

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Arkansas	FIELD OFFICE		DATE	
<b>PRACTICE: Land Reclamation Currently Mined Land 544</b>		Baseline Setting:			
		Appropriate Land Use(s): Mined			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Moderate to Substantial Improvement		Reshaping of disturbed land and establishing vegetative cover can reduce erosion from water.		
Wind	Moderate to Substantial Improvement		Reshaping of disturbed land and establishing vegetative cover can reduce erosion from wind.		
Ephemeral Gully	Moderate to Substantial Improvement		Reshaping of disturbed land and establishing vegetative cover can reduce erosion from water.		
Classic Gully	Slight Improvement		Onsite gullies are reclaimed and stabilized.		
Streambank	Not Applicable		Not applicable.		
Shoreline	Not Applicable		Not applicable.		
Irrigation Induced	Not Applicable		Not applicable.		
Mass Movement	Substantial Improvement		Slopes are reshaped and stabilized.		
Road, Roadsides, and Construction Sites	Substantial Improvement		Road and construction areas are reshaped and stabilized.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Moderate Improvement		Soil organic matter is a major concern that will be addressed by mulching, soil amendments, manure, compost, and high biomass producing plants		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Slight Improvement		Mulching, soil amendments, compost, and tillage will address soil compaction of the reconstructed area.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Moderate to Substantial Improvement		Contaminated soil will be removed from the surface and buried using precautions that prevent water contamination		
• Animal Waste and other Organics - N	Not Applicable		Not applicable.		
• Animal Waste and other Organics - P	Not Applicable		Not applicable.		
• Animal Waste and other Organics - K	Not Applicable		Not applicable.		
• Commercial Fertilizer - N	Not Applicable		Not applicable.		
• Commercial Fertilizer - P	Not Applicable		Not applicable.		
• Commercial Fertilizer - K	Not Applicable		Not applicable.		

• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
<b>WATER – QUANTITY</b>		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Moderate Improvement	Land reconstruction will include grading, shaping, and revegetation to reduce potential for flooding and ponding.
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Substantial Improvement	Adequate outlets are provided for water disposal.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Substantial Improvement	Shaping and revegetation will reduce concerns about sediments reducing water conveyance capacity.
Reduced Storage of Water Bodies by Sediment Accumulation	Substantial Improvement	Shaping and revegetation will reduce concerns about sediments reducing water storage capacity of water bodies.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
<b>WATER – QUALITY</b>		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Slight Improvement	The action results in increased vegetative growth which may take up contaminants.
• Harmful Levels of Heavy Metals	Slight Improvement	The action results in increased vegetative growth which may take up heavy metals.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Erosion control and revegetation will reduce concerns about sediments.
• Excessive Salinity	Slight Improvement	Improved vegetative cover will stabilize slopes reducing runoff from salt-affected soils.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Moderate Improvement	Reconstructed mine land provides reduced runoff and erosion and the filtering effects of vegetation reduces the risk of

		harmful levels of pathogens entering surface water.
<ul style="list-style-type: none"> <li>Harmful Levels of Petroleum</li> </ul>	Moderate Improvement	Reconstructed mine land provides reduced runoff and erosion. And the filtering effects of vegetation further reduces the risk of harmful levels of petroleum entering surface water.
<b>AIR – QUALITY</b>		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Equipment operations can produce particulate emissions and exhaust emissions.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Worsening	Equipment operations can produce particulate emissions and exhaust emissions.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation.
Excessive Greenhouse Gas:		
<ul style="list-style-type: none"> <li>CO<sub>2</sub> (Carbon Dioxide)</li> </ul>	Slight to Moderate Improvement	Vegetation removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.
<ul style="list-style-type: none"> <li>N<sub>2</sub>O (Nitrous Oxide)</li> </ul>	Not Applicable	Not applicable.
<ul style="list-style-type: none"> <li>CH<sub>4</sub> (Methane)</li> </ul>	Not Applicable	Not applicable.
Ammonia (NH <sub>3</sub> )	Neutral	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Worsening	short term fugitive dust emissions into the air
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
<b>PLANTS – SUITABILITY</b>		
Plants not Adapted or Suited	Substantial Improvement	When species are selected for stabilization, they are adapted and suited.
<b>PLANTS - CONDITION</b>		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Vegetative cover species will be selected and maintained at optimal conditions for the intended purpose.
Threatened or Endangered Plant Species:		
<ul style="list-style-type: none"> <li>Plant Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Not Applicable	Not applicable.
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Not Applicable	Not applicable.
Noxious and Invasive Plants	Moderate to Substantial	Vegetation is installed and

	Improvement	managed to control undesired species.
Forage Quality and Palatability	Substantial Improvement	Plants selected will be high quality forage plants if the intended use is grazing
Wildfire Hazard	Not Applicable	Not applicable.
<b>ANIMALS - FISH AND WILDLIFE</b>		
Inadequate Food	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food and cover for wildlife.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food and cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight Improvement	Reconstruction plans will provide for wildlife habitat improvements according to client objectives
Habitat Fragmentation	Slight to Moderate Improvement	Plant community fragmentation will be reduced.
Imbalance Among and Within Populations	Not Applicable	Not applicable.
Threatened and Endangered Fish and Wildlife Species:		
<ul style="list-style-type: none"> <li>Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
<ul style="list-style-type: none"> <li>Declining Species, Species of Concern</li> </ul>	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
<b>ANIMALS – DOMESTIC</b>		
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement	Revegetation efforts could include species that provide quality forage for livestock.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
<b>HUMAN – ECONOMICS</b>		
Land - Change in Land Use	Substantial	Substantial if land is brought into production.
Land – Land in Production	Substantial increase	Substantial increase, land brought into production.
Capital – Change in Equipment	Moderate to substantial increase.	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Negligible	Negligible, if contracted.
Risk - Yield	Substantial Decrease	Substantial decrease due to restoration of previously

		unproductive areas.
Risk - Flexibility	Substantial Decrease	Substantial decrease due to restoration of natural plant community balance.
Risk - Timing	Substantial Increase	Substantial increase - practice must be implemented during growing season.
Risk – Cash Flow	Substantial Increase	Substantial increase due to design considerations.
Profitability – Change in Profitability	Situational	Substantial decrease or increase.
<b>HUMAN - CULTURAL</b>		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Consider if mine is historic structure.
<b>HUMAN – ENERGY</b>		
Depletion of Fossil Fuel Resources	Not Applicable	Not Applicable
Underutilization of Non-Fossil Energy Resources	Not Applicable	Not Applicable

## Human Considerations Explanation

<b>Considerations</b>	<b>Physical effects indicate:</b>
<b>Land - Change in Land Use</b>	The degree to which implementing the conservation practice is expected to cause a change from one land use to another.
<b>Land - Land in Production</b>	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of land in production.
<b>Capital - Change in Equipment</b>	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of capital equipment required for farm or ranch operations.
<b>Capital - Total Investment Cost</b>	A qualitative measure of the increase in total investment dollars required in order to implement the conservation practice.
<b>Capital - Annual Cost</b>	A qualitative measure of the expected change in annual capital costs required in order to operate and maintain the conservation practice.
<b>Capital - Credit &amp; Farm Program Eligibility</b>	Included to make conservation planners aware of the potential availability of funding for implementing conservation practices.
<b>Labor – Labor</b>	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of overall farm or ranch labor required for operations.
<b>Labor - Change in Management Level</b>	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of required active management on a farm or ranch.
<b>Risk – Yield</b>	The degree to which risk, as related to crop or livestock yields, is expected to increase or decrease as a result of implementing the conservation practice.
<b>Risk – Flexibility</b>	The degree to which risk, as related to the flexibility of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice. For example, converting from flood irrigation to a sprinkler system gives a farmer an increase in flexibility of irrigation, which results in a decrease in the level of risk associated with inflexibility of operations.
<b>Risk – Timing</b>	The degree to which risk, as related to the timing of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
<b>Risk - Cash Flow</b>	The degree to which risk, as related to cash flow in farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
<b>Profitability - Change in Profitability</b>	The degree to which farm or ranch profitability is expected to increase or decrease as a result of implementing the conservation practice.
<b>Cultural Resources and/or Historic Properties Present or Suspected to be Present</b>	The degree to which implementation of the conservation practice is expected to increase or decrease the risk of cultural resource disturbance, degradation, or loss.
<b>Depletion of Fossil Fuel Resources</b>	Inefficient use of fossil-originated energy sources (diesel, gasoline, propane, natural gas, coal), lubricants, and other materials.
<b>Underutilization of Non-Fossil Energy Sources</b>	Available and cost-effective alternative energy sources (solar, wind, biofuel, hydroelectric, geothermal) are not being used or are being used inefficiently.