CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	North Dakota	FIELD OFFICE		DATE	
PRACTICE: Salinity and Sodic Soil Management 610		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Slight to substantial improvement		Converting low-yield cropland to perennial veg is typical.	
Wind		Slight to substantial improvement		Converting low-yield cropland to perennial veg is typical.	
Ephemeral Gully		None to moderate improvement		Converting low-yield cropland to perennial veg is typical.	
Classic Gully		None to slight improvement		Converting low-yield cropland to perennial veg is typical.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Moderate to substantial improvement		Converting low-yield cropland to perennial veg is typical.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Converting low-yield cropland to perennial veg is typical.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight to Substantial Improvement		Salts in the root zone are reduced by leaching, drainage and/or plant management.	
• 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.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Neutral		Not Applicable	
Excessive Seepage		Not Applicable		Not applicable.	
Excessive Runoff, Flooding, or Ponding		Slight to substantial improvement		Converting low-yield cropland to perennial veg is typical.	
Excessive Subsurface Water		Not Applicable		Not applicable.	
Drifted Snow		Slight to Moderate improvement		Converting low-yield cropland to perennial veg is typical.	

Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	NA or Slight Improvement	The practice is seldom applied on irrigated land in ND.
Inefficient Water use on Non-Irrigated Land	Substantial Improvement	Converting low-yield cropland to perennial veg is typical.
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable or Slight Improvement	Converting low-yield cropland to perennial veg is typical.
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable or slight improvement	Converting low-yield cropland to perennial veg is typical.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	None to Moderate Improvement	Converting low-yield cropland to perennial veg is typical..
• Excessive Nutrients and Organics	None to Moderate Improvement	Converting low-yield cropland to perennial veg is typical.
• Excessive Salinity	None to Slight Worsening	The action requires removing salts from the root-zone. Leaching is one alternative and degree of effect depends on the amount of leaching used and the location of the ground water table.
• Harmful Levels of Heavy Metals	Not Applicable	Not a problem in ND.
• Harmful Levels of Pathogens	Not Applicable	Not a problem in ND.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	None to Slight Improvement	Converting low-yield cropland to perennial veg is typical; uses less pesticides.
• Excessive Nutrients and Organics	None to Slight Improvement	Converting low-yield cropland to perennial veg is typical.; uses less fertilizer.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Converting low-yield cropland to perennial veg is typical.
• Excessive Salinity	None to Slight Improvement	Salts are typically kept in the subsoil and local groundwater onsite.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Preventing or reducing salt accumulation in the soil leads to improved vegetative cover, reducing the potential for soil movement by wind.

Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Preventing or reducing salt accumulation in the soil leads to improved vegetative cover, reducing the potential for soil movement by wind.
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight Improvement	Cropland is typically converted to perennial veg that demands less fossil fuel.
• N_20 (Nitrous Oxide)	Slight Improvement	Cropland is typically converted to perennial veg that demands less fossil fuel.
• CH_4 (Methane)	Slight Improvement	Cropland is typically converted to perennial veg that demands less fossil fuel.
Ammonia (NH_3)	Slight Improvement	Cropland is typically converted to perennial veg that demands less fossil fuel.
Chemical Drift	Slight Improvement	Cropland is typically converted to perennial veg that demands less fossil fuel.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Substantial Improvement	Suitable species are usually planted to apply this practice.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Suitable vegetation remediates the soil and benefits the vegetation itself.
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	Moderate to Substantial Improvement	Proper management and selection of adapted species will increase quality and palatability of forage.
Wildfire Hazard	Slight to Moderate increased risk	Cropland is typically converted to perennial vegetation, producing more residual cover.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	None to Moderate Increase	Cropland is typically converted to perennial vegetation and more residual cover.

Inadequate Cover/Shelter	Substantial Increase	Cropland is typically converted to perennial vegetation and more residual cover.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Not Applicable	Not applicable.
Habitat Fragmentation	None to Substantial Increase	Cropland is typically converted to perennial vegetation and more residual cover.
Imbalance Among and Within Populations	Not Applicable	Not applicable.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
• Declining Species, Species of Concern	Slight to Moderate Increase	Typical perennial veg est. benefits grassland species.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Moderate to Substantial Improvement	Forage vigor and quantity is improved through effective management of soil salinity and sodium.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to substantial.	
Land – Land in Production	Slight to substantial.	
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate.	
Labor – Change in Management Level	Slight to moderate increase.	
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease increase due to reduced salt levels.
Risk - Flexibility	Slight Increase	Slight increase based on methods used to reduce concentrations.
Risk - Timing	Moderate to Substantial Increase	Moderate to substantial increase, depending on level of concentration.
Risk – Cash Flow	Slight Increase short term, slight to moderate improvement long-term	Slight increase due to establishment costs.
Profitability – Change in Profitability	Situational	Moderate decrease to slight increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be Present	Not applicable.	Not applicable.

HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Improvement in long term	Less fuel wasted on unproductive crop acreage.
Underutilization of Non-Fossil Energy Resources	Not Applicable	Not Applicable

Human Considerations Explanation

Considerations	Physical effects indicate:
Land - Change in Land Use	The degree to which implementing the conservation practice is expected to cause a change from one land use to another.
Land - Land in Production	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of land in production.
Capital - Change in Equipment	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.
Capital - Total Investment Cost	A qualitative measure of the increase in total investment dollars required in order to implement the conservation practice.
Capital - Annual Cost	A qualitative measure of the expected change in annual capital costs required in order to operate and maintain the conservation practice.
Capital - Credit & Farm Program Eligibility	Included to make conservation planners aware of the potential availability of funding for implementing conservation practices.
Labor – Labor	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.
Labor - Change in Management Level	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.
Risk – Yield	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.
Risk – Flexibility	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.
Risk – Timing	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.
Risk - Cash Flow	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.
Profitability - Change in Profitability	The degree to which farm or ranch profitability is expected to increase or decrease as a result of implementing the conservation practice.
Cultural Resources and/or Historic Properties Present or Suspected to be Present	The degree to which implementation of the conservation practice is expected to increase or decrease the risk of cultural resource disturbance, degradation, or loss.
Depletion of Fossil Fuel Resources	Inefficient use of fossil-originated energy sources (diesel, gasoline, propane, natural gas, coal), lubricants, and other materials.
Underutilization of Non-Fossil Energy Sources	Available and cost-effective alternative energy sources (solar, wind, bio-fuel, hydroelectric, geothermal) are not being used or are being used inefficiently.