

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Pennsylvania	FIELD OFFICE	Any	DATE	
PRACTICE: Tree/Shrub Site Preparation 490		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Mined, Natural Area, Recreation, Urban, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS		RATIONALE		
SOIL - EROSION					
Sheet and Rill	Slight Worsening		An area with disturbed soil or reduction in vegetative cover and surface litter has potential for increases in erosive water energy.		
Wind	Slight Worsening		An area with bare soil or reduction in vegetative cover and surface litter has potential for increased exposure of the soil surface to erosive wind energy.		
Ephemeral Gully	Slight to Moderate Worsening		An area with disturbed soil or reduction in vegetative cover and surface litter has potential for increases in erosive water energy.		
Classic Gully	Slight to Moderate Worsening		An area with disturbed soil or reduction in vegetative cover and surface litter has potential for increases in erosive water energy.		
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	Slight to Moderate Worsening		Removal of vegetation and litter from a site removes organic material that could have become soil organic matter.		
Rangeland Site Stability	Not Applicable		Not applicable.		
Compaction	Slight Worsening		Use of heavy equipment compacts soil.		
Subsidence	Not Applicable		Not applicable.		
Contaminants:					
• Salts and other Chemicals	Not Applicable		Not applicable.		
• 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	Neutral	Temporary removal of surface litter and alteration of vegetative structure alters entrapment capabilities.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Neutral	Temporary site condition.
Excessive Subsurface Water	Neutral	Temporary site condition.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Neutral	Temporary site condition.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Moderate to Substantial Improvement	Mechanical disturbance of soil surface increases infiltration rate and soil moisture retention.
Reduced Capacity of Conveyances by Sediment Deposition	Neutral	Potential for erosion from site is increased for a short period of time.
Reduced Storage of Water Bodies by Sediment Accumulation	Neutral	Potential for erosion from site is increased for a short period of time.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Neutral	Temporary site condition.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Neutral	Increased woody vegetation on site may result in minor uptake of contaminants.
• Harmful Levels of Pathogens	Neutral	Increased woody vegetation on site may encourage microbial activity in the soil, reducing pathogen numbers.
• Harmful Levels of Petroleum	Neutral	Some herbicides require a petroleum-based carrier. Use of heavy equipment may lead to fuel or lubricant spills.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight Worsening	Soil disturbance increases erosion from the site.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Neutral	Eventual canopy cover of stand will shade streams.

• Harmful Levels of Pathogens	Neutral	Temporary site condition.
• Harmful Levels of Petroleum	Neutral	Temporary site condition.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Worsening	Exhaust from equipment operation and dust from soil-disturbing activities add particulate matter to the air.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Worsening	Exhaust from equipment operation and dust from soil-disturbing activities add particulate matter to the air.
Excessive Ozone	Neutral	There is a short-term increase in vehicle emissions and ozone precursors from site preparation equipment.
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	Slight Improvement	Tall vegetation slows surface air movement and intercepts and captures air borne materials.
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	Site is altered to allow more suited and desired species to grow.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Site is altered to allow more suitable species to grow resulting in increased productivity, improved health and vigor.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.
• Declining Species, Species of Concern	Neutral	When threatened or endangered plants are present, protection and recovery are addressed in the planning process.
Noxious and Invasive Plants	Moderate to Substantial Improvement	Site conditions are managed to minimize undesired vegetation.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Moderate to Substantial	Activities reduce fuel load

	Improvement	buildup.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Neutral	Temporary site conditions may decrease food species used by wildlife.
Inadequate Cover/Shelter	Neutral	Temporary site conditions may decrease cover/shelter for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Neutral	Conditions created are temporary. The action is designed to recreate woody habitat/space.
Habitat Fragmentation	Neutral	Conditions created are temporary. The action is designed to recreate/reconnect woody habitat.
Imbalance Among and Within Populations	Neutral	Temporary site condition. The action is designed to benefit woody species establishment.
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	Not Applicable	Not applicable.
Inadequate Shelter	Slight Worsening	Activities can remove protective brush and trees.
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	Not applicable.	Not applicable.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Not applicable.	Not applicable.
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate to substantial increase.	
Labor – Change in Management Level	Moderate increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight Decrease	Slight decrease due to the encouragement of natural or artificial regeneration of trees.
Risk - Timing	Substantial Increase	Substantial increase - practice should implemented prior to

		planting.
Risk – Cash Flow	Moderate Increase	Moderate increase due to installation costs.
Profitability – Change in Profitability	Situational	Slight decrease to moderate increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Construction impacts.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	This practice uses energy; however, the energy used depends on the intensity of preparation and management. The long term effect is an increase in biomass energy production.
Underutilization of Non-Fossil Energy Resources	No Effect	This practice facilitates the production of biomass that could be used for energy production.

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.