CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	10/10/2008
PRACTICE: Critical Area Planting 342		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Substantial Improvement	Increased vegetation and cover, and stabilization of erosive conditions will improve infiltration and decrease soil detachment by water.
Wind	Substantial Improvement	An increase in vegetation and cover will protect the soil surface and decrease soil detachment by wind.
Ephemeral Gully	Substantial Improvement	An increase in vegetation and cover will improve infiltration, protect the soil surface and decrease soil detachment by concentrated flow.
Classic Gully	Moderate to Substantial Improvement	Increased vegetation and cover will decrease erosion and runoff.
Streambank	Moderate to Substantial Improvement	Increased vegetation and cover will decrease erosion and runoff.
Shoreline	Moderate to Substantial Improvement	Increased vegetation and cover will decrease erosion.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Substantial Improvement	Increased vegetation and cover will decrease erosion and runoff.
SOIL – CONDITION		
Organic Matter Depletion	Substantial Improvement	Increased cover and growing vegetation will increase soil organic matter.
Rangeland Site Stability	Substantial Improvement	Increase in soil cover by vegetation will improve soil surface organic matter and surface stability.
Compaction	Slight to Substantial Improvement	Increased root growth will decrease compaction.
Subsidence	Neutral	If it affects drainage the practice can have an impact on subsidence.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Increased vegetation will increase salt uptake and increased organic matter may tie up salts and other chemicals.
• Animal Waste and other Organics - N	Not Applicable	Not applicable.
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• 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	Slight Improvement	Increased organic matter adsorbs pesticides and increased biological activity will break pesticides down. Selected vegetation may reduce the need for pesticides.
Damage from Sediment Deposition	Slight to Substantial Improvement	Growing vegetation and cover result in less erosion and sediment deposition.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Slight to Substantial Improvement	Growing vegetation and cover result in higher infiltration and lower runoff.
Excessive Seepage	Neutral	Growing plants will take up excess water but planting area is so small there is a neutral effect.
Excessive Runoff, Flooding, or Ponding	Neutral	Growing plants will take up excess water but planting area is so small there is a neutral effect.
Excessive Subsurface Water	Neutral	Growing plants will take up excess water but planting area is so small there is a neutral effect.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
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	Permanent vegetation reduces runoff and sediment yield.
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate to Substantial Improvement	Permanent vegetation reduces sediment yield.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Salinity	Neutral	Vegetation takes up moisture and salts.
• Harmful Levels of Heavy Metals	Slight Improvement	Higher organic matter levels increases buffering capacity of the soil. Vegetation can take up some heavy metals.
• Harmful Levels of Pathogens	Slight Improvement	The action increases organic matter promoting microbial activity which competes with

		pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action reduces erosion and sediment-attached nutrient delivery to surface water. Permanent vegetation will uptake nutrients.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Vegetation reduces erosion and sediment delivery.
• Excessive Salinity	Neutral	Less runoff reduces transport of soluble salts. Growing vegetation can use excess water which reduces seepage.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Decreased erosion and runoff reduces heavy metal delivery to surface water. Increased soil organic matter increases capacity of soils to retain heavy metals. Permanent vegetation can uptake heavy metals.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Less erosion and runoff reduces delivery of pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Permanent cover helps reduce wind erosion and generation of fugitive dust.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Permanent cover helps reduce wind erosion and generation of fugitive dust.
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:		
• CO_2 (Carbon Dioxide)	Slight Improvement	Vegetation removes CO2 from the air and stores it in the form of carbon in the plants and soil.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight to Moderate Improvement	Reduce fugitive dust emissions
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		

Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Proper plant selection, nutrient modification, and management improves plant growth and vigor.
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	Moderate to Substantial Improvement	Establishment of permanent vegetation may provide competition that would slow the spread of noxious plants.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more food for wildlife.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Increased quality and quantity of vegetation provides more cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight to Moderate Improvement	Increased cover will increase space for wildlife. May be used to connect other cover areas.
Habitat Fragmentation	Slight to Moderate Improvement	Increased cover will increase space for wildlife. May be used to connect other cover areas.
Imbalance Among and Within Populations	Slight Improvement	Habitat management is implemented to remove limiting factors.
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	Neutral	Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight Improvement	Established vegetation may add forage for domestic animals.
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	Substantial, if large areas are planted, N/A if small areas planted.
Land – Land in Production	Substantial decrease	Substantial decrease, land converted to permanant cover.
Capital – Change in Equipment	Negligible	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase during smoothing/planting, reduce labor working critical areas.
Labor – Change in Management Level	Negligible	
Risk - Yield	Substantial Decrease	Substantial decrease in adjacent eroding areas.
Risk - Flexibility	Moderate Decrease	Moderate decrease due to control of eroding areas.
Risk - Timing	Moderate Increase	Moderate increase must apply the practice when plants can be established.
Risk – Cash Flow	Substantial Increase	Substantial increase due to implementation and establishment costs.
Profitability – Change in Profitability	Slight to moderate decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Decrease	Historic properties in agricultural context can be protected from erosion.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Not Applicable	Not applicable.
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, biofuel, hydroelectric, geothermal) are not being used or are being used inefficiently.