap reduces infiltration • Long-term cap maintenance • Lengthy design phase, testing, permitting, and construction • Medium potential external community impacts; traffic safety concerns • High long-term reliability (CCR isolated)	• Minimizes GW impact following completion • Long time to implement (cap installation deferred-remains open to environment) • Solidification and capping will reduce COCs in groundwater • MNA will address the existing dissolved phase plume	• Significant barriers to implementation • ISS may not reach maximum depth • Bench scale and pilot testing required • Specialty contractors and equipment • Extensive permitting and approvals • Potential for changes in aquifer geochemistry • Some off-site disposal of CCR required
3	CIP with Capping and In-Situ Groundwater Treatment	✓	✓	✓	✓	✓	• No current risk • Low permeability cap isolates CCR and reduces infiltration. • Long-term GW monitoring and cap maintenance • No external community impacts; traffic safety concerns • Long-term reliability	• Low permeability cap decreases infiltration • Groundwater treatment completed in-situ • No secondary waste stream	• Minimal barriers to implementation • Bench scale testing to demonstrate reliability • Permitting likely needed for in-situ amendments • No specialty equipment • No removal and off-site disposal
4	CIP with Capping and Hydraulic Containment through Groundwater Pumping and Ex-Situ Treatment	✓	✓	✓	✓	✓	• No current risk • Low permeability cap isolates CCR and reduces infiltration • Long-term O&M • No external community impacts; traffic safety concerns • Generates secondary waste stream • Lengthy design phase, testing, permitting • Long-term reliability	• Low permeability cap decreases infiltration • Groundwater treatment completed ex-situ • Secondary waste stream requires disposal	• Minimal barriers to implementation • Proven technology but not commonly used for large-scale CCR unit closure • Permitting needed to discharge treated groundwater • Some specialty equipment • Pilot testing likely • Management/treatment of effluent created
5	Closure by Removal (CBR) with MNA	✓	✓	✓	✓	✓	• Highest risk to human health and environment • Low long-term residual risk • Logistically complex • Highest short-term impacts (noise, emissions & fugitive dust) • Long removal duration (time exceeds CCR Rule) • High potential for external community impacts; traffic safety concerns	• No active groundwater treatment • Source removed • Removal will take 15 to 20 years; CCR unit remains open and exposed during excavation timeframe	• Significant barriers to implementation • Technical and logistical challenges • Long project duration and uncertain haul productivity rates • Transportation of 6.1 MM CY over local roadways • Disposal capacity potential concern given concurrent CCR unit closures • Difficult regulatory process to permit and construct new on-site landfill

Favorable when compared to other alternatives

Slightly unfavorable when compared to other alternatives

Unfavorable when compared to other alternatives