CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Pennsylvania	FIELD OFFICE	Any	DATE	
PRACTICE: Contour Buffer Strips 332		Baseline Setting:			
		Appropriate Land Use(s): Crop			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Moderate to Substantial Improvement	Maintaining vegetation on the contour reduces runoff velocities, thus reducing the detachment and transport capacity of over-land flow.
Wind	Neutral	If the practice layout is coincidentally oriented across the direction of the erosive wind, soil particles borne by wind are trapped and soil detachment is reduced.
Ephemeral Gully	Slight to Moderate Improvement	Vegetation across the slope reduces runoff velocity and volume and increases infiltration reducing concentrated flow.
Classic Gully	Slight Improvement	Reduces runoff causing erosion in the gully.
Streambank	Slight Improvement	Reduces runoff causing erosion.
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	Slight to Moderate Improvement	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Neutral	Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect.
• Animal Waste and other Organics - N	Neutral	Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect.
• Animal Waste and other Organics - P	Neutral	Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect.
• Animal Waste and other Organics - K	Neutral	Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect.

• Commercial Fertilizer - N	Neutral	Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect.
• Commercial Fertilizer – P	Neutral	Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect.
• Commercial Fertilizer – K	Neutral	Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect.
• Residual Pesticides	Slight Worsening	Vegetation will increase opportunity for infiltration.
Damage from Sediment Deposition	Moderate to Substantial Improvement	Vegetation reduces soil erosion and subsequent deposition.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Worsening	Reduces runoff and traps drifting snow resulting in increased water infiltration that may move laterally to a seep area, particularly during fallow periods.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Reduces runoff resulting in increased water infiltration which will slightly reduce the potential for flooding or ponding.
Excessive Subsurface Water	Slight Worsening	Reduces runoff resulting in increased water infiltration which increases subsurface water.
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	Slight Improvement	Reduces runoff resulting in increased water infiltration.
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	Reduces soil erosion and resulting off-site sediment deposition.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Reduces soil erosion and resulting off-site sediment deposition.
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	Slight Worsening	The action reduces the velocity of runoff and traps drifting snow

		resulting in increased water infiltration which could move nutrients and organics to groundwater.
• Excessive Salinity	Slight Worsening	The action reduces the velocity of runoff and traps drifting snow resulting in increased water infiltration which could move salts to groundwater.
• Harmful Levels of Heavy Metals	Neutral	The action may result in increased water infiltration, but this will have a negligible effect on heavy metals in groundwater.
• Harmful Levels of Pathogens	Slight Worsening	Increased water infiltration could move pathogens into the soil.
• 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 the amount of pestide applied.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	The action decreases soil erosion by water and may increase water infiltration, thereby reducing the transport of nutrients and organics to surface water.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Contour Buffer Strips reduce sheet and rill erosion and slow the velocity of runoff, thereby reducing the transport of sediment to surface water
• Excessive Salinity	Slight Improvement	The action slows runoff, which may increase water infiltration, reducing the potential for transport of salts to surface water.
• Harmful Levels of Heavy Metals	Slight to Substantial Improvement	Strips of vegetation decrease sheet and rill erosion and slow runoff velocities, thereby reducing the potential for transport of heavy metals to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Contour Buffer Strips decrease sheet and rill erosion and slow runoff velocities, thereby reducing the potential for transport of pathogens to surface water
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Improvement	The areas of permanent vegetation reduce the amount of area that is susceptible to wind erosion.

Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Improvement	The areas of permanent vegetation reduce the amount of area that is susceptible to wind erosion.
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	Provides wind break to reduce chemical drift
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Improvement	Provides for biofiltering of windblown dust
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	Slight to Substantial Improvement	Plants are selected and managed to maintain optimal 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	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 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	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	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	Slight, convert cropland to vegetated strips.
Land – Land in Production	Moderate decrease	Moderate decrease, lose cropland.
Capital – Change in Equipment	Negligible	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase to maintain strips annually.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight Increase	Slight increase due to competition for water & nutrients.
Risk - Flexibility	Slight Increase	Slight increase due to following designed row pattern.
Risk - Timing	Slight to Moderate Increase	Slight to moderate increase, depending on the maintenance of strips.
Risk – Cash Flow	Moderate Increase	Moderate increase due to implementation 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	Initial plantings; changes in setting can have adverse effects.
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.