

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	12/27/2011
PRACTICE: Vegetative Barrier 601		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE			
SOIL - EROSION					
Sheet and Rill	Moderate to Substantial Improvement	Stiff-stemmed vegetation planted along the contour or across areas of concentrated flow slows runoff, effectively reducing slope length and increasing infiltration .			
Wind	Slight Improvement	Stiff-stemmed vegetation effectively reduces the unsheltered distance when oriented across the prevailing wind erosion direction.			
Ephemeral Gully	Substantial Improvement	Stiff-stemmed vegetation planted along the contour or across areas of concentrated flow slows runoff, effectively reducing slope length and increasing infiltration .			
Classic Gully	Slight to Moderate Improvement	Vegetation planted across slopes reduces runoff and contributes to gully stabilization.			
Streambank	Slight Improvement	Vegetation planted across slopes reduces runoff and contributes to streambank stabilization.			
Shoreline	Slight Improvement	Vegetation planted across slopes reduces runoff and contributes to streambank stabilization.			
Irrigation Induced	Not Applicable	Not applicable.			
Mass Movement	Neutral	Stiff-stemmed vegetation strategically located on the slope may divert water away from areas sensitive to mass movement. Increased evapotranspiration may reduce soil saturation during the growing season. Infiltration will increase.			
Road, Roadsides, and Construction Sites	Slight to Moderate Improvement	Vegetation and surface litter reduces erosive water energy.			
SOIL – CONDITION					
Organic Matter Depletion	Neutral	Buildup of eroded topsoil above vegetative barrier and growth of permanent cover will increase or maintain organic matter above the barrier but decrease it below the barrier.			
Rangeland Site Stability	Not Applicable	Not applicable.			
Compaction	Slight to Moderate Worsening	Root penetration and organic			

		matter helps restore soil structure in the immediate vicinity of the vegetative barrier. Soils remain wet longer. Immediately above the vegetative barrier and may lead to more potential compaction due to vehicular traffic.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight to Moderate Worsening	The action can over time collect or redistribute salts within a field due to seepage, if present.
• Animal Waste and other Organics - N	Slight to Moderate Worsening	Growing vegetation will take up N from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate N.
• Animal Waste and other Organics - P	Slight to Moderate Worsening	Growing vegetation will take up P from organics and remove some excess P from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate P.
• Animal Waste and other Organics - K	Slight to Moderate Worsening	Growing vegetation will take up K from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate K.
• Commercial Fertilizer - N	Slight to Moderate Worsening	Growing vegetation will take up N from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate N.
• Commercial Fertilizer – P	Slight to Moderate Worsening	Growing vegetation will take up P from organics and remove some excess P from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate P.
• Commercial Fertilizer – K	Slight to Moderate Worsening	Growing vegetation will take up K from organics and remove some excess N from the soil if vegetation is periodically harvested. However, buildup of sediment behind the practice may accumulate K.
• Residual Pesticides	Slight to Moderate Worsening	Buildup of sediment behind the

		practice may accumulate contaminants.
Damage from Sediment Deposition	Slight to Moderate Worsening	Vegetation and surface litter traps sediment.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Neutral	Where soils have restrictive layers, increased infiltration may create seeps.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Worsening	Vegetation will slow runoff and create ponding.
Excessive Subsurface Water	Slight to Moderate Improvement	Increased vegetation will cause ponding and infiltration increasing subsurface water.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Moderate Improvement	Vegetation slows and retains runoff; the need for larger outlets is reduced.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Vegetation slows runoff and improves infiltration increasing soil water recharge.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Vegetative barriers slow runoff and can pond water, increasing water infiltration.
Reduced Capacity of Conveyances by Sediment Deposition	Substantial Improvement	Sediment trapped preventing it from being deposited elsewhere.
Reduced Storage of Water Bodies by Sediment Accumulation	Substantial Improvement	Sediment trapped preventing it from being deposited elsewhere.
Aquifer Overdraft	Slight Improvement	Increased infiltration increases recharge, reducing overdraft.
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration.
• Excessive Nutrients and Organics	Slight Worsening	The action increases infiltration which may provide transport for nutrients.
• Excessive Salinity	Slight Worsening	The action can increase infiltration which may move soluble salts to groundwater.
• Harmful Levels of Heavy Metals	Slight Worsening	The action encourages increased infiltration, which may leach heavy metals.
• Harmful Levels of Pathogens	Neutral	Increased microbial activity in vegetative barrier increases the rate of pathogen degradation. Ponding slows the rate of pathogen movement allowing time for mortality. Infiltration can increase.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		

• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action reduces runoff and erosion and traps adsorbed pesticides.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Solid organics and nutrients attached to sediment may be filtered out. Soluble organics infiltrate into the soil and may be taken up by plants and soil organisms.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Vegetation slows runoff, filters water, and increases infiltration.
• Excessive Salinity	Slight Improvement	The action increases infiltration and reduces runoff, which may reduce salt movement off-site..
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Runoff containing heavy metals is slowed, increasing infiltration into the soil where metals are often tied up. Some plants may take up heavy metals.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Vegetative barriers capture sediment-bound pathogens and retard pathogen movement, allowing more time for mortality to occur before pathogens can reach water bodies.
• Harmful Levels of Petroleum	Slight Improvement	Vegetative barrier slows runoff and increases infiltration of petroleum contaminants. Increased microbial activity in the vegetative barrier breaks down petroleum contaminants.
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)	Slight to Moderate Improvement	Interception of NH ₃ by plants
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Improvement	Reduction in wind erosion potential and fugitive dust

Undesirable Air Movement	Slight Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABILITY		
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Substantial Improvement	Reduced erosion and improved water management creates site conditions favorable to plant health and productivity.
Threatened or Endangered Plant Species:		
<ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act 	Not Applicable	Not applicable.
<ul style="list-style-type: none"> 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	Food species can be included in the barrier.
Inadequate Cover/Shelter	Slight Improvement	The barrier provides cover for some species.
Inadequate Water	Slight Improvement	The available water meeting the quality required by target species is improved by the filtering functions of the barriers.
Inadequate Space	Slight Improvement	Barriers provide some additional space.
Habitat Fragmentation	Slight Improvement	Barriers can connect adjacent habitats to a limited degree.
Imbalance Among and Within Populations	Slight Improvement	By providing corridors for certain wildlife, vegetative barriers may enhance selected species.
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	Slight Improvement	Tall herbaceous vegetation may provide limited shelter.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Substantial decrease.	
Capital – Change in Equipment	Not applicable.	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Slight to moderate.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Slight Increase	Slight increase, based on optimal timing of planting.
Risk – Cash Flow	Slight Increase	Slight increase due to construction costs.
Profitability – Change in Profitability	Slight Decrease	Slight decrease due to reduction of productive acreage.
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 by permanent vegetative cover.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	Reduced erosion reduces sediment removal requirements. Barriers will need sediment removed, so the effect on energy use is negligible.
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.