

## CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Oklahoma	FIELD OFFICE		DATE	10/22/07
<b>PRACTICE: Row Arrangement 557</b>		Baseline Setting:			
		Appropriate Land Use(s): Crop			
<b>RESOURCES, CONSIDERATIONS AND CONCERNS</b>	<b>PHYSICAL EFFECTS</b>		<b>RATIONALE</b>		
<b>SOIL - EROSION</b>					
Sheet and Rill	Moderate Improvement		Rows are arranged in direction, grade, and length to reduce erosion		
Wind	Slight Improvement		Adding roughness to the soil across the prevailing wind direction reduces saltation.		
Ephemeral Gully	Moderate Improvement		Rows are arranged in direction, grade, and length to reduce erosion		
Classic Gully	Neutral		The action not installed in gully area		
Streambank	Neutral		Reduced erosion and sediment load can create water energy/stream bank erosion from runoff		
Shoreline	Not Applicable		Not applicable.		
Irrigation Induced	Moderate Improvement		Rows are arranged in direction, grade, and length to reduce erosion.		
Mass Movement	Not Applicable		Not applicable.		
Road, Roadsides, and Construction Sites	Not Applicable		Not applicable.		
<b>SOIL – CONDITION</b>					
Organic Matter Depletion	Slight Improvement		Reduced erosion reduces loss of organic material in sediments		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Not Applicable		Not applicable.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Slight Improvement		Improved moisture control may result in leaching of contaminants below the root zone		
• Animal Waste and other Organics - N	Slight Improvement		Will reduce soil erosion, reducing N losses.		
• Animal Waste and other Organics - P	Slight Improvement		Will reduce soil erosion and runoff, reducing P losses.		
• Animal Waste and other Organics - K	Slight Improvement		Will reduce soil erosion, reducing K losses.		
• Commercial Fertilizer - N	Slight Improvement		Will reduce soil erosion, reducing N losses.		
• Commercial Fertilizer - P	Slight Improvement		Will reduce soil erosion and runoff, reducing P losses.		
• Commercial Fertilizer - K	Slight Improvement		Will reduce soil erosion, reducing K losses.		

• Residual Pesticides	Neutral	Improved moisture control may result in leaching of soluble pesticides below the root zone
Damage from Sediment Deposition	Slight to Moderate Improvement	Reduced erosion will result in less sediment available for deposition
<b>WATER – QUANTITY</b>		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Worsening	Row arrangement may result in more infiltration.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Correct row arrangement provides better drainage control.
Excessive Subsurface Water	Slight Worsening	Row arrangement may result in more infiltration.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Moderate to Substantial Improvement	Row arrangement with proper grade and length improves irrigation efficiency.
Inefficient Water use on Non-Irrigated Land	Moderate to Substantial Improvement	Row arrangement with proper grade and length improves water capture.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Reduced erosion and sediment for off site transport.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Reduced erosion and sediment for off site transport.
Aquifer Overdraft	Slight Improvement	Better use of rainfall and irrigation water will reduce overdraft.
Insufficient Flows in Water Courses	Slight Improvement	Improve infiltration enhances interflow.
<b>WATER – QUALITY</b>		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action facilitates the removal of surface runoff, thus reducing percolation of water and nutrients.
• Excessive Salinity	Neutral	Increased percolation may move soluble salts into groundwater.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight Improvement	The action reduces runoff and erosion.
• Excessive Nutrients and Organics	Slight to Moderate Worsening	The action facilitates the removal of surface runoff, thus increasing the potential for surface water contamination by organics and nutrients.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Reduced slope and water velocity will reduce erosion.

• Excessive Salinity	Neutral	The action can increase percolation, which reduces the runoff of soluble salts. The action can also increase surface drainage, which moves contaminants from the site.
• Harmful Levels of Heavy Metals	Neutral	Collected runoff may discharge into surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Retarding surface water flow will reduce transport of pathogens
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
<b>AIR – QUALITY</b>		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Not Applicable	Not applicable.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Not Applicable	Not applicable.
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO <sub>2</sub> (Carbon Dioxide)	Neutral	Improved production and vegetative density removes CO <sub>2</sub> from the air and stores it in the form of carbon in the plants and soil.
• N <sub>2</sub> O (Nitrous Oxide)	Not Applicable	Not applicable.
• CH <sub>4</sub> (Methane)	Not Applicable	Not applicable.
Ammonia (NH <sub>3</sub> )	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Neutral	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
<b>PLANTS – SUITABILITY</b>		
Plants not Adapted or Suited	Not Applicable	Not applicable.
<b>PLANTS - CONDITION</b>		
Productivity, Health, and Vigor	Slight Improvement	Conserving moisture and reduced erosion will improve plant productivity and health.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.
• Declining Species, Species of Concern	Not Applicable	Not applicable.
Noxious and Invasive Plants	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
<b>ANIMALS - FISH AND WILDLIFE</b>		
Inadequate Food	Not Applicable	Not applicable.

Inadequate Cover/Shelter	Not Applicable	Not applicable.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Not Applicable	Not applicable.
Habitat Fragmentation	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Negligible	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Slight decrease due to adequate drainage and erosion control.
Risk - Flexibility	Slight Increase	Slight increase due to following designed row pattern.
Risk - Timing	Negligible	
Risk – Cash Flow	Slight Increase	Slight increase due to high fuel and labor requirements.
Profitability – Change in Profitability	Situational	Slight decrease to slight increase.
<b>HUMAN - CULTURAL</b>		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
<b>HUMAN – ENERGY</b>		
Depletion of Fossil Fuel Resources	Slight Decrease	The practice increases irrigation efficiency.
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.