CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	10/14/2008
PRACTICE: Waste Utilization 633		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Pasture			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Moderate Improvement	Additional organic material adds nutrients and increases soil organic matter which reduces runoff and erosion.
Wind	Slight Improvement	Additional organic material applied to the soil surface may reduce wind erosion potential.
Ephemeral Gully	Slight Improvement	Additional organic material adds nutrients and increases soil organic matter which reduces runoff and erosion.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Slight to Moderate Improvement	Additional organic material adds nutrients and increases soil organic matter which reduces runoff and erosion.
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Slight to Substantial Improvement	Composted organic material will aid in vegetation establishment that will provide adequate cover.
SOIL – CONDITION		
Organic Matter Depletion	Slight to Substantial Improvement	Added organic material will increase biomass production and increase soil organic matter.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Neutral	Field operations on moist soils cause soil compaction. However, increased plant growth and root penetration will counterbalance this effect. When wastes are applied through irrigation systems compaction is avoided.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Neutral	Proper waste utilization will not result in salt build up.
• Animal Waste and other Organics - N	Neutral	Proper application of animal waste or organics will not result in soil contamination.
• Animal Waste and other Organics - P	Neutral	Proper application of animal waste or organics will not result in soil contamination.

• Animal Waste and other Organics - K	Neutral	Proper application of animal waste or organics will not result in soil contamination.
• Commercial Fertilizer - N	Neutral	Proper application of animal waste or organics will not result in soil contamination.
• Commercial Fertilizer – P	Neutral	Proper application of animal waste or organics will not result in soil contamination.
• Commercial Fertilizer – K	Neutral	Proper application of animal waste or organics will not result in soil contamination.
• Residual Pesticides	Slight Improvement	Adding organic material to the soil may increase tie-up and biological degradation of pesticides.
Damage from Sediment Deposition	Slight Improvement	Increased organic material promotes better vegetative growth that results in less erosion.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement	Additional organic material and waste water adds nutrients, increases soil organic matter, and increases soil moisture.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	The action improves water use because of better plant vigor.
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action increases soil organic matter and biological activity.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Proper nutrient application should minimize leaching losses.
• Excessive Salinity	Slight to Moderate Improvement	Proper waste application should minimize leaching losses. Uses of manure for other than land application will decrease opportunity for water contamination.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Proper nutrient application

		should minimize leaching losses. Uses of manure for other than land application will decrease opportunity for water contamination.
• 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	Proper nutrient application should minimize losses due to runoff.
• Excessive Suspended Sediment and Turbidity	Neutral	Proper nutrient application should minimize losses due to runoff.
• Excessive Salinity	Slight to Moderate Improvement	Proper nutrient application should minimize runoff losses. Uses of manure for other than land application will decrease opportunity for water contamination.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Neutral	Proper nutrient application should minimize losses due to runoff.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Worsening	Application of dry manure can result in particulate losses to the air.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Worsening	Application of dry manure can result in particulate losses to the air.
Excessive Ozone	Slight to Moderate Improvement	Proper land application of manure will minimize emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate Improvement	Field management of nutrients optimizes the storage of soil carbon.
• N_20 (Nitrous Oxide)	Slight Improvement	Reduction in N in waste results in less N volatilization
• CH_4 (Methane)	Neutral	Not applicable.
Ammonia (NH_3)	Slight to Moderate Improvement	Proper nutrient management reduces NH3 production.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Moderate to Substantial Improvement	Proper land application/incorporation will reduce volatilization and particle transport.
Reduced Visibility	Slight Improvement	Land application reduces fine particulate matter and ozone precursors, burning increases fine particulate matter and ozone precursors

Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Slight to Substantial Improvement	Nutrients and soil amendments are optimized to enhance suited and desired species.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Substantial Improvement	Nutrients and soil amendments are applied to optimize to plant health and productivity.
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	Not Applicable	Not applicable.
Forage Quality and Palatability	Moderate to Substantial Improvement	Proper management will increase quality and palatability of forage.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Not Applicable	Not applicable.
Inadequate Cover/Shelter	Not Applicable	Not applicable.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Not Applicable	Not applicable.
Habitat Fragmentation	Not Applicable	Not applicable.
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	Moderate to Substantial Improvement	Wastes are applied to enhance production and nutritive value of the forage used by livestock.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Slight to Substantial Improvement	Management results in nutritive forage improving livestock health.
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	Substantial.	Substantial.
Capital – Annual Cost	Moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to substantial increase	Slight to substantial increase depending on type of waste and method of distribution.
Labor – Change in Management Level	Moderate to substantial increase	Moderate to substantial increase for timing and management of waste.
Risk - Yield	Slight Decrease	Negligible to slight decrease due to proper utilization of waste material.
Risk - Flexibility	Moderate Increase	Moderate increase because of runoff and pollution potential.
Risk - Timing	Substantial Increase	Substantial increase - only apply when plant resources can utilize nutrients.
Risk – Cash Flow	Slight Increase	Slight increase due to application 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	If buried pipelines are utilized.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Not Applicable	Not Applicable
Underutilization of Non-Fossil Energy Resources	Slight to Substantial Decrease	This practice provides the mechanism for utilizing methane and nutrient energy sources.

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.