

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	10/10/2008
PRACTICE: Grassed Waterway 412		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Not Applicable	Not applicable.			
Wind	Neutral	The unsheltered distance may be reduced by trapping saltating soil particles.			
Ephemeral Gully	Substantial Improvement	Shaping or grading of the channel conveys runoff water without causing erosion.			
Classic Gully	Moderate to Substantial Improvement	Runoff is controlled and managed to prevent erosion.			
Streambank	Slight Improvement	Inflows into the stream are controlled to prevent erosion.			
Shoreline	Slight Improvement	Inflows into the stream are controlled to prevent erosion.			
Irrigation Induced	Neutral	Captures sediment in tailwater runoff but does not reduce erosion.			
Mass Movement	Not Applicable	Not applicable.			
Road, Roadsides, and Construction Sites	Slight to Moderate Improvement	Erosion on construction sites and road side drainage ways controlled.			
SOIL – CONDITION					
Organic Matter Depletion	Moderate Improvement	Permanent vegetation in the area of the waterway increases soil organic matter.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Not Applicable	Not applicable.			
Subsidence	Not Applicable	Not applicable.			
Contaminants:					
• Salts and other Chemicals	Slight Worsening	Vegetation traps contaminated sediment.			
• Animal Waste and other Organics - N	Slight Worsening	Vegetation traps N and N-contaminated sediment, vegetation will take up N.			
• Animal Waste and other Organics - P	Slight Worsening	Vegetation traps P and P-contaminated sediment, vegetation will take up P.			
• Animal Waste and other Organics - K	Slight Worsening	Vegetation traps K and K-contaminated sediment, vegetation will take up K.			
• Commercial Fertilizer - N	Slight Worsening	Vegetation traps N and N-contaminated sediment, vegetation will take up N.			
• Commercial Fertilizer – P	Slight Worsening	Vegetation traps P and P-contaminated sediment, vegetation will take up P.			

• Commercial Fertilizer – K	Slight Worsening	Vegetation traps K and K-contaminated sediment, vegetation will take up K.
• Residual Pesticides	Slight Worsening	Vegetation traps contaminated sediment.
Damage from Sediment Deposition	Moderate Worsening	Vegetation traps soil particles.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Neutral	Provide outlet for seeps.
Excessive Runoff, Flooding, or Ponding	Moderate Improvement	Waterways provide outlets for diversions and other water control practices.
Excessive Subsurface Water	Slight to Moderate Improvement	Subsurface drainage installed as part of this practice removes excess water.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Moderate to Substantial Improvement	Waterways provide adequate outlets.
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	Slight to Moderate Improvement	Reduces erosion that results in sediment deposition in conveyances.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Reduces erosion that results in sediment deposition in conveyances.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Neutral	The action increases infiltration which is offset by increased soil organic matter and biological activity .
• Excessive Nutrients and Organics	Neutral	The action may slightly increases infiltration within the waterway. However, the vegetation will uptake nutrients.
• Excessive Salinity	Not Applicable	Not applicable.
• 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 to Moderate Improvement	The action increases infiltration and traps adsorbed pesticides.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The vegetation in the channel will filter out some sediments, and the vegetation will utilize some nutrients.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Erosion is controlled, vegetation traps sediment, and runoff is delivered at a safe velocity.

• Excessive Salinity	Neutral	The action results in slight increase of infiltration that could decrease soluble salts in runoff.
• Harmful Levels of Heavy Metals	Slight Improvement	Waterway acts as filter and reduces heavy metals in the runoff. Vegetation may take up heavy metals.
• Harmful Temperatures	Neutral	Water is not retained in the waterway
• Harmful Levels of Pathogens	Slight Improvement	Waterway acts as filter and reduces pathogens in the runoff
• Harmful Levels of Petroleum	Slight Improvement	Waterway acts as filter and reduces petroleum in the runoff
AIR – QUALITY		
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	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 CO ₂ from the air and stores it in the form of carbon in the plants and soil.
• N ₂ O (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	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABILITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Plants selected for retention are more adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Vegetation is maintained at optimal conditions for the function of the waterway
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	Vegetation is installed and managed to control undesired

		species.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight Improvement	Planting of wildlife adapted plants outside the hydraulic functioning area of the waterway will provide food.
Inadequate Cover/Shelter	Slight Improvement	Planting of wildlife adapted plants outside the hydraulic functioning area of the waterway will provide cover/shelter.
Inadequate Water	Slight Improvement	The action improves surface water quality and provides seasonal habitat for aquatic species, especially if connected to a stream or river.
Inadequate Space	Slight Improvement	Waterways constructed in cropland will increase space and provide wildlife corridor
Habitat Fragmentation	Slight Improvement	Waterways increase connectivity.
Imbalance Among and Within Populations	Not Applicable	Not applicable.
Threatened and Endangered Fish and Wildlife Species:		
<ul style="list-style-type: none"> 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.
<ul style="list-style-type: none"> 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	There may be some use of the planting for feed and forage by livestock.
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 Moderate	Moderate if large areas planted, N/A if small areas planted.
Land – Land in Production	Substantial	Substantial decrease, land converted to permanent cover.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease with smoother field operations.

Labor – Change in Management Level	Negligible	
Risk - Yield	Slight Increase	Slight increase due to land use conversion.
Risk - Flexibility	Slight Increase	Slight increase due to design specifications.
Risk - Timing	Substantial Increase	Substantial increase - must allow for vegetative establishment.
Risk – Cash Flow	Substantial Increase	Substantial increase due to construction 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 Increase	Construction impacts (mechanical).
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	Practice reduces the energy required to repair or farm around gullies.
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.