

Appendix A - Applicant Committed Environmental Protection Measures

Environmental Parameter	Potential Gross Impacts	Mitigation Measures	Potential Net Impacts
Air Quality	<p>Localized degradation of air quality from fugitive dust due to construction activities (new well sites, roads, workovers, compressor stations, LACT modifications, new production and injector flow lines) vehicle travel on dirt roads.</p> <p>A localized increase in gaseous emissions from mobile sources of SO<sub>x</sub>, NO<sub>x</sub>, CO, soot, hydrocarbons from drilling rigs, vehicles, dozers, excavators, ozone from electric motors, etc.</p> <p>Small amounts of CO<sub>2</sub> may migrate to surface in limited areas</p>	<p>Implement fugitive dust control (water spraying) as needed.</p> <p>Reclaim disturbed areas as soon as possible.</p> <p>Perform routine maintenance of equipment.</p> <p>Encourage carpooling to and from work sites.</p> <p>Ensure integrity of all well bores in project area.</p> <p>Install other devices e.g. horizontal bores, vertical shallow wells, or drains if needed</p>	<p>Short-term: minor increases in localized dust, gaseous emissions.</p> <p>Long-term: no major impacts.</p> <p>Potentially over 400 BCF (nearly 25 million tons) of CO<sub>2</sub> geosequestration over the life of the project is a beneficial impact.</p> <p>Impacts range from none in populated areas to negligible to minimal in remote areas.</p>

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Surface Water	<p>Increased sedimentation of Salt Creek and drainages from runoff of disturbed sites during construction activities.</p> <p>Potential contamination with polluted (diesel fuel, oil) surface runoff.</p> <p>Potential changes in produced water quality or quantity that is discharged into Salt Creek.</p>	<p>Control surface disturbances within 500 feet of perennial streams.</p> <p>Protect riparian zones.</p> <p>Implement erosion and sediment controls (sediment ponds, silt fencing, geotextiles, etc.).</p> <p>Follow reclamation plan to ensure proper drainage.</p> <p>Provide secondary containment of all fuel storage facilities and SPCC program.</p> <p>Monitor water quality and flow of produced water discharged into Salt Creek and affected tributaries.</p> <p>Meet WYPDES limitations on discharges.</p>	<p>Slight, localized and temporary increases in sedimentation possible, but not major; No major hydrocarbon contamination anticipated.</p> <p>Produced water quality discharged to Salt Creek from Proposed Action expected to be of similar quality that is discharged to Salt Creek from current waterflooding operations.</p> <p>Long-term slight decrease in produced water discharged to Salt Creek not considered major.</p> <p>Long-term: no major impact.</p>

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Groundwater	<p>Potential contamination of non-potable aquifers with produced water, hydrocarbon mixtures, or other hazardous chemicals.</p> <p>Contamination from fuel / lubricant spills.</p> <p>Contamination of shallow non-potable aquifers from Midwest sewage lagoon.</p>	<p>Design wells to within current industry standards; demonstrate mechanical integrity of wells.</p> <p>Set adequate surface casing and plug wells with cement at various depths.</p> <p>Use standard blow-out prevention equipment.</p> <p>Provide secondary containment of fuel storage areas and line bottom to protect groundwater.</p> <p>Implement SPCC program</p> <p>Monitor groundwater at wells near sewage lagoon.</p>	No major impacts in the short-term or long-term.
Human Health and Safety	Very low probability of CO <sub>2</sub> seep in occupied areas	<p>Ensure integrity of all well bores in project area.</p> <p>Install other devices e.g. horizontal bores, vertical shallow wells, or drains if needed</p>	None anticipated
Topography and Landscape	Modifications to surface topography from excavation, cut and fill operations, and recontouring of sites from construction of new well pads, flowlines, and short access roads, and new CO <sub>2</sub> facilities.	<p>Reclaim and revegetate disturbed areas as soon as possible.</p> <p>Use geotextiles when grade &gt;20%.</p>	<p>Long-term small scale changes in topography and landforms.</p> <p>No major impacts to topography and landscape.</p>

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Soils	<p>Soil compaction, loss of fertility and erosion from construction activities (new well sites, roads, workovers, compressor stations, LACT modifications, new production and injector flow lines).</p> <p>Contamination from fuel / lubricant spills.</p>	<p>Implement erosion and sediment control plan and top soil stockpiling.</p> <p>Reclaim soils while phases / activities progress.</p> <p>Prevent or minimize surface contamination via secondary containment mitigation.</p> <p>Monitor until reclamation is successful</p>	<p>Short-term: some soil loss at construction sites and temporary disturbance of 673 acres. Mitigation and restoration of all soils except for 177 acres which is considered minor.</p> <p>Duplicate and unnecessary existing roads will be closed and reclaimed throughout the project.</p>
Wetlands	<p>No gross impacts are predicted as wetlands are limited in the project area.</p>	<p>Avoid wetlands whenever possible</p> <p>Cross wetlands perpendicular to flow during dry conditions</p> <p>Restore wetlands and wetland soils to pre-project conditions</p> <p>Handle wetland soils selectively</p>	<p>No major impacts in the short-term or long-term.</p>
Vegetation and Weeds	<p>Direct vegetation removal and retardation of growth and development.</p>	<p>Minimize vegetation disturbance and removal.</p> <p>Avoid disturbance to riparian areas.</p> <p>Reclaim and revegetate disturbed areas.</p> <p>Provide secondary containment.</p> <p>Implement NWMP</p>	<p>Short-term: 673 acres of vegetation removed over a 10-15 year period Long-term: 177 acres of vegetation removed; impact is minor.</p> <p>Duplicate and unnecessary existing roads will be closed and revegetated, a positive impact.</p> <p>Some temporary increase in weed population, no residual impact.</p>

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Terrestrial Wildlife	Removal of some grassland and shrubland habitat in the short-term; Displacement and destruction of some terrestrial wildlife within the immediate area of project activity.	<p>Minimize project footprint of disturbance.</p> <p>Avoid disturbance to the Salt Creek riparian corridor as it is the most valuable wildlife habitat.</p> <p>Reclaim and revegetate disturbed areas as soon as possible.</p> <p>Construct powerlines in accordance with APLIC standards</p> <p>Retrofit power lines to APLIC standards when re-energizing lines or following incidents of bird mortality.</p>	<p>Removal of an average of 56 - 85 acres per year of some grassland and shrubland habitat in the short-term that will be reclaimed.</p> <p>Short-term: possible reduction in some terrestrial wildlife activity in immediate areas of disturbance; not a major impact.</p> <p>Long-term: no major impacts as a result of 177 acres of grassland and shrubland habitat lost.</p> <p>Powerlines represent a low incremental impact to raptors, moderate risk to individual birds, long-term benefit of retrofitted structures.</p>
Aquatic Biology	<p>Localized, temporary increase in sedimentation from runoff of construction areas, new roads and well pads may negatively impact aquatic life in Salt Creek.</p> <p>Hydrocarbon / hazardous material spills into drainages / Salt Creek.</p> <p>Slight reduction in produced water discharged to Salt Creek in the long-term may reduce amount of water available in the creek.</p>	<p>Implement erosion and sediment control program to minimize sediment inputs to Salt Creek.</p> <p>Provide secondary spill containment, SPCC.</p> <p>Protect riparian area as buffer zone.</p> <p>Monitor of grazing impacts.</p>	<p>Existing aquatic life adapted to wide fluctuations in flow, temperature, and TSS in Salt Creek.</p> <p>Produced water discharge reduction not major impact on amount of water in Salt Creek.</p> <p>No major short-term or long-term impact.</p>
Threatened or Endangered Species	Disturbance to T&E species or habitats.	None necessary.	No major impact as there are no known occurrences of plant or animal T&E species within the project boundary.
Cultural Resources	Disturbance of archaeological resources and artifacts from construction activities	Implement cultural resources mitigation program if artifacts are uncovered during construction operations and notify BLM authorities.	No major impacts

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Range Management	<p>Temporary loss of AUMs.</p> <p>Slight possibility of injury to individual livestock</p>	<p>Reclaim disturbed sites as soon as possible.</p> <p>Fence sites as needed to prevent livestock access.</p> <p>Coordinate with grazing leaseholder to mitigate any damages</p>	<p>Short-term reduction in AUMs</p> <p>No major impact.</p>
Socioeconomic Conditions	<p>Increased employment opportunities; increased tax and/or royalty revenues for county, state and federal government.</p> <p>Slight reduction in grazing land available for ranchers within the concession.</p> <p>Increase in traffic.</p>	<p>Provide employee training programs.</p> <p>Reclamation/revegetation of disturbed habitats while phases progress.</p> <p>Promote driving safety, training, car pooling</p>	<p>Positive impact</p> <p>Short-term: increased job availability; long-term: increased job availability and extended employment; positive tax revenues.</p> <p>No major impact.</p>
Visual Resources	<p>Improved visual quality as a result of removal of existing unused equipment, power lines, and roads.</p>	<p>Bury flowlines and reclaim corridors</p> <p>Reclaim temporary work areas as soon as practical.</p> <p>Paint buildings an approved BLM-specified color.</p>	<p>Long-term benefit as pumping units and unused equipment will be removed.</p>
Noise	<p>Localized increase in noise from construction &amp; drilling activities, compressor stations; increased vehicle travel.</p>	<p>Provide personal protective equipment and localized noise controls.</p> <p>Site equipment away from sensors</p> <p>Employ natural screens</p> <p>Avoid running equipment during school hours if within close proximity to schools.</p> <p>Log and investigate complaints of noise.</p>	<p>Short-term: minor increases in localized noise.</p>
Transportation	<p>Increased traffic resulting in increased road wear</p>	<p>Encourage carpooling to and from work sites.</p>	<p>Short-term minor impacts.</p>