CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Manure Transfer 634		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Headquarters, Pasture, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by water.
Wind	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by wind.
Ephemeral Gully	Slight Worsening	The land application process may disturb the soil surface and increase the potential of erosion by water.
Classic Gully	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight Worsening	Manure application equipment will tend to compact the soil in the area of travel.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Not Applicable	Not applicable.
• Animal Waste and other Organics - N	Neutral	The action moves manure around, but does not increase or decrease total N.
• Animal Waste and other Organics - P	Neutral	The action moves manure around, but does not increase or decrease total P.
• Animal Waste and other Organics - K	Neutral	The action moves manure around, but does not increase or decrease total N.
• Commercial Fertilizer - N	Neutral	The action moves manure around, but does not increase or decrease total N.
• Commercial Fertilizer – P	Neutral	The action moves manure around, but does not increase or decrease total P.
• Commercial Fertilizer – K	Neutral	The action moves manure around, but does not increase or

		decrease total N.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Neutral	To the extent manure and wastewater application increase hydraulic loading of the soil, there is some potential for increasing seeps.
Excessive Runoff, Flooding, or Ponding	Neutral	To the extent manure and wastewater application increase hydraulic loading of the soil, there is some potential for increasing runoff and ponding.
Excessive Subsurface Water	Neutral	To the extent manure and wastewater application increase hydraulic loading of the soil, there is some potential for increasing subsurface water.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Neutral	Water content of manure applied from waste storage/treatment facilities can increase soil moisture.
Inefficient Water use on Non-Irrigated Land	Slight Improvement	Water content of manure from waste storage/treatment facilities can increase soil moisture when applied.
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	Neutral	Water content of manure from waste storage/treatment facilities can increase soil moisture when applied.
Insufficient Flows in Water Courses	Neutral	Water content of manure from waste storage/treatment facilities can increase soil moisture and potential returns to water courses when applied.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action decreases the potential for ground water contamination in the animal production area.
• Excessive Salinity	Slight to Moderate Improvement	The action insures manure is properly handled and contaminants are not available for infiltration.

• Harmful Levels of Heavy Metals	Neutral	The action insures manure is properly handled and contaminants are not available for infiltration or runoff. Heavy metals are rarely associated with manure.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	The action insures manure is properly handled and pathogens are not available for infiltration or runoff.
• 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 Substantial Improvement	Proper handling of manure will decrease the potential for surface water contamination in animal production areas.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Slight to Moderate Improvement	The action insures manure is properly handled and reduces the potential for salt runoff.
• Harmful Levels of Heavy Metals	Neutral	Excess heavy metals are rarely associated with manure. There is a decrease in potential surface water contamination in the animal production areas. There may be limited increase in surface water contamination in the areas where manure is land applied.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	Decrease in potential surface water contamination in the animal production areas. May be limited increase in surface water contamination in the areas where manure is land applied.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Worsening	Loading and unloading dry manure can add particulates to the air.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Worsening	Loading and unloading dry manure can add particulates to the air.
Excessive Ozone	Neutral	There is an increase in potential ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Slight to Moderate Worsening	Anaerobic conditions are conducive to the formation of CH4

Ammonia (NH_3)	Slight to Moderate Worsening	Emissions occur as manure is moved and land applied
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Movement and application of manure will increase particulates, VOCs, and can increase odors.
Reduced Visibility	Slight Worsening	increased ammonia emissions can increase PM fines
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Slight Worsening	Manure may contain weed seeds and other contaminants as a result of livestock consuming feed containing weed seed.
Forage Quality and Palatability	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight short-term decrease, lose cropland as system is installed.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Moderate.	
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate to substantial decrease.	
Labor – Change in Management Level	Slight decrease.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Moderate Decrease	Moderate decrease due to increase in manure disposial options.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to 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	Construction impacts (mechanical); buried pipelines.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Substantial Increase	Transporting manure requires energy. The amount required depends on the weight of the material, transport mechanism and the distance transported. Systems using gravity flow may use substantially less energy.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Mulching 484		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		Soil cover reduces erosion from water.	
Wind		Moderate to Substantial Improvement		Soil cover reduces erosion from wind.	
Ephemeral Gully		Moderate to Substantial Improvement		Soil cover reduces erosion from water.	
Classic Gully		Slight Improvement		Mulching will stabilize eroding areas and reduce runoff.	
Streambank		Slight to Moderate Improvement		Mulching will stabilize eroding areas and reduce runoff.	
Shoreline		Slight Improvement		Mulching will stabilize eroding areas and reduce runoff.	
Irrigation Induced		Slight to Substantial Improvement		Surface cover reduces erosion.	
Mass Movement		Slight Worsening		Increased infiltration could exacerbate mass movement during high rainfall.	
Road, Roadsides, and Construction Sites		Moderate to Substantial Improvement		Surface cover reduces erosion.	
SOIL – CONDITION					
Organic Matter Depletion		Slight to Substantial Improvement		Decreased erosion and biomass addition from organic mulches will increase soil organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Slight to Moderate Improvement		Mulch cover may provide some cushion to vehicular traffic. Added biomass from organic mulches over time improve soil structure and resilience to compaction.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight to Moderate Improvement		Reduced evaporation may reduce salt build-up. Added organic matter will buffer salts.	
• Animal Waste and other Organics - N		Slight Improvement		Added carbon immobilizes some N.	
• Animal Waste and other Organics - P		Neutral		Not applicable.	
• Animal Waste and other Organics - K		Slight Improvement		Added carbon immobilizes some K.	
• Commercial Fertilizer - N		Slight Improvement		Added carbon immobilizes some N.	
• Commercial Fertilizer – P		Neutral		Not applicable.	
• Commercial Fertilizer – K		Slight Improvement		Added carbon immobilizes some K.	

• Residual Pesticides	Slight Improvement	Soil biological activity under organic mulches increases over time, which increases pesticide breakdown.
Damage from Sediment Deposition	Slight Improvement	Mulch cover may trap sediment, but mulch reduces soil erosion.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Worsening	Increased infiltration results in more water moving through the profile.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Increased infiltration, reduces runoff and ponding.
Excessive Subsurface Water	Slight Worsening	Increased infiltration results in more water moving through the profile.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	Reduces needed capacity of outlets due to less runoff.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Increases infiltration and decreases evaporation resulting in more available water.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Increases infiltration and decreases evaporation resulting in more available water.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Substantial Improvement	Reduces erosion which results in less sediment in conveyances.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	Reduces erosion which results in less sediment in water bodies.
Aquifer Overdraft	Slight Improvement	Increases infiltration and reduces evaporation, reducing the amount of water needed and improving aquifer recharge.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	The action reduces the need for pesticide use and may increase soil organic matter and biological activity.
• Excessive Nutrients and Organics	Slight Worsening	The action increases infiltration that contributes to nutrient leaching. Also, high organic carbon will cause microbes to immobilize nutrients.
• Excessive Salinity	Slight Worsening	Better infiltration increases leaching potential.
• Harmful Levels of Heavy Metals	Neutral	Higher organic matter levels may bind heavy metals but may increase infiltration.
• Harmful Levels of Pathogens	Neutral	Better infiltration could increase leaching, but increased microbial activity increases competition with pathogens.

• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action reduces runoff, erosion and the need for pesticide use. Impervious mulches may increase runoff.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action reduces erosion and runoff, reducing the loss of dissolved and sediment-bound nutrients from the site.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Less erosion and runoff reduces transport of sediment.
• Excessive Salinity	Slight Improvement	Less runoff reduces transport potential of soluble salts.
• Harmful Levels of Heavy Metals	Slight Improvement	Decreased erosion and runoff reduces heavy metal delivery to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Less erosion and runoff reduces delivery of pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Mulches can stabilize the soil surface, reducing the generation of particulate matter.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Mulches can stabilize the soil surface, reducing the generation of particulate matter.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by mulch material.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight Improvement	If used, vegetation residue stores carbon.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Slight Worsening	Breakdown and decay of organic material is conducive to the formation of CH4
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight to Moderate Improvement	Soil erosion from wind is reduced.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Slight to Moderate Improvement	Materials can insulate sites from low temperatures accelerating plant germination and growth.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Substantial Improvement	Mulching materials improve growing conditions contributing

		to increased plant health and vigor.
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	Slight to Substantial Improvement	Thick and/or impenetrable mulch cover can prevent emergence of undesired species.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight Improvement	Mulching enhances production of any food species planted.
Inadequate Cover/Shelter	Slight Improvement	Mulching enhances cover/shelter conditions.
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	Slight to Moderate Improvement	Soil fertility is improved which increases forage quantity and quality.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate to substantial increase	Moderate to substantial increase during application.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight Decrease	Slight decrease due to conserved

		moisture and reduced erosion.
Risk - Flexibility	Slight Increase	Slight increase due to incorporating practice into the cropping system.
Risk - Timing	Substantial Increase	Substantial increase - practice must applied prior to planting.
Risk – Cash Flow	Slight Increase	Negligible to slight increase because of application cost.
Profitability – Change in Profitability	Situational	Slight decrease to slight increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	Reduced evaporation, erosion and sedimentation, and improved weed suppression reduce the need for irrigation, pesticide use and off site sediment removal. Manufacture, transport and application of mulch materials require varying amounts of energy.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Nutrient Management 590		Baseline Setting:			
		Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Neutral		Soil disturbance to incorporate fertilizer loosens the soil and buries surface residue which can increase erosion. Other application methods do not contribute to erosion.	
Wind		Neutral		Soil disturbance to incorporate fertilizer loosens the soil and buries surface residue which can increase erosion. Other application methods do not contribute to erosion.	
Ephemeral Gully		Neutral		Soil disturbance to incorporate fertilizer loosens the soil and buries surface residue which can increase erosion. Other application methods do not contribute to erosion.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Slight Worsening		Soil disturbance to incorporate fertilizer loosens the soil and buries surface residue which can increase erosion.	
Mass Movement		Not Applicable		Not applicable.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Slight to Moderate Improvement		Applying sufficient nutrients will maintain or enhance biomass production.	
Rangeland Site Stability		Neutral		Soil disturbance to incorporate fertilizer loosens the soil and buries surface residue which can increase erosion. Other application methods do not contribute to erosion.	
Compaction		Slight to Moderate Worsening		Field operations on moist soils cause soil compaction.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight to Moderate Improvement		Decreased excess nutrients results in reduced salts and other	

		contaminants.
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Proper application results in reduced risks of contamination from N.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Proper application results in reduced risks of contamination from P.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Proper application results in reduced risks of contamination from K.
• Commercial Fertilizer - N	Slight to Moderate Improvement	Proper application results in reduced risks of contamination from N.
• Commercial Fertilizer – P	Slight to Moderate Improvement	Proper application results in reduced risks of contamination from P.
• Commercial Fertilizer – K	Slight to Moderate Improvement	Proper application results in reduced risks of contamination from K.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Slight Improvement	Better vegetative growth 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	Neutral	Excess nitrogen promotes shoot growth in relation to root growth.
Inefficient Water use on Non-Irrigated Land	Neutral	Excess nitrogen promotes shoot growth in relation to root growth.
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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Substantial Improvement	The amount and timing of nutrient application are balanced with plant needs.
• Excessive Salinity	Slight Improvement	Proper nutrient application should reduce salinity if nutrient source contains salts.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	The action limits the total amount of heavy metals that can be applied to a site ensuring that

		harmful levels are not leached to groundwater.
• Harmful Levels of Pathogens	Slight Improvement	The action limits the amount of manure that can be applied thus preventing harmful levels of pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Substantial Improvement	Source, amount, timing, and method of application are managed to maximize nutrient use efficiency by the crop and to minimize the potential for nutrient losses in leaching and runoff.
• Excessive Suspended Sediment and Turbidity	Neutral	Proper nutrient application will minimize losses due to runoff.
• Excessive Salinity	Slight Improvement	Proper nutrient application should reduce salinity if nutrient source contains salts.
• Harmful Levels of Heavy Metals	Slight to Substantial Improvement	Changing pH will alter the solubility of metals. The action will reduce the application rate of heavy metals if required.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Decrease application of pathogens if nutrient source contains pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	The proper application of nutrients can reduce the production of particulates.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Substantial Improvement	The proper application of nutrients can reduce the production of particulates and minimize volatilization losses during and immediately after application.
Excessive Ozone	Slight to Substantial Improvement	There is a decrease in potential ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight Improvement	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)	Slight to Moderate Improvement	Proper nutrient management reduces methane production.
Ammonia (NH_3)	Slight to Moderate Improvement	Proper nutrient management reduces NH3 production.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Moderate to Substantial	Proper management and

	Improvement	application/incorporation reduces volatilization, VOCs, and particle transport.
Reduced Visibility	Slight to Moderate Improvement	Reduction in 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 optimized to enhance health and vigor of desired species.
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	Slight Improvement	Management enhances production of any food species planted.
Inadequate Cover/Shelter	Slight Improvement	Management enhances cover/shelter conditions.
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	Nutrients are managed to ensure optimal production and nutritive value of the forage used by livestock.

Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Slight to Moderate Improvement	Management improves livestock water quality.
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	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Slight increase	Slight increase to take soil test, calibrate equipment, apply accurate rates, keep records.
Risk - Yield	Slight Decrease	Slight decrease due to more effective use of nutrients.
Risk - Flexibility	Slight Increase	Slight increase due to closer management of nutrient use.
Risk - Timing	Substantial Increase	Substantial increase - practice must be applied in an effective manner.
Risk – Cash Flow	Slight Decrease	Slight decrease due to higher yields and reduced costs.
Profitability – Change in Profitability	Situational	Slight decrease or increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	The energy associated with nitrogen fertilizers may be increased or decreased depending on the farm nutrient balance/budget.
Underutilization of Non-Fossil Energy Resources	Slight to Substantial Decrease	When nitrogen needs of the crop can be supplied by organic sources, accounting for these sources in the farm nutrient budget will save embodied energy.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Obstruction Removal 500		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Neutral	The action requires that appropriate erosion control practices will be applied on disturbed areas.
Wind	Neutral	The action requires that appropriate erosion control practices will be applied on disturbed areas.
Ephemeral Gully	Neutral	The action requires that appropriate erosion control practices will be applied on disturbed areas.
Classic Gully	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight Worsening	Equipment used in removing obstructions will tend to increase compaction in travel areas.
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	Erosion control practices are required.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or	Not Applicable	Not applicable.

Ponding		
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Slight to Moderate Improvement	The action may remove obstruction that catches snow.
Inadequate Outlets	Slight to Moderate Improvement	The action may remove obstacles blocking 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 Substantial Improvement	The action maybe be used to remove sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	The action maybe be used to remove sediment.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Slight Improvement	The action may remove obstacles blocking inlets to the water course.
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Neutral	Carbon is released if the obstruction materials are burned.
• 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Worsening	Construction activities increase particulates. Mitigation and appropriate timing are part of

		practice design.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Not Applicable	Not applicable.
Inadequate Cover/Shelter	Slight to Moderate Worsening	Debris removal may remove habitat used for cover/shelter by wildlife.
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	Not Applicable	Not applicable.
Inadequate Shelter	Slight Worsening	The action may remove structures used for 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	Not applicable.	Not applicable.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Not applicable.	Not applicable.
Capital – Credit and Farm Program Eligibility	Situational.	

Labor - Labor	Negligible	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase because of application cost.
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	Adverse effects to historic structures and landscapes.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pond Sealing or Lining, Compacted Clay Treatment 521D		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		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Slight Improvement		Banks are protected by liners that extend above the water line.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight Improvement		Lining decreases contamination immediately below the pond.	
• Animal Waste and other Organics - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Residual Pesticides		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Slight Improvement		Reduction in seepage due to less water seeping from ponds.	
Excessive Runoff, Flooding, or		Not Applicable		Not applicable.	

Ponding		
Excessive Subsurface Water	Slight to Moderate Improvement	Reduced seepage from the pond will result in less contribution to the ground water, particularly in the immediate area of the pond.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
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	Slight Worsening	Liner will reduce the potential for seepage and recharge of the aquifer.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action reduces the potential for seepage.
• Excessive Salinity	Moderate Improvement	The action prevents contaminants in the pond from moving below the pond to the groundwater.
• Harmful Levels of Heavy Metals	Slight Improvement	The action limits seepage to prevent leaching of heavy metals from the pond.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	The action limits seepage to prevent leaching of pathogens from the pond.
• 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	Liners reduce or prevent seepage losses from waste storage ponds, reducing the delivery of nutrients to surface water.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Available water to facilitate grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
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	Slight Improvement	Duration of water in pond is extended.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Moderate to Substantial Improvement	Lining will prolong availability of water for livestock.

Stress and Mortality	Slight to Substantial Improvement	Reliable water supply decreases stress on animals.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Not applicable.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Negligible to slight decrease due to reduction of seepage losses.
Risk - Flexibility	Substantial Decrease	Substantial decrease due to reduction of seepage losses.
Risk - Timing	Moderate Increase	Moderate increase - practice should be applied prior to excessive seepage losses.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to application costs.
Profitability – Change in Profitability	Situational	Moderate decrease to substantial increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT		
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources		
Underutilization of Non-Fossil Energy Resources		

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Open Channel 582		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		Not Applicable		Not Applicable	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Slight to Substantial Improvement		Stabilized channel bottom and sides.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
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		Slight Improvement		Channel intercepts runoff that might otherwise cause deposition	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Slight Improvement		Water conveyance reduces seepage.	
Excessive Runoff, Flooding, or Ponding		Substantial Improvement		Channel capacity accommodates runoff and reduces flooding and ponding.	
Excessive Subsurface Water		Slight to Substantial Improvement		Provides suitable outlets and facilitates drainage.	
Drifted Snow		Not Applicable		Not applicable.	
Inadequate Outlets		Substantial Improvement		Provides adequate outlet capacity.	
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	Improved channel conveyance is more efficient mechanism for sediment transport.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Worsening	Improved channel conveyance is more efficient mechanism for carrying sediment to water bodies.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Moderate Improvement	Improved channels will increase flows to other water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Neutral	Rapid removal of water off site has the potential to decrease infiltration, thus decreasing contamination of ground water.
• Excessive Salinity	Neutral	Rapid removal of water off site has the potential to decrease infiltration, thus decreasing contamination of ground water.
• 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight Worsening	Rapid removal of water off site has the potential to decrease infiltration, thus increasing contamination of surface water.
• Excessive Suspended Sediment and Turbidity	Neutral	Change in alignment, capacity, and velocity will cause a temporary increase in sediments and turbidity.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Slight Worsening	Rapid movement of water off site will tend to move contaminants in surface water.
• Harmful Temperatures	Neutral	The action conveys water quickly and will not result in increased surface water temperatures.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		

• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Neutral	Constructing or improving channels may increase or decrease food for fish and wildlife.
Inadequate Cover/Shelter	Neutral	Constructing or improving channels may increase or decrease cover/shelter for fish and wildlife.
Inadequate Water	Slight to Moderate Worsening	Flow through the channel is accelerated reducing slow-water habitat.
Inadequate Space	Neutral	Constructing or improving channel may increase or decrease food and habitat for fish and wildlife depending on species and the vegetation of the stabilized channel..
Habitat Fragmentation	Slight to Moderate Worsening	Constructing channels will fragment vegetation and habitats.
Imbalance Among and Within Populations	Neutral	Constructing or improving channel may increase or decrease food and habitat for fish and wildlife depending on species and the vegetation of the stabilized channel..
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or	Neutral	Activities are designed,

Proposed for Listing Under the Endangered Species Act		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	Not Applicable	Not applicable.
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 Substantial	N/A, if currently farmed, substantial if change from non-use to crop.
Land – Land in Production	Slight decrease	Slight decrease, channel banks taken out of production.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Substantial Increase	Substantial increase due to construction cost.
Profitability – Change in Profitability	Slight to moderate increase.	
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	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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Anionic Polyacrylamide (PAM) Erosion Control 450		Baseline Setting:			
		Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Moderate Improvement	Application aggregates soil particles making them less susceptible to detachment from flowing water.
Wind	Slight to Moderate Improvement	Application aggregates soil particles making them less susceptible to detachment from wind energy.
Ephemeral Gully	Slight to Moderate Improvement	Application aggregates soil particles making them less susceptible to detachment from concentrated flow.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Slight to Substantial Improvement	Pam reduces sediment transport.
Mass Movement	Not Applicable	Not applicable..
Road, Roadsides, and Construction Sites	Slight to Substantial Improvement	Pam reduces sediment transport.
SOIL – CONDITION		
Organic Matter Depletion	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Substantial Improvement	Pam reduces sediment transport off of the field that otherwise would deposit in conveyance ways.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	Pam reduces sediment transport off of the field that otherwise would deposit in water bodies.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• 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 Substantial Improvement	The action decreases runoff and erosion.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Because irrigation-induced erosion is reduced, there is less delivery of sediment-attached nutrients to be carried off-site to surface water.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	The action reduces erosion and sediment load
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Slight Improvement	PAM will reduce transport of heavy metals attached to soils.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Substantial Improvement	The action reduces the susceptibility of soil to wind erosion.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Substantial Improvement	The action reduces the susceptibility of soil to wind erosion.
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight to Moderate Improvement	Reduce fugitive dust emissions
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
• Declining Species, Species of Concern	Not Applicable	Not applicable.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Situational.	
Capital - Total Investment Cost	Slight to moderate.	
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight increase.	
Labor – Change in Management Level	Negligible to slight increase.	
Risk - Yield	Moderate Decrease	Moderate decrease due to

		increased irrigation efficiency.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Slight increase due to cost of product.
Profitability – Change in Profitability	Slight to Moderate Increase	Slight to moderate increase depending on increased yields.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	Sediment reduction reduces energy needed to clean out deposition areas and irrigation filtration systems. Less energy is required for pumping with greater water delivery system efficiency.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pasture & Hay Planting 512		Baseline Setting:			
		Appropriate Land Use(s): Hay, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Moderate to Substantial Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Wind		Moderate to Substantial Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Ephemeral Gully		Moderate to Substantial Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Classic Gully		Slight Improvement		There will be an increase of vegetative cover and reduced runoff in the watershed in the long-term.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Slight to Substantial Improvement		There will be an improvement of protective vegetative cover and reduced runoff.	
Mass Movement		Neutral		The increase in vegetation enhances soil binding by root mass and removal of soil moisture by increased transpiration. There may be a slight worsening because of increase in infiltration.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					

Organic Matter Depletion	Moderate to Substantial Improvement	There will be enhanced biomass production, root development, litter accumulation, increased biological activity, and/or reduced tillage if associated with change in land use.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Moderate to Substantial Improvement	There will be enhanced biomass production, root development, litter accumulation, increased biological activity, and/or reduced tillage if associated with change in land use.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight to Substantial Improvement	Site planted to adapted species could contribute to the reduction of saline seep areas. There would be a negligible decrease of selenium, boron, and heavy metals because of very limited uptake by pasture plants.
• Animal Waste and other Organics - N	Moderate to Substantial Improvement	There will be increased N use by grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration.
• Animal Waste and other Organics - P	Moderate to Substantial Improvement	There will be increased P use by grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration.
• Animal Waste and other Organics - K	Moderate to Substantial Improvement	There will be increased K use by grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration on sandy soils.
• Commercial Fertilizer - N	Moderate to Substantial Improvement	There will be increased N use by grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration.
• Commercial Fertilizer – P	Moderate to Substantial Improvement	There will be increased P use by grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration.
• Commercial Fertilizer – K	Moderate to Substantial Improvement	There will be increased K use by grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration on sandy soils.
• Residual Pesticides	Slight to Moderate Improvement	Proper seedbed preparation and

		the establishment of a healthy, vigorous stand will reduce pesticide use in general. There may be a slight potential for increased leaching because of improved infiltration.
Damage from Sediment Deposition	Slight to Moderate Improvement	There will be a reduction in erosion due to increased cover and reduced overland flow depending on management.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not Applicable
Excessive Seepage	Neutral	There will be an increase in plant uptake and transpiration in the long-term. There may be a slight to moderate increase in seepage because of increased infiltration.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	There will be an increase in cover and infiltration, reducing runoff and overland flow.
Excessive Subsurface Water	Slight Improvement	There will be increased plant uptake and transpiration depending on the species selected.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	Needed capacity of outlets is reduced due to decreased runoff.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	The plant species selected will be adapted to meet the seasonal distribution of moisture.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Reduced erosion due to increased vegetative cover, reduced runoff, and increased infiltration.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Reduced erosion due to increased vegetative cover, reduced runoff, and increased infiltration.
Aquifer Overdraft	Neutral	Plant species will be selected that are adapted to the amount, frequency, and availability of water, whether on irrigated or non-irrigated lands.
Insufficient Flows in Water Courses	Slight Improvement	Selection of adapted species will increased cover and improve infiltration, enhancing interflow.
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	Permanent vegetation will take up excess nutrients.

• Excessive Salinity	Slight Improvement	There will be an increase in plant uptake when adapted plant species are used. There is the slight potential for leaching of salts into ground water because of increased infiltration.
• Harmful Levels of Heavy Metals	Slight Improvement	Certain plant species can take up heavy metals. Increased infiltration may increase the potential of heavy metal movement to groundwater.
• Harmful Levels of Pathogens	Slight Improvement	Increased soil microbial activity will enhance competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action decreases runoff and erosion.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.
• Excessive Salinity	Slight Improvement	Dense vegetation will increase infiltration and reduce runoff. Planting of pasture species in recharge areas may reduce movement of salts to seep areas and surface waters.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Increased uptake by some pasture plants and reduced erosion and runoff may reduce off-site movement of heavy metals attached to sediment.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	The improved vegetative cover and increased soil microbiological activity will reduce movement of pathogens, however a land use change to pasture may increase potential pathogen levels.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Establishing permanent vegetation reduces the potential for generation of particulates by wind erosion.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Establishing permanent vegetation reduces the potential for generation of particulates by 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)	Slight Worsening	NH3 emissions may increase with fertilizer application.
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 – SUITABLIITY		
Plants not Adapted or Suited	Substantial Improvement	There will be a selection of well-adapted and compatible species, varieties, and/or cultivars for each site.
PLANTS - CONDITION		
Productivity, Health, and Vigor	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	Substantial Improvement	The selection of adapted plant species will have adequate nutritive value and palatability for the intended use.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Planted species provide food for certain species.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Plant species are selected that are well-adapted and compatible to the site and provide cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight Improvement	Selection of adapted species may accommodate species of interest.

Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Slight Improvement	Increase forage supply and cover.
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	Substantial Improvement	Plant species will be selected that accommodate seasonal livestock production and nutritional needs.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Slight to Substantial Improvement	Improved forage cultivars will improve livestock health.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to Substantial	N/A, if currently grazed, substantial if change from crop, non-use or wildlife.
Land – Land in Production	Substantial increase	Substantial increase if land brought into production.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Moderate.	
Capital – Annual Cost	Not applicable.	Not applicable.
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate to substantial increase	Moderate to substantial increase in seedbed preparation and planting.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease due to incresed yields.
Risk - Flexibility	Slight Increase	Slight increase due to deferment of affected area until establishment is complete.
Risk - Timing	Substantial Increase	Substantial increase - practice implemented during proper climatic and establishment period.
Risk – Cash Flow	Slight Increase	Slight increase because of implementation cost.
Profitability – Change in Profitability	Slight increase.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pest Management 595		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Substantial Improvement	Surface runoff is decreased by changing the way pests are managed and/or applying mitigation techniques.
Wind	Slight to Substantial Improvement	Wind erosion is decreased by changing the way pests are managed and/or applying mitigation techniques.
Ephemeral Gully	Slight to Substantial Improvement	Concentrated flow erosion is decreased by changing the way pests are managed and/or applying mitigation techniques.
Classic Gully	Slight to Substantial Improvement	Gully erosion is decreased by changing the way pests are managed and/or applying mitigation techniques.
Streambank	Neutral	Pest management activities generally have a negligible effect on streambank erosion.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Slight to Substantial Improvement	Surface runoff is decreased by changing the way pests are managed and/or applying mitigation techniques.
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight to Moderate Improvement	Organic matter depletion is decreased by changing the way pests are managed and/or applying mitigation techniques.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight to Moderate Improvement	Soil compaction is decreased by changing the way pests are managed and/or applying mitigation techniques.
Subsidence	Slight to Moderate Improvement	Oxidation of organic matter is decreased by changing the way psts are managed and/or applying mitigation techniques.
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	Slight to Substantial Improvement	Residual pesticides are decreased by changing the way pests are managed and/or applying mitigation techniques.
Damage from Sediment Deposition	Slight to Moderate Improvement	Sedimentation is decreased by changing the way pests are managed and/or applying mitigation techniques.
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 Improvement	If this resource concern is negatively impacted by pests, application of pest management (IPM where it is available) may improve the beneficial use of available water.
Inefficient Water use on Non-Irrigated Land	Slight Improvement	Water use is more efficient by changing the way pests are managed and/or applying mitigation techniques.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Sedimentation is decreased by changing the way pests are managed and/or applying mitigation techniques.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Sedimentation is decreased by changing the way pests are managed and/or applying mitigation techniques.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Substantial Improvement	Residual pesticides are decreased by changing the way pests are managed and/or applying mitigation techniques.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• 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	Substantial Improvement	Residual pesticides are decreased by changing the way pests are managed and/or applying mitigation techniques.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Suspended sediment is decreased by changing the way pests are managed and/or applying mitigation techniques.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	The suspension component of wind erosion is decreased by changing the way pests are managed and/or applying mitigation techniques.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	The suspension component of wind erosion is decreased by changing the way pests are managed and/or applying mitigation techniques.
Excessive Ozone	Not Applicable	Not Applicable
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate Improvement	The release of CO2 by ground disturbing activities is decreased by changing the way pests are managed and/or applying mitigation techniques.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Substantial Improvement	Pesticide drift is decreased by changing the way pests are managed and/or applying mitigation techniques.
Objectionable Odors	Moderate to Substantial Improvement	Objectionable odors are decreased by changing the way pests are managed and/or applying mitigation techniques.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Substantial Improvement	There will be a selection of well-adapted and compatible species, varieties, and/or cultivars for each site.

PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Pest management (IPM where it is available) reduces plant damage and competition from pests.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed for Listing Under the Endangered Species Act	Slight to Substantial Improvement	Reducing pest competition, pest damage, and pest management environmental risks to either threatened or endangered species or their habitat, diminishes the potential for extinction.
• Declining Species, Species of Concern	Slight to Substantial Improvement	Reducing pest competition, pest damage, and pest management environmental risks to either threatened or endangered species or their habitat, diminishes the potential for extinction.
Noxious and Invasive Plants	Substantial Improvement	Pest management (IPM where it is available) reduces plants of concern.
Forage Quality and Palatability	Moderate to Substantial Improvement	Pest management (IPM where it is available) will reduce plant damage and competition from pests resulting in improved forage nutritive value and palatability.
Wildfire Hazard	Slight to Substantial Improvement	Undesired plants are managed thereby reducing hazard.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Pest management (IPM where it is available) reduces plant damage and competition from pests resulting in increased fish and wildlife food quantity and quality.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Pest management (IPM where it is available) reduces plant damage and competition from pests resulting in improved fish and wildlife cover/shelter.
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	Neutral	Activities are designed,

Concern		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	Pest management (IPM where it is available) reduces plant damage and competition from pests resulting in improved livestock feed and forage quantity and quality.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Moderate to Substantial Improvement	Reducing pest damage to domestic animals decreases illness and death.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase to scout crops.
Labor – Change in Management Level	Moderate to substantial increase	Moderate to substantial increase for selecting control system, timing, calibration & records.
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease due to healthier environment for crop production.
Risk - Flexibility	Slight Increase	Slight increase due to closer management capabilities and following chemical label.
Risk - Timing	Substantial Increase	Substantial increase - practice must be applied when needed.
Risk – Cash Flow	Slight Decrease	Slight decrease because of higher yields and reduced costs.
Profitability – Change in Profitability	Situational	Slight decrease or increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	The energy needed for pest control depends on the mechanisms used.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pipeline 516		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		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Neutral		Short term increase along pipeline route.	
Compaction		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
Inefficient Water use on Non-Irrigated Land		Not Applicable		Not applicable.	
Reduced Capacity of Conveyances by Sediment Deposition		Not Applicable		Not applicable.	
Reduced Storage of Water Bodies by		Not Applicable		Not applicable.	

Sediment Accumulation		
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Available water to facilitate grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	Pipeline facilitates the distribution of water to livestock.
Stress and Mortality	Moderate to Substantial Improvement	Pipelines facilitate the distribution and availability of water reducing stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Slight Decrease	Slight short-term decrease
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease.	
Labor – Change in Management Level	Slight to moderate decrease.	
Risk - Yield	Not Applicable.	Not Applicable.
Risk - Flexibility	Moderate Decrease	Moderate decrease due to enhanced capability of grazing area.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase because of implementation cost.
Profitability – Change in Profitability	Situational	Slight decrease to moderate increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic	Slight to Substantial Increase	Construction impacts

Properties Present or Suspected to be PRESENT		(mechanical).
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	Piping livestock water eliminates the need for hauling.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pond 378		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	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Slight to Substantial Improvement	Stabilization of the gully due to the embankment.
Streambank	Slight Improvement	Reduced peak flows downstream from impoundment.
Shoreline	Slight to Moderate Worsening	Increase in shoreline.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	Sediment is trapped in embankment ponds.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Worsening	Possible seepage from ponding of water.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Runoff and peak flows reduced.
Excessive Subsurface Water	Slight Worsening	Seepage from ponded water.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Provides permanent water storage for irrigation.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Provides permanent water storage.

Reduced Capacity of Conveyances by Sediment Deposition	Moderate Improvement	Sediment is trapped in impoundment.
Reduced Storage of Water Bodies by Sediment Accumulation	Neutral	Limited sediment deposition.
Aquifer Overdraft	Slight Improvement	Seepage from the impoundment impacts recharge and water storage reduces demands on aquifer.
Insufficient Flows in Water Courses	Slight Worsening	Controlled release of stored water provides flow downstream of structure.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight Worsening	Nutrients impounded could contaminate groundwater.
• 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action impounds water reducing the delivery of nutrients to surface water downstream.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Suspended sediments are trapped.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Neutral	Water released from impoundments may be warmer or cooler than receiving waters, depending on site conditions.
• Harmful Levels of Pathogens	Slight to Moderate Worsening	Because of aquatic animal feed or decaying vegetation, or from excessive nutrients in runoff
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Available water to facilitate grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Ponds provide plant and animal foods for certain fish and wildlife.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Plant and structure provide cover/shelter for fish and wildlife.
Inadequate Water	Moderate to Substantial Improvement	Ponds provide water for wildlife; entrapment, especially of fish and salamanders, as waters recede or are withdrawn, should be minimized to the extent possible.
Inadequate Space	Slight to Moderate Improvement	Impoundments create additional pond-type habitat/space for species requiring such habitat.
Habitat Fragmentation	Slight to Moderate Improvement	Multiple ponds can restore the number and connectivity of this kind of habitat.
Imbalance Among and Within Populations	Slight to Moderate Improvement	Ponds and adjacent areas provide variety and diversity for wildlife communities.
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	Not Applicable	Not applicable.

Feed and Forage		
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	Ponds provide stock water.
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Substantial	Substantial, land use changes to water storage.
Land – Land in Production	Substantial decrease	Substantial decrease, water storage takes land out of production.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Substantial.	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 depending on use of pond.
Labor – Change in Management Level	Slight to moderate increase	Slight to moderate increase depending on use of pond.
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Moderate to Substantial Increase	Moderate to substantial increase due to high construction cost.
Profitability – Change in Profitability	Situational	Moderate decrease to substantial increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Construction impacts (mechanical); inundation, shore erosion.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	Collection of rainwater/runoff for conservation purposes can save energy associated with pumping.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pond Sealing or Lining, Bentonite Sealant 521C		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		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Slight Improvement		Banks are protected by liners that extend above the water line.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight Improvement		Lining decreases contamination immediately below the pond.	
• Animal Waste and other Organics - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Residual Pesticides		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Slight Improvement		Reduction in seepage due to less water seeping from ponds.	
Excessive Runoff, Flooding, or		Not Applicable		Not applicable.	

Ponding		
Excessive Subsurface Water	Slight to Moderate Improvement	Reduced seepage from the pond will result in less contribution to the ground water, particularly in the immediate area of the pond.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
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	Slight Worsening	Liner will reduce the potential for seepage and recharge of the aquifer.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action reduces the potential for seepage.
• Excessive Salinity	Moderate Improvement	The action prevents contaminants in the pond from moving below the pond to the groundwater.
• Harmful Levels of Heavy Metals	Slight Improvement	The action limits seepage to prevent leaching of heavy metals from the pond.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	The action limits seepage to prevent leaching of pathogens from the pond.
• 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	Liners reduce or prevent seepage losses from waste storage ponds, reducing the delivery of nutrients to surface water.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Available water to facilitate grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
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	Slight Improvement	Duration of water in pond is extended.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Moderate to Substantial Improvement	Lining will prolong availability of water for livestock.

Stress and Mortality	Slight to Substantial Improvement	Reliable water supply decreases stress on animals.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Not applicable.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Negligible to slight decrease due to reduction of seepage losses.
Risk - Flexibility	Substantial Decrease	Substantial decrease due to reduction of seepage losses.
Risk - Timing	Moderate Increase	Moderate increase - practice should be applied prior to excessive seepage losses.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to application costs.
Profitability – Change in Profitability	Situational	Moderate decrease to substantial increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	On freshwater ponds water loss is prevented, saving energy associated with pumping
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pond Sealing or Lining, Flexible Membrane 521A		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		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Slight Improvement		Banks are protected by liners that extend above the water line.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight Improvement		Lining decreases contamination immediately below the pond.	
• Animal Waste and other Organics - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Residual Pesticides		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Slight Improvement		Reduction in seepage due to less water seeping from ponds.	
Excessive Runoff, Flooding, or		Not Applicable		Not applicable.	

Ponding		
Excessive Subsurface Water	Slight to Moderate Improvement	Reduced seepage from the pond will result in less contribution to the ground water, particularly in the immediate area of the pond.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
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	Slight Worsening	Liner will reduce the potential for seepage and recharge of the aquifer.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	The action will retain a substantial amount of contaminants in the pond. The magnitude of the effect will depend on the integrity of the pond before lining.
• Excessive Salinity	Moderate Improvement	The action prevents contaminants in the pond from moving below the pond to the groundwater.
• Harmful Levels of Heavy Metals	Slight Improvement	The action limits seepage to prevent leaching of heavy metals from the pond.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	The action limits seepage to prevent leaching of pathogens from the pond.
• 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	Liners reduce or prevent seepage losses from waste storage ponds, reducing the delivery of nutrients to surface water.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Available water to facilitate grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
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	Slight Improvement	Duration of water in pond is extended.
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	Not Applicable	Not applicable.

Feed and Forage		
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Moderate to Substantial Improvement	Lining will prolong availability of water for livestock.
Stress and Mortality	Slight to Substantial Improvement	Reliable water supply decreases stress on animals.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Not applicable.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Negligible to slight decrease due to reduction of seepage losses.
Risk - Flexibility	Substantial Decrease	Substantial decrease due to reduction of seepage losses.
Risk - Timing	Moderate Increase	Moderate increase - practice should be applied prior to excessive seepage losses.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to application costs.
Profitability – Change in Profitability	Situational	Moderate decrease to substantial increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	On freshwater ponds water loss is prevented, saving energy associated with pumping
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pond Sealing or Lining, Soil Dispersant 521B		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		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Slight Improvement		Banks are protected by liners that extend above the water line.	
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		Not Applicable		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		Lining decreases contamination immediately below the pond, but salts often used as dispersants can migrate below the pond.	
• Animal Waste and other Organics - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Animal Waste and other Organics - K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer - N		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – P		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Commercial Fertilizer – K		Slight Improvement		Lining decreases contamination immediately below the pond used to store animal waste.	
• Residual Pesticides		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Slight Improvement		Reduction in seepage due to less	

		water seeping from ponds.
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.
Excessive Subsurface Water	Slight to Moderate Improvement	Reduced seepage from the pond will result in less contribution to the ground water, particularly in the immediate area of the pond.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Retention of water in pond will allow more optimal use of water.
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	Slight Worsening	Liner will reduce the potential for seepage and recharge of the aquifer.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Liner will retain a substantial amount of contaminants in the pond. The magnitude of the effect will depend on the integrity of the pond before lining.
• Excessive Salinity	Moderate Improvement	The action prevents contaminants in the pond from moving below the pond to the groundwater.
• Harmful Levels of Heavy Metals	Slight Improvement	The action limits seepage to prevent leaching of heavy metals from the pond.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	The action limits seepage to prevent leaching of pathogens from the pond.
• 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	Liners reduce or prevent seepage losses from waste storage ponds, reducing the delivery of nutrients to surface water.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.

• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Available water to facilitate grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
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	Slight Improvement	Duration of water in pond is extended.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Moderate to Substantial Improvement	Lining will prolong availability of water for livestock.
Stress and Mortality	Slight to Substantial Improvement	Reliable water supply decreases stress on animals.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Not applicable.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Negligible to slight decrease due to reduction of seepage losses.
Risk - Flexibility	Substantial Decrease	Substantial decrease due to reduction of seepage losses.
Risk - Timing	Moderate Increase	Moderate increase - practice should be applied prior to excessive seepage losses.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to application costs.
Profitability – Change in Profitability	Situational	Moderate decrease to substantial increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	On freshwater ponds water loss is prevented, saving energy associated with pumping
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Prescribed Burning 338		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Substantial Improvement	Improved plant production and vegetative cover reduces erosion from water.
Wind	Slight to Moderate Improvement	Improved plant production and vegetative cover reduces erosion from wind.
Ephemeral Gully	Slight to Substantial Improvement	Improved plant production and vegetative cover reduces erosion from water.
Classic Gully	Slight Improvement	Improved plant production and vegetative cover reduces erosion from water.
Streambank	Slight Improvement	Improved plant production and vegetative cover decreases runoff and duration to streams.
Shoreline	Slight Improvement	Improved plant production and vegetative cover decreases runoff and duration to shorelines.
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 Improvement	Improved plant production and vegetative cover decreases depletion.
Rangeland Site Stability	Slight to Moderate Improvement	Improved plant production and vegetative cover increases surface stability.
Compaction	Not Applicable	Not applicable.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight Worsening	Burning mineralizes organic materials.
• Animal Waste and other Organics - N	Slight Improvement	Fire causes mineralization of N in plant materials and in the soil near the surface.
• Animal Waste and other Organics - P	Slight Improvement	Fire causes mineralization of P in plant materials and in the soil near the surface.
• Animal Waste and other Organics - K	Slight Improvement	Fire causes mineralization of K in plant materials and in the soil

		near the surface.
• Commercial Fertilizer - N	Slight Improvement	Fire causes mineralization of N in plant materials and in the soil near the surface.
• Commercial Fertilizer – P	Slight Improvement	Fire causes mineralization of P in plant materials and in the soil near the surface.
• Commercial Fertilizer – K	Slight Improvement	Fire causes mineralization of K in plant materials and in the soil near the surface.
• Residual Pesticides	Slight Improvement	Residues in plants and litter are released to the atmosphere through burning.
Damage from Sediment Deposition	Slight Improvement	Improved plant production and vegetative cover decreases runoff and deposition.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Slight to Substantial Improvement	Restoration and/or maintenance of the function and structure of the ecological site.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Improved plant production and vegetative cover reduces runoff.
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	Improved plant production and vegetative cover reduces runoff.
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 Improvement	Improved plant production and vegetative cover reduces runoff and sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Improved plant production and vegetative cover reduces runoff and sediment.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight Improvement	The action increases plant vigor and uptake of 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action increases plant vigor and uptake of nutrients.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Improved plant production and vegetative cover reduces runoff

		and sediment.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Slight Improvement	Initial removal of vegetation is followed by improved plant growth.
• Harmful Temperatures	Neutral	The action is designed or mitigated to maintain surface water temperatures.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Increased plant vigor reduces the potential for generation of particulates by wind erosion.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Increased plant vigor reduces the potential for generation of particulates by wind erosion.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced incidence of wildfire. There is a short-term increase in ozone precursors (NOx and VOC emissions) during the burn.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Moderate to Substantial Improvement	CO2 emissions are decreased with the decreased incidence of wildfire.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Moderate Worsening	Combustion of organic material reduces CH4 emissions.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Fire increases smoke, particulates, and associated odors.
Reduced Visibility	Neutral	Smoke can substantially affect visibility temporarily.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Slight to Moderate Worsening	Removal of tall vegetation eliminates shade and increases temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Growing conditions are altered to allow more suitable species to grow.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Growing conditions are altered to enhance health and productivity of the more desirable plants.
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	Activities are designed and carried out to manage undesirable vegetation.
Forage Quality and Palatability	Substantial Improvement	Sites are restored improving forage quality and palatability.
Wildfire Hazard	Substantial Improvement	Activities are carried out to reduce fuel loading.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Growing conditions are altered to provide a diverse plant community with adequate food for wildlife.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Growing conditions are altered to provide a diverse plant community with adequate cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Moderate to Substantial Improvement	Burning can restore desired habitats/space.
Habitat Fragmentation	Moderate to Substantial Improvement	Burning can restore and reconnect desired habitats/space.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Stand is rejuvenated and more productive, increasing carrying capacity.
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	Substantial Improvement	Plant and/or site conditions are restored to improve production and quality of desirable forage species.
Inadequate Shelter	Slight Worsening	Some shrubs and trees which provide shelter are removed from area.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Slight to Moderate Improvement	Improved conditions result in more desirable plants and the control of poisonous plants.

HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Moderate increase	Moderate increase, more land is reclaimed for production.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Slight.	Slight.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase depending on period of burning.
Labor – Change in Management Level	Slight increase	Slight increase determining safe time and management logistics or burning.
Risk - Yield	Slight Decrease	Slight decrease due to improved forage production quality and quantity.
Risk - Flexibility	Moderate Increase	Moderate increase due to preparation of area prior to burn.
Risk - Timing	Substantial Increase	Substantial increase - practice must be applied according to climatic and fuel conditions.
Risk – Cash Flow	Slight Decrease	Slight decrease due to higher yield.
Profitability – Change in Profitability	Slight to moderate increase.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Adverse effects to historic structures and landscapes.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	This practice reduces energy requirements for fire fighting and pest control.
Underutilization of Non-Fossil Energy Resources	Slight Increase	Burning removes potential biomass fuel.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Prescribed Grazing 528		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Moderate to Substantial Improvement	Improving the health and vigor of plant communities will increase vegetative cover and/or water infiltration and decrease erosion by water.
Wind	Moderate to Substantial Improvement	Improving the health and vigor of plant communities will increase vegetative cover and decrease erosion by wind.
Ephemeral Gully	Moderate to Substantial Improvement	Improving the health and vigor of plant communities will increase vegetative cover and/or water infiltration and decrease erosion by water.
Classic Gully	Slight to Moderate Improvement	There will be decreased overland flow, enhanced vegetation cover.
Streambank	Slight to Substantial Improvement	There will be enhancement of protective riparian vegetation.
Shoreline	Slight to Substantial Improvement	There will be enhancement of protective shoreline vegetation.
Irrigation Induced	Slight to Moderate Improvement	There will be an improvement in vegetative cover.
Mass Movement	Neutral	There will be improved stability of soil profile by root systems of the more vigorous plant communities.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Moderate to Substantial Improvement	There will be an increase in vegetative cover, deeper root systems, increased soil organic material and biological activity, and improved nutrient cycling.
Rangeland Site Stability	Moderate to Substantial Improvement	There will be an increase in vegetative cover, deeper root systems, increased soil organic material and biological activity, and improved nutrient cycling.
Compaction	Slight to Substantial Improvement	Soil bulk density decreases on long-term basis because of an increase in vegetative cover, deeper root systems, and increased soil organic material.

		There may be a slight increase in bulk density in the short term on intensively managed grazing systems.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight to Moderate Improvement	There will be increased vigor of plant community in recharge areas which may uptake salts, however a slight worsening may be possible in areas where intensive grazing systems are implemented.
• Animal Waste and other Organics - N	Slight to Moderate Improvement	There will be a greater use of N by more vigorous plants.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	There will be a greater use of P by more vigorous plants.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	There will be a greater use of K by more vigorous plants.
• Commercial Fertilizer - N	Slight to Moderate Improvement	There will be a greater use of N by more vigorous plants.
• Commercial Fertilizer – P	Slight to Moderate Improvement	There will be a greater use of P by more vigorous plants.
• Commercial Fertilizer – K	Slight to Moderate Improvement	There will be a greater use of K by more vigorous plants.
• Residual Pesticides	Slight to Moderate Improvement	Vigorous plants are more resistant to pest pressure.
Damage from Sediment Deposition	Moderate Improvement	There will be an increase in vegetative cover, reducing runoff, erosion, and sediment yield.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Slight to Substantial Improvement	Restoration and/or maintenance of the function and structure of the ecological site.
Excessive Seepage	Neutral	There is potential for a decrease in seep flow because of increased utilization of soil moisture, however there may be slight worsening due to increased infiltration, especially during dormant season.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Runoff will be reduced and infiltration increased due to improved vegetative cover.
Excessive Subsurface Water	Slight Improvement	There will be an increase in plant uptake.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	Runoff will be reduced and infiltration increased due to improved vegetative cover.
Inefficient Water use on Irrigated Land	Slight Worsening	Grazing animals causes difficulty in scheduling irrigations.

Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	There will be increased infiltration, increased available water, and extended interflow yield.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	There will be a decrease in sediment loads due to reduced runoff, greater water infiltration, and increased cover.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	There will be a decrease in sediment loads due to reduced runoff, greater water infiltration, and increased cover.
Aquifer Overdraft	Neutral	Improved vigor of plant community increases infiltration rate and evapotranspiration.
Insufficient Flows in Water Courses	Neutral	Improved vigor of plant community increases infiltration rate and evapotranspiration.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	Managing for desirable plant health and vigor reduces the need for pesticide applications.
• Excessive Nutrients and Organics	Slight Improvement	The action increases plant vigor and uptake of nutrients.
• Excessive Salinity	Slight Improvement	The action results in increased vigor of plant community which may increase contaminant uptake.
• Harmful Levels of Heavy Metals	Slight Improvement	The action results in increased vigor of plant community, which may increase uptake of metals.
• Harmful Levels of Pathogens	Slight Improvement	The action may increase soil microbial activity enhancing competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	Managing for desirable plant health and vigor reduces runoff, erosion, and the need for pesticide applications.
• Excessive Nutrients and Organics	Slight Improvement	The action increases plant vigor and uptake of nutrients.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Management will result in increased plant vigor and cover, decreasing sediment yields.
• Excessive Salinity	Slight to Moderate Improvement	The action reduces soil surface evaporation, increases infiltration and reduces runoff.
• Harmful Levels of Heavy Metals	Slight Improvement	Improved plant growth reduces runoff and increases uptake.
• Harmful Temperatures	Neutral	The action protects soil and water quality.
• Harmful Levels of Pathogens	Slight Improvement	Reduced runoff, grazing

		managent, and properly placed and designed watering facilities will reduce risk of movement of pathogens in surface waters.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Improved vegetative cover reduces the generation of particulates.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Improved vegetative cover reduces the generation of particulates.
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 to Moderate Improvement	Improved vegetative cover 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	Not applicable.
Objectionable Odors	Neutral	Proper management will spread livestock, reducing manure concentrations.
Reduced Visibility	Slight to Moderate Improvement	Reduction in particulates due to improved ground cover.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Grazing management is implemented to create or maintain the desired plant community.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Improved plant and animal management enhances growing conditions of the desired plant community.
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	Management will increased health and vigor and competition by desirable plants which will decrease noxious and invasive plants.
Forage Quality and Palatability	Moderate to Substantial Improvement	Management of plant community will increase quality and palatability of forage species.
Wildfire Hazard	Slight to Substantial Improvement	Management of plant communities reduces fuel loads.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Management enhances production and diversity of the plant community including food species.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Management enhances production and diversity of cover/shelter conditions/
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Moderate to Substantial Improvement	Management can restore desired habitats/space.
Habitat Fragmentation	Moderate to Substantial Improvement	Management can restore and reconnect desired habitats/space.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Stocking rates are determined with the intent of maintaining or enhancing wildlife habitat.
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	Substantial Improvement	Livestock numbers are in balance with available feed and forage that meets nutritional and productive needs for the kinds and classes of livestock.
Inadequate Shelter	Slight to Substantial Improvement	Grazing management considers location of animals and available shelter(s) throughout the year.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Moderate to Substantial Improvement	Management results in nutritive forage, reduction and avoidance of poisonous plant, and disruption of pest cycles which improves 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	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase to move livestock between pastures.
Labor – Change in Management Level	Slight increase	Slight increase to determine when to move livestock and manage forage.
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease from improved health, extended grazing period, improved forage.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase because of increased management.
Risk - Timing	Substantial Increase	Substantial increase - practice must be applied according to forage needs.
Risk – Cash Flow	Slight to Moderate Decrease	Slight to moderate decrease due to higher yields and reduced costs.
Profitability – Change in Profitability	Slight to moderate increase.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Pumping Plant 533		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	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Rangeland Site Stability		
Compaction	Not Applicable	Not applicable.
Subsidence	Slight to Substantial Improvement	Maintaining water levels reduces opportunity for organic material oxidation, however, if the pump is used as a drainage tool, the oxidation and resulting subsidence may increase.
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	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Improvement	Provide drainage by the removal of groundwater.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Provides drainage by the removal of surface water.
Excessive Subsurface Water	Slight to Moderate Improvement	Provide drainage by the removal of groundwater.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Moderate Improvement	Pump can be used to transfer water to other outlets.

Inefficient Water use on Irrigated Land	Slight to Substantial Improvement	Provides control for better water distribution.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Provides control for better water distribution.
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	Slight Improvement	Pumps can be used to recharge aquifers. Worsening if used to withdraw water
Insufficient Flows in Water Courses	Neutral	Pumps can be used to supplement insufficient flows or withdraw water from water course.
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	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Slight Worsening	Spills are possible where petroleum is used.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	Replacement of older pumping plants with more efficient internal combustion engines or electric motors will reduce emissions of ozone precursors, however, new placement of internal combustion engines will result in increase in emission of ozone precursors.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Substantial Improvement	Replacement of older pumping plants with more efficient internal combustion engines or electric motors will reduce CO2

		emissions, however, new placement of internal combustion engines will result in an increase in CO2 emissions.
• 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Improvement	Replacement of older pumping plants with more efficient internal combustion engines or electric motors will reduce fine particulate and precursor emissions causing reduced visibility. New placement of internal combustion engines will result in reduced visibility.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Substantial Improvement	Increased water availability enhances plant growth, health and vigor.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	Pumping plants facilitates the distribution of water to livestock.
Stress and Mortality	Moderate to Substantial Improvement	Structures facilitate the distribution and availability of water reducing stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight.	
Land – Land in Production	Moderate to substantial increase.	
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate increase.	
Labor – Change in Management Level	Moderate increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight to Moderate Decrease	Slight to moderate decrease in risk due to proper water management.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase because of 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	Construction impacts (mechanical).
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Increase	Pumping requires substantial energy resources.
Underutilization of Non-Fossil Energy Resources	Slight to Moderate Decrease	Alternative sources of power such as wind, solar and hydraulic powerer are well-suited to this practice.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Range Planting 550		Baseline Setting:			
		Appropriate Land Use(s): Graze Forest, Grazed Range, Native or Naturalized Pasture, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Moderate to Substantial Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Wind		Moderate to Substantial Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Ephemeral Gully		Moderate to Substantial Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Classic Gully		Slight to Substantial Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Streambank		Slight to Moderate Improvement		Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.	
Shoreline		Slight to Moderate Improvement		Establishment of adapted species	

		increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Neutral	The increase in vegetation enhances soil binding by root mass and removal of soil moisture by increased transpiration. There may be a slight worsening because of increase in infiltration.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Moderate to Substantial Improvement	There will be enhanced root development, litter accumulation, increased biological activity, and/or reduced tillage if associated with change in land use.
Rangeland Site Stability	Moderate to Substantial Improvement	There will be enhanced root development, litter accumulation, increased biological activity.
Compaction	Moderate to Substantial Improvement	Enhanced root development, litter accumulation, increased biological activity, and/or reduced tillage may improve soil structure.
Subsidence	Slight Improvement	There will be enhanced root development increasing soil stability. There may be slight initial increase because of soil disturbing operations during seedbed preparation and establishment that may increase oxidation of organic matter.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Site planted to adapted species could contribute to the reduction of saline seep areas. There would be a negligible decrease of selenium, boron, and heavy metals because of very limited uptake by pasture plants.
• Animal Waste and other Organics - N	Slight to Moderate Improvement	There will be increased N use by vigorously growing grasses and/or legumes. There may be a slight potential for increased leaching because of improved

		infiltration.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	There will be increased P use by vigorously growing grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	There will be increased K use by vigorously growing grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration on sandy soils.
• Commercial Fertilizer - N	Slight to Moderate Improvement	There will be increased N use by vigorously growing grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration.
• Commercial Fertilizer – P	Slight to Moderate Improvement	There will be increased P use by vigorously growing grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration.
• Commercial Fertilizer – K	Slight to Moderate Improvement	There will be increased K use by vigorously growing grasses and/or legumes. There may be a slight potential for increased leaching because of improved infiltration on sandy soils.
• Residual Pesticides	Slight to Substantial Improvement	Proper seedbed preparation and the establishment of a healthy, vigorous stand will reduce pesticide use in general. There may be a slight potential for increased leaching because of improved infiltration.
Damage from Sediment Deposition	Slight to Substantial Improvement	There will be a reduction in erosion due to increased cover and reduced overland flow depending on management.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Moderate to Substantial Improvement	Establishment of adapted species increases vegetative cover and reduces erosion potential. During the establishment period, there may be a slight to moderate risk of erosion, depending on seedbed preparation, seeding method, and species planted.
Excessive Seepage	Neutral	There will be an increase in plant uptake and transpiration in the long-term. There may be a

		slight to moderate increase in seepage because of increased infiltration depending on the species selected.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	There will be an increase in cover and infiltration, reducing runoff and overland flow.
Excessive Subsurface Water	Neutral	There will be an increase in plant uptake and transpiration in the long-term. There may be a slight to moderate increase in seepage because of increased infiltration depending on the species selected.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	There will be an increase in cover and infiltration, reducing runoff and overland flow.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	The plant species selected will be adapted to meet the seasonal distribution of moisture.
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	There will be an increase in protective vegetative cover, reduced runoff, and increased infiltration resulting in less sediment transport.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	There will be an increase in protective vegetative cover, reduced runoff, and increased infiltration resulting in less sediment transport.
Aquifer Overdraft	Neutral	Plant species will be selected that are adapted to the amount, frequency, and availability of water, whether on irrigated or non-irrigated lands.
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Selection of adapted species will increased cover and improve infiltration, enhancing interflow.
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	Permanent vegetation will uptake excess nutrients.
• Excessive Salinity	Slight Improvement	There will be an increase in plant uptake when adapted plant species are used. There is the slight potential for leaching of salt into ground water because of increased infiltration.
• Harmful Levels of Heavy Metals	Slight Improvement	Certain plant species can take up heavy metals. Increased infiltration may increase the

		potential of heavy metal movement to groundwater.
• Harmful Levels of Pathogens	Slight Improvement	Increased soil microbial activity will enhance competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action decreases runoff and erosion.
• Excessive Nutrients and Organics	Slight Improvement	Improving vegetative cover will reduce runoff and erosion, and reduce the delivery of organics and nutrients to surface water.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.
• Excessive Salinity	Slight Improvement	Dense vegetation will increase infiltration and reduce runoff. Planting of range species in recharge areas may reduce movement of salts to seep areas and surface waters.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Improved plant growth reduces runoff and increases uptake.
• Harmful Temperatures	Neutral	The action protects soil and water quality.
• Harmful Levels of Pathogens	Slight Improvement	The improved vegetative cover and increased soil microbiological activity will reduce movement of pathogens, however a land use change to pasture may increase potential pathogen levels.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Establishing permanent vegetation reduces the potential for generation of particulates by wind erosion.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Establishing permanent vegetation reduces the potential for generation of particulates by 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 to Moderate 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight to Moderate Improvement	Reduction in particulates due to improved ground cover.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Substantial Improvement	There will be a selection of well-adapted and compatible species, varieties, and/or cultivars for each site.
PLANTS - CONDITION		
Productivity, Health, and Vigor	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	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	Vegetation is installed and managed to control undesired species.
Forage Quality and Palatability	Substantial Improvement	Selected plant species will have adequate nutritive value and palatability for the intended use.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Plant species are selected that are well-adapted and compatible to the site and provide food for wildlife.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Plant species are selected that are well-adapted and compatible to the site and provide cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Moderate to Substantial Improvement	Planting can restore desired habitats/space.
Habitat Fragmentation	Moderate to Substantial Improvement	Planting can restore and reconnect desired habitats/space.
Imbalance Among and Within Populations	Slight to Moderate Improvement	Increase forage supply and cover.
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	Substantial Improvement	Plant species will be selected that accommodate seasonal livestock production and nutritional needs.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Slight to Substantial Improvement	Improved forage cultivars will improve livestock health.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to Substantial	N/A, if currently grazed, substantial if change from crop, non-use or wildlife.
Land – Land in Production	Substantial increase	Substantial increase if land is brought into production.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Not applicable.	Not applicable.
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	Slight Increase	Slight increase due to deferment of affected area until establishment is complete.
Risk - Timing	Substantial Increase	Substantial increase - practice must be implemented during climatic and establishment period.
Risk – Cash Flow	Slight Increase	Slight increase because of implementation costs.
Profitability – Change in Profitability	Slight increase.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Planting impacts (mechanical) on previously undisturbed land types.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Residue and Tillage Management, No Till/Strip Till/Direct Seed 329		Baseline Setting: Appropriate Land Use(s): Crop, Hay, Pasture			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Moderate to Substantial Improvement		Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.	
Wind		Moderate to Substantial Improvement		Managing residue to reduce soil disturbance and increase residue cover reduces erosion by wind.	
Ephemeral Gully		Moderate to Substantial Improvement		Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.	
Classic Gully		Slight Improvement		No-till may slow gully growth due to less runoff.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Slight to Substantial Improvement		Less soil disturbance and more residue cover reduces erosion.	
Mass Movement		Slight Worsening		Increased infiltration could exacerbate mass movement during high rainfall.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Slight to Substantial Improvement		Decreased erosion and less oxidation from lack of soil disturbance will increase or maintain organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Slight to Moderate Improvement		Fewer field operations and less tillage reduce the potential for soil compaction.	
Subsidence		Neutral		Drainage creating aerobic conditions is the predominant cause of subsidence. The action slows oxidation but not enough to offset drainage effects.	
Contaminants:					
• Salts and other Chemicals		Slight Improvement		Low disturbance and high residue cropping systems increase organic matter which will buffer salts.	
• 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		Not Applicable		Not applicable.	

- K		
• Commercial Fertilizer - N	Not Applicable	Not applicable.
• Commercial Fertilizer – P	Not Applicable	Not applicable.
• Commercial Fertilizer – K	Not Applicable	Not applicable.
• Residual Pesticides	Neutral	Initially this practice may require increased pesticides. As the system matures lower rates may be needed. Also, soil biological activity increases, which increases pesticide breakdown.
Damage from Sediment Deposition	Slight to Substantial Improvement	Residue management reduces erosion resulting in less sediment.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Worsening	No-till increases infiltration resulting in more water moving through the profile.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	No-till increases infiltration, reducing runoff and ponding.
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	No-till increases infiltration and decreases evaporation resulting in more available water. However, increased infiltration reduces the efficiency of flood and furrow irrigation.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	No-till increases infiltration and decreases evaporation resulting in more available water.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Substantial Improvement	No-till reduces erosion which results in less sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	No-till reduces erosion which results in less sediment.
Aquifer Overdraft	Slight Improvement	Increased infiltration may improve aquifer recharge and reduce withdrawals.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	The action increases soil organic matter and biological activity.
• Excessive Nutrients and Organics	Slight Worsening	The action increases infiltration that contributes to nutrient leaching. Also, high organic carbon will cause microbes to immobilize nutrients.
• Excessive Salinity	Slight Worsening	Better infiltration may increase leaching potential.
• Harmful Levels of Heavy Metals	Slight Improvement	Higher organic matter levels may increase buffering capacity

		of the soil.
• Harmful Levels of Pathogens	Neutral	Better infiltration could increase leaching, but increased microbial activity may enhance competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Moderate to Substantial Improvement	The action decreases runoff and erosion.
• Excessive Nutrients and Organics	Slight Improvement	Less erosion and runoff reduces transport of nutrients.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Less erosion and runoff reduces transport of sediment.
• Excessive Salinity	Slight Improvement	Less runoff reduces transport of soluble salts. However increased infiltration results in more seepage which can carry soluble salts to the surface.
• Harmful Levels of Heavy Metals	Slight Improvement	Decreased erosion and runoff reduces heavy metal delivery to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Less erosion and runoff reduces delivery of pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Substantial Improvement	Less soil disturbance, increased residue on the surface and fewer field operations reduce the generation of particulate matter.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Substantial Improvement	Less soil disturbance, increased residue on the surface and fewer field operations reduce the generation of particulate matter.
Excessive Ozone	Slight to Moderate Improvement	Reduced use of machinery reduces ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate Improvement	Reduced use of machinery reduces CO2 emissions and increases soil carbon storage.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Slight to Moderate Worsening	The action may require increased use of pesticides and increase the potential for drift.
Objectionable Odors	Slight Improvement	Residues will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.
Reduced Visibility	Slight to Substantial Improvement	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Not Applicable	Not applicable.

Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Conserving moisture and improving soil conditions contribute to enhanced plant productivity and health. However, on cold and wet soils there may be a delay in emergence and early growth.
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	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Crop residue provides some food for wildlife.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Crop residue provides some cover/shelter.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight Improvement	Residue restores some habitat/space.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Slight to Moderate Improvement	Residue is managed to provide cover during critical periods.
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 residue 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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Moderate increase.	

Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease with fewer tillage operations.
Labor – Change in Management Level	Slight to moderate increase	Slight to moderate increase to control weeds and other unique problems in residue.
Risk - Yield	Moderate Decrease	Slight increase in short term, long-term moderate decrease.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase because of adoption of new technology.
Risk - Timing	Slight to Moderate Decrease	Slight to moderate decrease - longer field season.
Risk – Cash Flow	Slight Decrease	Slight decrease due to reduced costs.
Profitability – Change in Profitability	Situational	Slight decrease or increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Substantial Decrease	Minimizing soil disturbance dramatically reduces fuel requirements of farming equipment.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Residue and Tillage Management, Mulch Till 345		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Moderate to Substantial Improvement	Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.
Wind	Moderate to Substantial Improvement	Managing residue to reduce soil disturbance and increase residue cover reduces erosion by wind.
Ephemeral Gully	Moderate to Substantial Improvement	Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.
Classic Gully	Slight Improvement	Mulch till may slow gully growth due to less runoff.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Slight to Moderate Improvement	Less soil disturbance and more residue cover reduces erosion.
Mass Movement	Slight Worsening	Increased infiltration could exacerbate mass movement during high rainfall.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight Improvement	Decreased erosion and less oxidation from less soil disturbance may increase or maintain organic matter.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight Improvement	Less intensive tillage reduces the potential for soil compaction.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Less tillage disturbance and high residue cropping systems increase organic matter which may buffer salts.
• 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	Neutral	Initially this practice may require increased pesticides. As

		the system matures lower rates may be needed. Also, soil biological activity increases, which increases pesticide breakdown.
Damage from Sediment Deposition	Slight to Moderate Improvement	Maintaining surface residue reduces erosion resulting in less sediment.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Worsening	Mulch till increases infiltration resulting in more water moving through the profile.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Mulch till increases infiltration, reducing runoff and ponding.
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 Improvement	Mulch till increases infiltration and decreases evaporation resulting in more available water. However, increased infiltration reduces the efficiency of flood and furrow irrigation.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Mulch till increases infiltration and decreases evaporation resulting in more available water.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Mulch till reduces erosion which results in less sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Mulch till reduces erosion which results in less sediment.
Aquifer Overdraft	Slight Improvement	Increased infiltration may improve aquifer recharge and reduce withdrawals.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	The action increases soil organic matter and biological activity.
• Excessive Nutrients and Organics	Slight Worsening	The action increases infiltration that contributes to nutrient leaching. Also, high organic carbon will cause microbes to immobilize nutrients.
• Excessive Salinity	Slight Worsening	Better infiltration increases leaching potential.
• Harmful Levels of Heavy Metals	Slight Improvement	Higher organic matter levels may increase buffering capacity of the soil.
• Harmful Levels of Pathogens	Neutral	Better infiltration could increase leaching, but increased microbial activity may enhance

		competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Moderate to Substantial Improvement	The action decreases runoff and erosion.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Less erosion and runoff reduces transport of nutrients.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Less erosion and runoff reduces transport of sediment.
• Excessive Salinity	Slight Improvement	Less runoff reduces transport of soluble salts. However increased infiltration results in more seepage which can carry soluble salts to the surface.
• Harmful Levels of Heavy Metals	Slight Improvement	Decreased erosion and runoff reduces heavy metal delivery to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Less erosion and runoff reduces delivery of pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Substantial Improvement	Less soil disturbance, increased residue on the surface and fewer field operations reduce the generation of particulate matter.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Substantial Improvement	Less soil disturbance, increased residue on the surface and fewer field operations reduce the generation of particulate matter.
Excessive Ozone	Slight Improvement	Reduced use of machinery reduces ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate Improvement	Reduced use of machinery reduces CO2 emissions and increases soil carbon storage.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Slight Worsening	The action may require increased use of pesticides and increase the potential for drift.
Objectionable Odors	Slight Improvement	Residues will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.
Reduced Visibility	Slight to Moderate Improvement	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.

PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Conserving moisture and improving soil conditions contribute to enhanced plant 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	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Crop residue provides some food for wildlife.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Crop residue provides some cover/shelter.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight Improvement	Residue restores some habitat/space.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Slight to Moderate Improvement	Residue is managed to provide cover during critical periods.
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 residue 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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease with fewer tillage operations.

Labor – Change in Management Level	Slight increase.	
Risk - Yield	Moderate Decrease	Slight increase in short term, long-term moderate decrease.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase because of adoption of new technology.
Risk - Timing	Slight to Moderate Decrease	Slight to moderate decrease - longer field season.
Risk – Cash Flow	Slight Decrease	Slight decrease due to reduced costs.
Profitability – Change in Profitability	Situational	Slight decrease or increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Moderate Decrease	Reducing soil disturbance reduces fuel requirements of farming equipment.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Residue and Tillage Management, Ridge Till 346		Baseline Setting:			
		Appropriate Land Use(s): Crop			

RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE
SOIL - EROSION		
Sheet and Rill	Moderate to Substantial Improvement	Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.
Wind	Moderate to Substantial Improvement	Managing residue to reduce soil disturbance and increase residue cover reduces erosion by wind. Oriented ridge roughness also reduces wind erosion.
Ephemeral Gully	Moderate to Substantial Improvement	Managing residue to reduce soil disturbance and increase residue cover reduces erosion by water.
Classic Gully	Slight Improvement	Ridge till may slow gully growth due to less runoff.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Slight to Moderate Improvement	Less soil disturbance and more residue cover reduces erosion.
Mass Movement	Slight Worsening	Increased infiltration could exacerbate mass movement during high rainfall.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight to Moderate Improvement	Decreased erosion and less oxidation from less soil disturbance may increase or maintain organic matter.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight to Substantial Improvement	Ridges are protected from compaction due to controlled traffic. Less tillage operations reduce trips across field.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Less tillage disturbance and high residue cropping systems increase organic matter which may buffer salts.
• 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	Slight Improvement	Less pesticides are used in ridge till systems.
Damage from Sediment Deposition	Slight to Moderate Improvement	Maintaining surface residue reduces erosion resulting in less sediment.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Worsening	Ridge till increases infiltration resulting in more water moving through the profile.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Ridge till increases infiltration, reducing runoff and ponding.
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	Ridge till increases infiltration and decreases evaporation resulting in more available water. However, increased infiltration reduces the efficiency of furrow irrigation.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Ridge till increases infiltration and decreases evaporation resulting in more available water.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Ridge till reduces erosion which results in less sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Ridge till reduces erosion which results in less sediment.
Aquifer Overdraft	Slight Improvement	Increased infiltration may improve aquifer recharge and reduce withdrawals.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	The action increases soil organic matter and biological activity.
• Excessive Nutrients and Organics	Slight Worsening	The action increases infiltration that contributes to nutrient leaching. Also, high organic carbon will cause microbes to immobilize nutrients.
• Excessive Salinity	Slight Worsening	Better infiltration may increase leaching potential.
• Harmful Levels of Heavy Metals	Slight Improvement	Higher organic matter levels may increase buffering capacity of the soil.
• Harmful Levels of Pathogens	Neutral	Better infiltration could increase leaching, but increased microbial activity may enhance competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.

In Surface Water:		
• Harmful Levels of Pesticides	Moderate to Substantial Improvement	The action decreases runoff and erosion.
• Excessive Nutrients and Organics	Slight Improvement	Less erosion and runoff reduces transport of nutrients.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Less erosion and runoff reduces transport of sediment.
• Excessive Salinity	Slight Improvement	Less runoff reduces transport of soluble salts. However increased infiltration results in more seepage which can carry soluble salts to the surface.
• Harmful Levels of Heavy Metals	Slight Improvement	Decreased erosion and runoff reduces heavy metal delivery to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Less erosion and runoff reduces delivery of pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Substantial Improvement	Less soil disturbance, increased residue on the surface and fewer field operations reduce the generation of particulate matter.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Substantial Improvement	Less soil disturbance, increased residue on the surface and fewer field operations reduce the generation of particulate matter.
Excessive Ozone	Slight to Moderate Improvement	Reduced use of machinery reduces ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate Improvement	Reduced use of machinery reduces CO2 emissions and increases soil carbon storage.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Slight Worsening	The action may require increased use of pesticides and increase the potential for drift.
Objectionable Odors	Slight Improvement	Residues will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.
Reduced Visibility	Slight to Substantial Improvement	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Conserving moisture and

		improving soil conditions contribute to enhanced plant productivity and health. Ridge till on cold and wet soils may improve emergence and vigor.
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	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Crop residue provides some food for wildlife.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Crop residue provides some cover/shelter.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight Improvement	Residue restores some habitat/space.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Slight to Moderate Improvement	Residue is managed to provide cover during critical periods.
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 residue 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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease with fewer tillage operations.

Labor – Change in Management Level	Slight increase.	
Risk - Yield	Moderate Decrease	Slight increase in short term, long-term moderate decrease.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase because of adoption of new technology.
Risk - Timing	Slight to Moderate Decrease	Slight to moderate decrease - longer field season.
Risk – Cash Flow	Slight Decrease	Slight decrease due to reduced costs.
Profitability – Change in Profitability	Situational	Slight decrease or increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Decrease	Reducing soil disturbance reduces fuel requirements of farming equipment.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Residue Management, Seasonal 344		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Moderate Improvement	Managing residue to increase residue cover reduces erosion by water especially during periods of higher rainfall.
Wind	Slight to Substantial Improvement	Managing residue to increase residue cover reduces erosion by wind.
Ephemeral Gully	Slight Improvement	Managing residue to increase residue cover reduces erosion by water.
Classic Gully	Slight Improvement	Residue cover may reduce runoff during critical periods.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Slight to Moderate Improvement	More residue on soil surface reduces erosion
Mass Movement	Neutral	Rooting depth could cause slight improvement. Residue may increase moisture content that may cause slight worsening.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight Improvement	Increased residue may increase 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 Improvement	If residue management increases organic matter salts may be buffered.
• 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	Slight to Moderate Improvement	Maintaining surface residue reduces erosion resulting in less sediment.

WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Worsening	Increases infiltration resulting in more water moving through the profile.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Reduces runoff, ponding, and increase infiltration.
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 Improvement	Residue increases infiltration and decreases evaporation resulting in more available water. However, increased infiltration reduces the efficiency of furrow irrigation.
Inefficient Water use on Non-Irrigated Land	Slight Improvement	Increases water holding capacity because of better infiltration. Also will trap snow that will increase infiltration.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Increase water holding capacity because of better infiltration. Also will trap snow that will increase infiltration.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Residue on soil surface reduces erosion which results in less sediment.
Aquifer Overdraft	Slight Improvement	Increased infiltration may improve aquifer recharge and reduce withdrawals.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration.
• Excessive Nutrients and Organics	Slight Worsening	The action increases infiltration that contributes to nutrient leaching. Also, high organic carbon will cause microbes to immobilize nutrients.
• Excessive Salinity	Slight Worsening	Better infiltration may increase leaching potential.
• Harmful Levels of Heavy Metals	Slight Improvement	Higher organic matter levels may increase buffering capacity of the soil.
• Harmful Levels of Pathogens	Neutral	Better infiltration could increase leaching, but increased microbial activity may enhance competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight Improvement	The action decreases runoff and erosion.
• Excessive Nutrients and Organics	Slight Improvement	Less erosion and runoff reduces transport of nutrients.

• Excessive Suspended Sediment and Turbidity	Slight Improvement	Less erosion and runoff reduces transport of sediment.
• Excessive Salinity	Slight Improvement	Less runoff reduces transport of soluble salts. However increased infiltration results in more seepage which can carry soluble salts to the surface.
• Harmful Levels of Heavy Metals	Slight Improvement	Decreased erosion and runoff reduces heavy metal delivery to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Less erosion and runoff reduces delivery of pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Residue on the surface during the critical wind erosion period reduces particulate generation.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Residue on the surface during the critical wind erosion period reduces particulate generation.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by mulch material.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate Improvement	Reduced use of machinery reduces CO2 emissions and increases soil carbon storage.
• 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	Not applicable.
Objectionable Odors	Neutral	Residues will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.
Reduced Visibility	Slight to Moderate Improvement	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Conserving moisture and improving soil conditions contribute to enhanced plant 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	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Crop residue provides some food for wildlife.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Crop residue provides some cover/shelter.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight Improvement	Residue restores some habitat/space.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Slight to Moderate Improvement	Residue is managed to provide cover during critical periods.
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 residue 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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Moderate Decrease	Slight increase in short term, long-term moderate decrease.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase because of adoption of new technology.
Risk - Timing	Slight to Moderate Decrease	Slight to moderate decrease - longer field season.
Risk – Cash Flow	Slight Decrease	Slight decrease due to reduced costs.
Profitability – Change in Profitability	Situational	Slight decrease or increase.

HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	Managing to reduce tillage will reduce depletion of fossil fuels.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Restoration and Management of Rare or Declining Habitats 643		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Mined, Native or Naturalized Pasture, Natural Area, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Moderate Improvement	Establishing or improving native vegetative cover will reduce erosion by water.
Wind	Slight to Moderate Improvement	Establishing or improving native vegetative cover will reduce erosion by wind.
Ephemeral Gully	Slight to Moderate Improvement	Establishing or improving native vegetative cover will reduce erosion by water.
Classic Gully	Neutral	Effect will vary based upon initial land use.
Streambank	Neutral	Effect will vary based upon initial land use.
Shoreline	Neutral	Effect will vary based upon initial land use.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Neutral	Effect will vary based upon initial land use.
SOIL – CONDITION		
Organic Matter Depletion	Neutral	Improved vegetative cover may increase soil organic matter. However, if prescribed burning is used, removal of vegetation and litter from a site temporarily removes organic material that could have become 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	When prescribed burning is used, organic materials are mineralized.
• 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	If prescribed burning is used, temporary removal of surface litter and alteration of vegetative structure alters entrapment capabilities. The action may also temporarily increase 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	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Slight to Moderate Improvement	Restoration of habitat adjacent to streams or water bodies will moderate surface water temperatures.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	If vegetative cover is increased, 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Slight to Moderate Improvement	Reestablishment of tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Restoration and management creates or maintains the desired plant community.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate 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	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	Vegetation is installed and managed to control undesired species.
Forage Quality and Palatability	Moderate to Substantial Improvement	Selected plant species will have adequate nutritive value and palatability for the intended use.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides food for

		wildlife.
Inadequate Cover/Shelter	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.
Inadequate Water	Moderate to Substantial Improvement	Fish and wildlife habitat considerations are addressed in the design.
Inadequate Space	Moderate to Substantial Improvement	Declining habitats/space are restored.
Habitat Fragmentation	Moderate to Substantial Improvement	Declining habitats/space are restored and reconnected to adjacent habitats.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Management is designed to minimize limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
• Declining Species, Species of Concern	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Slight.	Slight.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible to substantial increase	Negligible to substantial increase depending if habitat is natural or artificial maintained.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease due to improved habitat.
Risk - Flexibility	Slight to Moderate Increase	Substantial to moderate increase in habitat capabilities.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Negligible increase because of implementation costs.
Profitability – Change in Profitability	Slight to substantial decrease.	
HUMAN - CULTURAL		

Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Riparian Forest Buffer 391		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Slight to Moderate Improvement		Vegetation and surface litter reduces erosive water energy on the planted site.	
Wind		Slight to Moderate Improvement		Vegetation creates a wind shadow and reduces erosive wind velocities and provides a stable area which stops saltating particles.	
Ephemeral Gully		Slight Improvement		Vegetation reduces erosive energy of concentrated flows.	
Classic Gully		Moderate Improvement		Reduces runoff and erosion.	
Streambank		Moderate Improvement		Roots of vegetation binds the soil making it resistant to water flow erosion.	
Shoreline		Moderate Improvement		Roots of vegetation binds the soil making it resistant to water flow erosion.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Moderate Improvement		Roots of vegetation binds the soil layers making the site resistant to gravity-induced movement.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Moderate to Substantial Improvement		Increased vegetative matter and its breakdown increases soil organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Moderate to Substantial Improvement		Root penetration and organic matter helps restore soil structure.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight Improvement		Increased vegetation will increase salt uptake and increased organic matter may tie up salts and other chemicals.	
• Animal Waste and other Organics - N		Slight to Substantial Improvement		Unless the system is overloaded, plants and soil organisms can scavenge excess N.	
• Animal Waste and other Organics - P		Slight to Substantial Improvement		Unless the system is overloaded, plants and soil organisms can scavenge excess P.	
• Animal Waste and other Organics		Slight to Substantial Improvement		Unless the system is overloaded,	

- K		plants and soil organisms can scavenge excess K.
• Commercial Fertilizer - N	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess N.
• Commercial Fertilizer – P	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess P.
• Commercial Fertilizer – K	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess K.
• Residual Pesticides	Slight to Moderate Improvement	Plants and soil organisms uptake residues and soil organic matter neutralizes pesticides.
Damage from Sediment Deposition	Slight to Moderate Improvement	Vegetation and surface litter traps sediment but is adapted to such deposits. Deposits in riparian areas reduce deposits elsewhere.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Improvement	Plants uptake excess water.
Excessive Runoff, Flooding, or Ponding	Moderate Worsening	Vegetation causes flooding and ponding.
Excessive Subsurface Water	Slight to Moderate Improvement	Plants uptake excess 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	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Substantial Improvement	Riparian areas collect sediment preventing it from being deposited elsewhere.
Reduced Storage of Water Bodies by Sediment Accumulation	Substantial Improvement	Riparian areas collect sediment preventing it from being deposited elsewhere.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Moderate to Substantial Improvement	Riparian areas intercept precipitation and infiltrate and retain runoff with a net, elevated release to water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	Trees, shrubs, and other vegetation take up pesticide residues. Also, pesticide degradation may be improved by increased soil organic matter and biological activity.
• Excessive Nutrients and Organics	Substantial Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Salinity	Slight Improvement	The action may result in some uptake by plants.
• Harmful Levels of Heavy Metals	Slight Improvement	The action may result in metal

		uptake by some plants.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Riparian areas capture and delay pathogen movement and increase pathogen mortality. Soil microbial activity enhances competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Moderate to Substantial Improvement	Trees, shrubs and other vegetation reduce runoff, trap adsorbed pesticides, take up pesticide residues and may intercept pesticide drift.
• Excessive Nutrients and Organics	Substantial Improvement	Plants and soil organisms in the buffer will utilize nutrients. The buffer will filter out suspended particles to which nutrients are attached.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Vegetation protects soil surface and traps sediment, nutrients and other materials.
• Excessive Salinity	Slight Improvement	The action increases infiltration and reduces runoff.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	The action filters sediment, and some plants may take up heavy metals.
• Harmful Temperatures	Slight to Substantial Improvement	Riparian forest canopy shades streams and rivers, moderating water temperatures.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	Riparian areas capture and delay pathogen movement and thereby increase their mortality.
• Harmful Levels of Petroleum	Slight Improvement	Increased microbial activity in the riparian area breaks down petroleum contaminants.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Improvement	Vegetation reduces erosive wind velocities and provides a stable area which stops saltating particles.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Improvement	Vegetation reduces erosive wind velocities and provides a stable area which stops saltating particles.
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)	Moderate to Substantial 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	Slight to Moderate Improvement	Tall vegetation slows surface air movement and intercepts chemical drift.
Objectionable Odors	Slight Improvement	Tall vegetation slows surface air movement and intercepts and captures air borne materials.
Reduced Visibility	Slight to Substantial Improvement	Tall vegetation slows surface air movement and intercepts and captures air borne materials. Reduced wind erosion improves visibility.
Undesirable Air Movement	Slight to Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Moderate to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Buffer establishment and management creates or maintains the desired plant community.
PLANTS - CONDITION		
Productivity, Health, and Vigor	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	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	Vegetation is installed and managed to control undesired species.
Forage Quality and Palatability	Moderate to Substantial Improvement	Plants are managed to optimize forage quality and palatability.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides food for wildlife.
Inadequate Cover/Shelter	Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.
Inadequate Water	Slight to Moderate Improvement	Water can be temporarily

		trapped in the riparian area. Warm-season water is cooled.
Inadequate Space	Moderate to Substantial Improvement	Buffers can restore desired habitats/space.
Habitat Fragmentation	Moderate to Substantial Improvement	Buffers can restore and reconnect desired habitats/space.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Buffers are designed to minimize limiting factors.
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	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
Inadequate Shelter	Moderate to Substantial Improvement	Buffers can provide shade and protection from wind.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Moderate to Substantial Improvement	Riparian vegetation alters temperatures and wind effects reducing stress caused by weather extremes.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to substantial.	
Land – Land in Production	Slight to substantial.	
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease with land taken out of production.
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to establishment cost.
Profitability – Change in Profitability	Situational	Slight increase to substantial decrease.
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	Slight to Moderate Decrease	Establishing forest buffers on cropland removes need for annual agronomic energy inputs.
Underutilization of Non-Fossil Energy Resources	Slight to Moderate Decrease	This practice can potentially provide a source of biomass fuel.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Riparian Herbaceous Cover 390		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Rabge, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Moderate Improvement	Vegetation and surface litter reduces erosive water energy on the planted site.
Wind	Slight to Moderate Improvement	Dense herbaceous vegetation reduces erosion from wind.
Ephemeral Gully	Slight Improvement	Vegetation reduces erosive energy of concentrated flows.
Classic Gully	Not Applicable	Not applicable.
Streambank	Moderate to Substantial Improvement	Vegetation and dense roots protects and binds the soil making it resistant to water flow erosion.
Shoreline	Moderate to Substantial Improvement	Vegetation and dense roots protects and binds the soil making it resistant to water flow erosion.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Slight Improvement	Vegetation and dense roots protects and binds the soil making it resistant to mass movement.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Moderate to Substantial Improvement	Increased vegetative matter and its breakdown increases soil organic matter.
Rangeland Site Stability	Slight to Substantial Improvement	Vegetation and dense roots protects and binds the soil making it more stable.
Compaction	Moderate to Substantial Improvement	Root penetration and organic matter helps restore soil structure.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight to Moderate Improvement	Increased vegetation will increase salt uptake and increased organic matter may tie up salts and other chemicals.
• Animal Waste and other Organics - N	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess N.
• Animal Waste and other Organics	Slight to Substantial Improvement	Unless the system is overloaded,

- P		plants and soil organisms can scavenge excess P.
• Animal Waste and other Organics - K	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess K.
• Commercial Fertilizer - N	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess N.
• Commercial Fertilizer – P	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess P.
• Commercial Fertilizer – K	Slight to Substantial Improvement	Unless the system is overloaded, plants and soil organisms can scavenge excess K.
• Residual Pesticides	Slight to Moderate Improvement	Plants and soil organisms uptake residues and soil organic matter neutralizes pesticides.
Damage from Sediment Deposition	Slight to Moderate Improvement	Vegetation and surface litter traps sediment but is adapted to such deposits. Deposits in riparian areas reduce deposits elsewhere.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Slight to Substantial Improvement	Restoration and/or maintenance of the function and structure of the ecological site.
Excessive Seepage	Slight to Moderate Improvement	Plants uptake excess water.
Excessive Runoff, Flooding, or Ponding	Moderate Worsening	Vegetation causes flooding and ponding.
Excessive Subsurface Water	Slight to Moderate Improvement	Plants uptake excess 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	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	Riparian areas collect sediment preventing it from being deposited elsewhere.
Reduced Storage of Water Bodies by Sediment Accumulation	Substantial Improvement	Riparian areas collect sediment preventing it from being deposited elsewhere.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Moderate to Substantial Improvement	Riparian areas act as a sponge to collect water and release it slowly over time
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	Pesticide degradation may be improved by increased soil organic matter and biological activity.
• Excessive Nutrients and Organics	Substantial Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Salinity	Slight Improvement	The action may result in some

		uptake by plants.
• Harmful Levels of Heavy Metals	Slight Improvement	The action may result in metal uptake by some plants.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Riparian areas capture and delay pathogen movement and increase pathogen mortality. Soil microbial activity enhances competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action reduces runoff and traps adsorbed pesticides.
• Excessive Nutrients and Organics	Substantial Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Vegetation protects soil surface and traps sediment, nutrients and other materials.
• Excessive Salinity	Slight Improvement	The action increases infiltration and reduces runoff.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	The action filters sediment, and some plants may take up heavy metals.
• Harmful Temperatures	Slight to Moderate Improvement	Herbaceous plants provide some shade and protect banks, moderating stream temperature.
• Harmful Levels of Pathogens	Moderate Improvement	vegetation traps pathogens providing increased opportunity for solar and microbial action to destroy some
• Harmful Levels of Petroleum	Slight Improvement	Increased microbial activity in the riparian area breaks down petroleum contaminants.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight Improvement	Vegetative cover reduces wind erosion and provides a stable area which stops saltating particles.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight Improvement	Vegetative cover reduces wind erosion and provides a stable area which stops saltating particles.
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 to Moderate 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Neutral	Vegetation does not reach sufficient heights to provide shade.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Establishment and management of cover creates or maintains the desired plant community.
PLANTS - CONDITION		
Productivity, Health, and Vigor	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	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	Vegetation is installed and managed to control undesired species.
Forage Quality and Palatability	Moderate to Substantial Improvement	Plants are managed to optimize forage quality and palatability.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides food for wildlife.
Inadequate Cover/Shelter	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.
Inadequate Water	Slight to Moderate Improvement	Water can be temporarily trapped in the riparian area. Warm-season water is cooled.
Inadequate Space	Moderate to Substantial Improvement	Cover can restore desired habitats/space.
Habitat Fragmentation	Moderate to Substantial Improvement	Cover can restore and reconnect desired habitats/space.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Cover is designed to minimize limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the	Neutral	Activities are designed, installed, and mitigated to an

Endangered Species Act		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	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Moderate to Substantial Improvement	Improved cover results in nutritive forage and reduction of poisonous plants.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to substantial.	
Land – Land in Production	Slight to substantial.	
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease with land taken out of production.
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to establishment cost.
Profitability – Change in Profitability	Situational	Slight increase to moderate decrease.
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	Slight to Moderate Decrease	Establishing forest buffers on cropland removes need for annual agronomic energy inputs.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Row Arrangement 557		Baseline Setting:			
		Appropriate Land Use(s): Crop			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Moderate Improvement	Rows are arranged in direction, grade, and length to reduce erosion
Wind	Slight Improvement	Adding roughness to the soil across the prevailing wind direction reduces saltation.
Ephemeral Gully	Moderate Improvement	Rows are arranged in direction, grade, and length to reduce erosion
Classic Gully	Neutral	The action not installed in gully area
Streambank	Neutral	Reduced erosion and sediment load can create water energy/stream bank erosion from runoff
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Moderate Improvement	Rows are arranged in direction, grade, and length to reduce erosion.
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight Improvement	Reduced erosion reduces loss of organic material in sediments
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Improved moisture control may result in leaching of contaminants below the root zone
• Animal Waste and other Organics - N	Slight Improvement	Will reduce soil ersoion, reducing N losses.
• Animal Waste and other Organics - P	Slight Improvement	Will reduce soil ersoion and runoff, reducing P losses.
• Animal Waste and other Organics - K	Slight Improvement	Will reduce soil ersoion, reducing K losses.
• Commercial Fertilizer - N	Slight Improvement	Will reduce soil ersoion, reducing N losses.
• Commercial Fertilizer – P	Slight Improvement	Will reduce soil ersoion and runoff, reducing P losses.
• Commercial Fertilizer – K	Slight Improvement	Will reduce soil ersoion, reducing K losses.

• Residual Pesticides	Neutral	Improved moisture control may result in leaching of soluble pesticides below the root zone
Damage from Sediment Deposition	Slight to Moderate Improvement	Reduced erosion will result in less sediment available for deposition
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Worsening	Row arrangement may result in more infiltration.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Correct row arrangement provides better drainage control.
Excessive Subsurface Water	Slight Worsening	Row arrangement may result in more infiltration.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Moderate to Substantial Improvement	Row arrangement with proper grade and length improves irrigation efficiency.
Inefficient Water use on Non-Irrigated Land	Moderate to Substantial Improvement	Row arrangement with proper grade and length improves water capture.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Reduced erosion and sediment for off site transport.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Reduced erosion and sediment for off site transport.
Aquifer Overdraft	Slight Improvement	Better use of rainfall and irrigation water will reduce overdraft.
Insufficient Flows in Water Courses	Slight Improvement	Improve infiltration enhances interflow.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action facilitates the removal of surface runoff, thus reducing percolation of water and nutrients.
• Excessive Salinity	Neutral	Increased percolation may move soluble salts into groundwater.
• 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 Improvement	The action reduces runoff and erosion.
• Excessive Nutrients and Organics	Slight to Moderate Worsening	The action facilitates the removal of surface runoff, thus increasing the potential for surface water contamination by organics and nutrients.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Reduced slope and water velocity will reduce erosion.

• Excessive Salinity	Neutral	The action can increase percolation, which reduces the runoff of soluble salts. The action can also increase surface drainage, which moves contaminants from the site.
• Harmful Levels of Heavy Metals	Neutral	Collected runoff may discharge into surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Retarding surface water flow will reduce transport of pathogens
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Neutral	Improved production and vegetative density 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Neutral	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Conserving moisture and reduced erosion will improve plant 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	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Negligible	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Slight decrease due to adequate drainage and erosion control.
Risk - Flexibility	Slight Increase	Slight increase due to following designed row pattern.
Risk - Timing	Negligible	
Risk – Cash Flow	Slight Increase	Slight increase due to high fuel and labor requirements.
Profitability – Change in Profitability	Situational	Slight decrease to slight increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	The practice increases irrigation efficiency.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Salinity and Sodic Soil Management 610		Baseline Setting:			
		Appropriate Land Use(s): Crop, Hay, Pasture			

RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight to Substantial Improvement	Salts in the root zone are reduced by leaching, drainage and/or plant management.
• 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	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Neutral	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	Control of salt improves use of available water.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Control of salt improves use of available water.
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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Slight to Moderate Worsening	The action requires removing salts from the root-zone. Leaching is one alternative and degree of effect depends on the amount of leaching used and the location of the ground water table.
• Harmful Levels of Heavy Metals	Slight Worsening	Leaching salts from the root zone may also leach heavy metals.
• Harmful Levels of Pathogens	Slight Worsening	Leaching salts from the root zone may also leach pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Slight to Moderate Worsening	Salts leached from the root zone by drainage may enter surface water.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Preventing or reducing salt accumulation in the soil leads to improved vegetative cover, reducing the potential for soil movement by wind.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Preventing or reducing salt accumulation in the soil leads to improved vegetative cover, reducing the potential for soil movement by wind.
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Slight to Substantial Improvement	Management of salts and the use of soil amendments enhances suited and desired species.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Substantial Improvement	Management of salts and the use of soil amendments improves plant productivity and vigor.
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 and selection of adapted species 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	Forage vigor and quantity is improved through effective management of soil salinity and sodium.
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 substantial.	
Land – Land in Production	Slight to substantial.	

Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate.	
Labor – Change in Management Level	Slight to moderate increase.	
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease increase due to reduced salt levels.
Risk - Flexibility	Slight Increase	Slight increase based on methods used to reduce concentrations.
Risk - Timing	Moderate to Substantial Increase	Moderate to substantial increase, depending on level of concentration.
Risk – Cash Flow	Slight Increase	Slight increase due to establishment costs.
Profitability – Change in Profitability	Situational	Moderate decrease to slight increase.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Moderate Increase	This practice requires substantial energy expenditures for control of water. Litle change in energy. Control is achieved through better crop rotations to improve water utilization. Energy saved by not tilling saline spots and putting to perrenial grass
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Sediment Basin 350		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Slight to Moderate Improvement	Controlled flow will reduce gulley erosion down slope of basin
Classic Gully	Slight to Moderate Improvement	Controlled flow will reduce gulley erosion down slope of basin.
Streambank	Neutral	Stream bank erosion due to flows are reduced because of controlled flows, but 'clean' water from basin could create stream bank erosion.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Slight Worsening	Increases infiltration and soil instability.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Slight to Substantial Improvement	Sediment is retained in basin.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Worsening	Stored water in basin will infiltrate adding to seepage problem.

Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Basin will retard flows reducing the runoff and controlling water releases.
Excessive Subsurface Water	Slight to Moderate Worsening	Retarded water in basin will infiltrate adding to subsurface water.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Substantial Improvement	Basin will retard flows reducing the runoff and controlling water releases.
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	Moderate to Substantial Improvement	Basin traps and retains sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate to Substantial Improvement	Basin traps and retains sediment.
Aquifer Overdraft	Slight Improvement	Infiltrating water in basin may recharge ground water.
Insufficient Flows in Water Courses	Slight Worsening	Water stored in basins will be with held from water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	Water containing pesticides may seep from the basin.
• Excessive Nutrients and Organics	Slight Worsening	Nutrients impounded could contaminate groundwater.
• Excessive Salinity	Slight Worsening	Infiltrating water in the basin may move soluble salts to ground water.
• Harmful Levels of Heavy Metals	Slight Worsening	Infiltrating water in the basin may move soluble contaminants to the ground water.
• Harmful Levels of Pathogens	Slight Worsening	Infiltrating water in the basin may move pathogens to the ground water.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action collects and stores adsorbed pesticides.
• Excessive Nutrients and Organics	Substantial Improvement	The action will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Basin retains sediment, decreasing runoff turbidity.
• Excessive Salinity	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to

		sediments.
• Harmful Temperatures	Neutral	Although water retained in basin is warmer than flowing surface water, discharge to surface waters is unlikely.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants
• Harmful Levels of Petroleum	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble 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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	Not applicable.
Objectionable Odors	Neutral	Proper siting and management are required If used as part of an agricultural waste management system
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight Worsening	Any food species are eliminated in the area used for the basin.
Inadequate Cover/Shelter	Slight Worsening	Any cover is eliminated in the area used for the basin.

Inadequate Water	Slight Improvement	Water is temporarily stored, and sediment and debris are removed from runoff.
Inadequate Space	Not Applicable	Not applicable.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Slight Improvement	Vegetated basins provide habitat.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Slight Improvement	Captured water in basins can supplement stock water.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Substantial	Substantial, convert to water & sediment storage.
Land – Land in Production	Substantial decrease	Substantial decrease, land converted to water & sediment storage.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Substantial Decrease	Substantial decrease in risk due to maintained capacity of waterways.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Moderate to Substantial Increase	Moderate to substantial increase to construction costs.
Profitability – Change in Profitability	Situational	Moderate decrease to slight increase.
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	Moderate to Substantial Increase	This practice requires energy intensive operation and

		maintenance.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Solid/Liquid Waste Separation Facility 632		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			

RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Neutral	Some chemicals such as PAM used as flocculants could reduce irrigation induced erosion when the waste stream is surface itrrigated
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight Improvement	Using amendments and separation could create high organic residues that when land applied could increase soil organic matter in excess of the application of untreated manure
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Neutral	Could be slight worsening to slight improvement depending on whether salts are concentrated or removed from the land applied waste stream
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce nitrogen concentrations
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce phoswphorus concentrations
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce phoswphorus concentrations
• 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	Not Applicable	Not applicable.
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 Improvement	Altered waste stream with minumum solids will be compatible with irrigation needs
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
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	Neutral	Altered waste stream with minumum solids will be compatible with irrigation needs
Insufficient Flows in Water Courses	Neutral	Altered waste stream with minumum solids will be compatible with irrigation needs
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Separation and other treatment options are often used to remove nutrients and organics from the waste stream
• Excessive Salinity	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• 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 Substantial Improvement	Separation and other treatment options are often used to remove nutrients and organics from the waste stream
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.

• Excessive Salinity	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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)	Slight to Moderate Improvement	liquid-solid separation can have some effect in reducing emissions such as ammonia fraction
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight Improvement	Separation may have an impact on the release of a number of manure constituents
• N_20 (Nitrous Oxide)	Slight Improvement	Separation may have an impact on the release of a number of manure constituents
• CH_4 (Methane)	Slight to Moderate Improvement	Separation may have an impact on the release of a number of manure constituents
Ammonia (NH_3)	Slight to Substantial Improvement	Separating solids and liquids (particularly feces and urine) can be an effective means of controlling ammonia emissions
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Moderate to Substantial Improvement	Liquid/solids separators are very successful in facilitating the reduction of odor emmissions from manure, particularly when solids are allowed to remain in an aerobic environment
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed	Not Applicable	Not applicable.

for Listing Under the Endangered Species Act		
• Declining Species, Species of Concern	Not Applicable	Not applicable.
Noxious and Invasive Plants	Not Applicable	Not applicable.
Forage Quality and Palatability	Slight to Moderate Improvement	Separation and handling the solids and liquids separately can alter the waste stream to better meet the needs of the plant
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	Not Applicable	Not applicable.
• Declining Species, Species of Concern	Not Applicable	Not applicable.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Neutral	Separation could favorably alter the waste stream to better provide the needs of growing feed and forage, but this would be minor impact
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Slight Improvement	Some alternatives are used to treat the waste stream to the point water can be reused by livestock. Liquid/solid separation is almost always the first step
Stress and Mortality	Slight to Moderate Improvement	Suppressing emissions of ammonia and other manure constituents through liquid solid separation may well improve overall animal health and reduce mortality
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to Moderate.	
Land – Land in Production	Slight to moderate increase.	
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	

Labor – Change in Management Level	Moderate increase.	
Risk - Yield	Slight Decrease	Slight decrease due to reduction of salts.
Risk - Flexibility	Slight Decrease	Slight decrease due to more conductive growing conditions.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase because of construction and/or establishment 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		
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources		
Underutilization of Non-Fossil Energy Resources		

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Spring Development 574		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Slight Improvement	Collection of water reduces runoff.
Streambank	Slight Improvement	Spring development removes seeps and flows that keep stream banks saturated and easily erodible.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Slight Improvement	Spring development removes seeps and flows that keep slopes saturated and available for mass wasting.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight Worsening	Increased animal traffic around developed water source will increase compaction potential especially if the soil is moist.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Not Applicable	Not applicable.
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Commercial Fertilizer - N	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Commercial Fertilizer – P	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Commercial Fertilizer – K	Slight to Moderate Improvement	Better water distribution allows less animal concentration.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		

Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Improvement	Water collected and removed from site.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Water collected and removed from site.
Excessive Subsurface Water	Slight to Moderate Improvement	Subsurface water collected and removed from the site.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement	Provides a dependable supply of water allowing improved management.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Provides a dependable supply of water allowing improved management.
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	Neutral	By definition springs are at the land surface, not in aquifer.
Insufficient Flows in Water Courses	Slight Worsening	Spring flows diverted from water courses.
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Water development will decrease livestock trampling in wet areas and nearby streams.
• Excessive Salinity	Slight Improvement	Spring flows provide some dilution effect.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Spring flows are typically better quality than surface flows allowing opportunity for dilution. Effect depends on the proportion of one flow to the other.
• Harmful Temperatures	Neutral	Springs are cooler than surface water and their proximity to streams moderates stream temperatures, via hyporheic exchange. Development of springs may decrease amount of hyporheic water in channel. .
• Harmful Levels of Pathogens	Slight Improvement	Spring flows are typically better

		quality than surface flows allowing opportunity for dilution. Effect depends on the proportion of one flow to the other.
• Harmful Levels of Petroleum	Slight Improvement	Spring flows are typically better quality than surface flows allowing opportunity for dilution. Effect depends on the proportion of one flow to the other.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Available water to facilitate irrigation or grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
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	Moderate to Substantial Improvement	Provides water for terrestrial species.
Inadequate Space	Slight to Moderate Improvement	Additional habitat/space is

		available once spring water is available.
Habitat Fragmentation	Slight to Moderate Improvement	Multiple spring developments can reconnect habitats.
Imbalance Among and Within Populations	Slight Improvement	Management is designed to minimize limiting factors.
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 to Substantial Improvement	Improved distribution of animals makes forage more readily available to livestock.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	The spring increases the quality and quantity of water for livestock.
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to Substantial	N/A, if currently grazed or wildlife, substantial if change from cropland.
Land – Land in Production	Substantial increase	Substantial increase if land is brought into production.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	
Labor – Change in Management Level	Slight to moderate increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight Decrease	Slight decrease in risk due to dependable water supply.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Moderate Increase	Moderate increase due to construction costs.
Profitability – Change in Profitability	Slight 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	Slight to Moderate Decrease	Energy associated with pumping is saved when this practice is

		implemented.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Channel Stabilization 584		Baseline Setting:			
		Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Slight to Substantial Improvement	The action stabilizes channel to prevent further erosion.
Streambank	Slight to Substantial Improvement	Stabilizes channel to prevent further degradation and improves bank stabilization.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	Stabilizing the channel may increase its transport capacity.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Improvement	Reduced channel degradation improves ground water levels in floodplains, riparian areas, and wetlands.
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	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Stabilizing the channel can help improve sediment transport and reduce deposition.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Stabilizing the channel reduces channel erosion.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Slight to Moderate Improvement	The action can be used to manage surface water levels in floodplains, riparian areas, and wetlands
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Maintaining stable channels usually results in decreased suspended sediment.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Slight Improvement	The action design addresses stream water quality and fish habitat, which includes stream temperature.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	When species are selected, they 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	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	Noxious and invasive plants are removed from streambank and replaced with stabilization species.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight Improvement	The stabilized channel traps and provides more food for fish.
Inadequate Cover/Shelter	Slight Improvement	The stabilized channel provides more cover/shelter for fish.
Inadequate Water	Slight Improvement	The stabilized channel provides more and deeper pools.
Inadequate Space	Slight to Moderate Improvement	Stabilized channels increase suitable space for fish.
Habitat Fragmentation	Slight to Moderate Improvement	Stabilized channels that previously fragmented the stream system increase connectivity.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight decrease, channel banks out of crop production.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	
Capital – Annual Cost	Slight to moderate increase.	
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	Not applicable.	Not applicable.
Risk – Cash Flow	Substantial Increase	Substantial increase due to construction or establishment costs.
Profitability – Change in Profitability	Moderate decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Mechanical removal impacts; TCP important plant species.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Stream Habitat Improvement and Management 395		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	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Substantial Improvement	Vegetation and dense roots protects and binds the soil making it resistant to water flow 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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Improved vegetation and management will reduce streambank erosion and improve channel stability.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Slight to Substantial Improvement	Restoration of riparian conditions will contribute to moderation of stream temperatures.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Moderate to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.

PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Management and improvement measures create or maintain the desired riparian and aquatic plant communities.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Management and improvement measures create or maintain the health and vigor of desired riparian and aquatic plant communities.
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	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 Substantial Improvement	Aquatic habitat is improved providing food for fish and wildlife.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Aquatic habitat is improved providing cover for fish and wildlife.
Inadequate Water	Slight to Substantial Improvement	Riparian and instream improvements will improve water quality, and where applicable, water quantity for aquatic and riparian species and their habitats..
Inadequate Space	Moderate to Substantial Improvement	Restored habitats increase suitable space for fish.
Habitat Fragmentation	Moderate to Substantial Improvement	Restored habitats that were previously fragmenting the stream system increase connectivity.
Imbalance Among and Within Populations	Moderate Improvement	Habitat management is implemented to remove limiting factors.
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 to Moderate Improvement	Re-establishment of streamside habitat can provide additional forage.
Inadequate Shelter	Moderate to Substantial Improvement	Riparian area shrubs and trees can provide shade and protection from wind.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Moderate to Substantial Improvement	Tall vegetation alters temperatures and wind effects reducing stress caused by weather extremes.
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	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to substantial increase	Slight to substantial increase during installation.
Labor – Change in Management Level	Slight to moderate increase.	
Risk - Yield	Slight Decrease	Slight decrease due to favorable habitat.
Risk - Flexibility	Slight Decrease	Slight decrease due to favorable habitat.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Slight 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 (mechanical).
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Streambank and Shoreline Protection 580		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	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Moderate to Substantial Improvement	Stream banks are stabilized.
Shoreline	Moderate to Substantial Improvement	Shorelines are stabilized.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Moderate to Substantial Improvement	Stabilized side slopes prevents slips associated with mass movement.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	Reduction in eroded stream banks and shorelines reduces availability of sediment for deposition.
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	Not Applicable	Not applicable.

Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Substantial Improvement	Reduced erosion and stabilized channels result in decrease in offsite deposition.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Substantial Improvement	Reduced erosion and stabilized channels result in decrease in offsite deposition. Could result in slight to significant increase in off site deposition due to increased sediment transport.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight Improvement	Stabilizing eroding banks will reduce the delivery of nutrients and organic material in the soil profile to surface water.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Reduces erosion on banks and shorelines.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Slight Improvement	The action includes vegetation along stream courses.
• Harmful Levels of Pathogens	Slight Improvement	Elimination of eroding banks in areas adjacent to feedlots and livestock stream accesses.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	If used, vegetation residue stores carbon.
• 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Moderate to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Protection measures create or maintain the desired plant community.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Protection measures improves site conditions to enhance plant health and vigor of the desired plant community.
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	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	Vegetation planted for stabilization can consist of food species.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Vegetation planted for stabilization can consist of cover for wildlife.
Inadequate Water	Neutral	Measures taken are to be compatible with conservation of fish and wildlife habitat components in and adjacent to stream or shore.
Inadequate Space	Slight to Moderate Improvement	Stabilized banks and shoreline increase suitable space for fish.
Habitat Fragmentation	Slight to Moderate Improvement	Stabilized banks and shoreline that were previously fragmenting the stream system increase connectivity.
Imbalance Among and Within Populations	Slight Improvement	Habitat management is implemented to remove limiting factors.

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	Re-establishment of streambank vegetation can provide additional forage.
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	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight decrease, channel banks out of crop production.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Substantial increase	
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Moderate Increase	Moderate increase due to construction or establishment costs.
Profitability – Change in Profitability	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	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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Stripcropping 585		Baseline Setting:			
		Appropriate Land Use(s): Crop			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Moderate to Substantial Improvement	When applied on or near the contour, this practice reduces runoff velocities, thus reducing the detachment and transport capacity of overland flow. Additional credit is given for the sediment trapped and retained on the slope by the non-erosive strips.
Wind	Moderate to Substantial Improvement	Stripcropping reduces the "L" factor value of WEQ. The amount of erosion reduction depends on strip width, vegetative cover and strip orientation in relation to the direction of erosive winds.
Ephemeral Gully	Moderate to Substantial Improvement	Stripcropping can reduce ephemeral gully erosion by decreasing runoff velocity and volume
Classic Gully	Slight Improvement	Reduces runoff causing erosion in the gully.
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 Improvement	Perennial crops in the alternating strips can add organic matter to the soil. Reduced erosion reduces organic matter loss.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Moderate to Substantial Improvement	Alternating strips of erosion-resistant vegetation reduce soil erosion and the resulting soil deposition.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Worsening	Increased water infiltration that may move laterally to a seep area, particularly during fallow periods.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Drifting snow traps results in increased water infiltration which will slightly reduce the potential for flooding or ponding.
Excessive Subsurface Water	Slight Worsening	Drifting snow trapped results in increased infiltration which could contribute to excess 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	Drifting snow trapped results in increased water infiltration and greater water storage in the profile.
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 may be 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	Stripcropping may reduce the velocity of runoff and trap drifting snow resulting in increased water infiltration which could move salts to

		groundwater.
• Harmful Levels of Heavy Metals	Slight Worsening	The action reduces the velocity of runoff and traps drifting snow, increasing water infiltration and potentially moving soluble metals to groundwater.
• Harmful Levels of Pathogens	Slight Worsening	The action reduces the velocity of runoff and traps drifting snow, increasing water infiltration and potentially moving pathogens to groundwater.
• Harmful Levels of Petroleum	Neutral	Stripcropping reduces the velocity of runoff and traps drifting snow increasing water infiltration, and potentially moving available petroleum residues to groundwater.
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 Substantial Improvement	Stripcropping decreases soil erosion by wind and 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	Reduces erosion, slows water and wind velocities, increases infiltration.
• Excessive Salinity	Slight Improvement	Stripcropping slows runoff and can increase water, thereby reducing the potential for transport of salts to surface water.
• Harmful Levels of Heavy Metals	Slight to Substantial Improvement	The action decreases soil erosion by wind and water and may increase water infiltration, thereby reducing the potential for transport of heavy metals to surface water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Improvement	Stripcropping decreases soil erosion by wind and water and may increase water infiltration, 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 to Substantial Improvement	Vegetated strips provide ground cover and reduces wind erosion.
Particulate Matter less than 2.5	Slight to Substantial Improvement	Vegetated strips provide ground

Micrometers in Diameter (PM 2.5)		cover and reduces wind erosion.
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Neutral	CO2 emissions are decreased if equipment travel is reduced.
• 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Improvement	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Substantial Improvement	Reduced erosion will improve site potential to enhance plant 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	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Food for wildlife is improved because of proximity of strips to one another.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Cover for wildlife is improved because of proximity of strips to one another.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Slight Improvement	Strip provides only limited additional space for most species.
Habitat Fragmentation	Slight Improvement	Strips can connect adjacent habitats to a limited degree.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	N/A, or slight decrease, corners and end rows taken out of production.
Capital – Change in Equipment	Negligible	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Negligible to slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight increase	Slight increase where short rows exist, when moving between strips.
Labor – Change in Management Level	Slight to moderate increase	Slight to moderate increase to manage new mix of enterprises.
Risk - Yield	Slight Decrease	Slight decrease due to reduction of water erosion.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase due to following designed cropping pattern.
Risk - Timing	Negligible	
Risk – Cash Flow	Slight Increase	Slight increase due to higher fuel and labor requirements.
Profitability – Change in Profitability	Slight decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	Fuel use may be increased by implementation of this practice; however, this increase may be offset by the savings associated with reduced sedimentation removal.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Structure for Water Control 587		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	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
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	Slight Improvement	Structure used for better control and removal of water.
SOIL – CONDITION		
Organic Matter Depletion	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
Subsidence	Neutral	If used to manage water tables, this practice may increase or decrease organic matter oxidation.
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	Slight to Moderate Improvement	Controlling the rate of water movement will reduce the transport of sediment onto sensitive areas.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Improvement	Structure used for flow control, or level regulation of water.
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	Provides control for better water distribution.

Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Provides control for better water distribution.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Controls velocity and enhances sediment transport and trapping.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Controls velocity and enhances sediment transport and trapping.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Structure allows better management of water which can enhance flows in water courses.
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Decrease in water velocity will result in reduction in suspended sediments.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Slight Improvement	The action is used to control water releases and regulate surface water temperature.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.

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	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	Degree of effect is determined by the species whose aquatic habitat is improved and the extent to which connectivity of habitats is provided.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Slight Improvement	Captured water in structures can supplement stock water.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight decrease, structure built on cropland.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Substantial Increase	Substantial increase - control the

		stage, discharge, delivery and direction of flow of water.
Risk – Cash Flow	Moderate to Substantial Increase	Moderate to substantial increase due to construction costs.
Profitability – Change in Profitability	Situational	Sight decrease to moderate increase.
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	This practice may reduce the need for pumping.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Surface Roughening 609		Baseline Setting:			
		Appropriate Land Use(s): Crop			

RESOURCES, CONSIDERATIONS AND CONCERNS	PHYSICAL EFFECTS	RATIONALE
SOIL - EROSION		
Sheet and Rill	Slight Improvement	Soil roughness created for wind erosion also temporarily reduces runoff and erosion from water
Wind	Moderate Improvement	Clods and ridges from tillage temporarily reduce wind erosion
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	Wind erosion reduction provides a slight to moderate reduction in sedimentation from wind blown sediment
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	Slight Improvement	Wind erosion reduction reduces accumulation of wind blown soil that reduces water outlet

		capacity.
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	Wind erosion reduction reduced soil accumulation in surface water conveyances.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Wind erosion reduction reduced soil accumulation in water bodies.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Neutral	Roughened surface may increase infiltration, moving soluble salts below the root zone.
• Harmful Levels of Heavy Metals	Slight Worsening	Roughened surface may cause some modest infiltration increases, moving soluble contaminants and pathogens below the root zone.
• Harmful Levels of Pathogens	Slight Worsening	Roughened surface may cause some modest infiltration increases, moving soluble contaminates and pathogens below the root zone.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight Improvement	The action reduces soil erosion from wind.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Formation of clods will reduce wind erosion.
• Excessive Salinity	Neutral	Roughened surface may cause some modest infiltration increases, decreasing runoff potential.
• Harmful Levels of Heavy Metals	Slight Improvement	The action reduces wind erosion, reducing transport of heavy metal containing particulates.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Substantial Improvement	Increasing the random roughness of the soil surface reduces the potential for wind erosion.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Substantial Improvement	Increasing the random roughness of the soil surface reduces the potential for wind erosion.

Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Neutral	Some carbon may be lost due to soil disturbance.
• 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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Moderate to Substantial Improvement	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Neutral	Roughening disrupts the saltation process but do not slow winds.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
• Declining Species, Species of Concern	Not Applicable	Not applicable.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.

Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Negligible to slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate increase	Moderate increase to perform tillage/roughening operations.
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight Increase	Slight increase due to incorporating practice into cropping system.
Risk - Timing	Substantial Increase	Substantial increase - applied during periods of high probability for erosive winds.
Risk – Cash Flow	Slight Increase	Negligible to slight increase due to fuel and labor requirements.
Profitability – Change in Profitability	Slight decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Substantial Increase	Use of this practice indicates a need for additional long term conservation.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Terrace 600		Baseline Setting:			
		Appropriate Land Use(s): Crop			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Substantial Improvement		Terrace shortens slope length and reduces erosion by water.	
Wind		Slight Improvement		Vegetative terraces may shorten the unsheltered distance and trap saltating soil particles when orientation is across the prevailing wind erosion direction.	
Ephemeral Gully		Moderate to Substantial Improvement		The slope length of the concentrated flow channel is shortened.	
Classic Gully		Slight to Moderate Improvement		Changes hydrology of the land unit	
Streambank		Slight Improvement		Reduces concentrated flow from the land unit. May increase sediment carrying capacity of runoff water entering stream.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Slight Improvement		Reduced slope length reduces erosion.	
Mass Movement		Slight Worsening		Infiltration of trapped runoff may add to soil saturation causing mass movement.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Slight Improvement		Reduced erosion will reduce losses of organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Slight Worsening		Construction activities cause compaction in the terrace channel and embankment.	
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	Slight to Moderate Improvement	The action reduces erosion and traps sediment.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Worsening	Because of increased infiltration
Excessive Runoff, Flooding, or Ponding	Moderate to Substantial Improvement	Water storage is increased and runoff is reduced.
Excessive Subsurface Water	Slight to Moderate Worsening	Because of increased infiltration
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Moderate Improvement	Amount of runoff is regulated and controlled to reduce impact on outlets.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Moderate Improvement	The action reduces erosion and runoff and improves water efficiency.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Sediment trapped before it is transported to conveyance ways.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Sediment trapped before it is transported to conveyance ways.
Aquifer Overdraft	Slight Improvement	Increases infiltration for aquifer recharge
Insufficient Flows in Water Courses	Slight Worsening	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight to Moderate Worsening	this practice increases infiltration
• Excessive Nutrients and Organics	Slight to Moderate Worsening	The action increases infiltration which may provide transport for nutrients.
• Excessive Salinity	Slight to Moderate Worsening	The action increases infiltration of water and soluble contaminants.
• Harmful Levels of Heavy Metals	Slight Worsening	The action increases infiltration of water and soluble contaminants.
• Harmful Levels of Pathogens	Slight Worsening	The action increases infiltration of water and contaminants, including pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Substantial Improvement	The action reduces runoff and erosion.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Reduced erosion and increased infiltration can result in fewer dissolved and sediment-attached nutrients leaving the field.
• Excessive Suspended Sediment and Turbidity	Slight to Substantial Improvement	Terraces slow water and allow sediment deposition.
• Excessive Salinity	Slight to Moderate Improvement	The action can increase infiltration, which will reduce

		runoff of salts from a field.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	The action traps sediment, reduces ephemeral gully erosion and increases infiltration of surface runoff.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Increases infiltration and reduces runoff.
• Harmful Levels of Petroleum	Slight to Moderate Improvement	Increases infiltration and reduces 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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Neutral	Terracing promotes vegetative growth that 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Conserving moisture and reduced erosion will improve plant 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	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Not Applicable	Not applicable.
Inadequate Cover/Shelter	Slight Improvement	Vegetation-backed terraces provide limited cover.
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	Not Applicable	Not applicable.
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 to terrace and water/sediment storage.
Land – Land in Production	Moderate decrease	Moderate decrease, lose cropland as terrace is installed.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	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 terraces annually.
Labor – Change in Management Level	Negligible	
Risk - Yield	Situational.	
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 presence and effect of ephemeral gullies.
Risk – Cash Flow	Moderate Increase	Moderate increase due to construction costs.
Profitability – Change in Profitability	Situational	Slight decrease to slight increase.
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 Increase	The practice reduces sedimentation off-site but periodic sediment removal from the practice itself is required. Additional turning in field operations required.
Underutilization of Non-Fossil Energy	Not Applicable	Not Applicable

Resources		

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Tree/Shrub Establishment 612		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Substantial Improvement		Vegetation and surface litter reduces erosive water energy.	
Wind		Substantial Improvement		Tall vegetation creates a wind shadow, reduces erosive wind velocities and provides a stable area which stops saltating particles.	
Ephemeral Gully		Moderate to Substantial Improvement		Vegetation, surface litter and roots reduce erosive energy of concentrated flows.	
Classic Gully		Slight to Moderate Improvement		Vegetation, surface litter and roots reduce erosive energy of concentrated flows.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Moderate Improvement		Roots of vegetation binds the soil layers making the site resistant to gravity-induced movement.	
Road, Roadsides, and Construction Sites		Slight to Moderate Improvement		Vegetation and surface litter reduces erosive water energy.	
SOIL – CONDITION					
Organic Matter Depletion		Moderate to Substantial Improvement		Establishment of permanent woody vegetation can lead to increased root and shoot development. Decomposition increases soil organic matter.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Slight to Moderate Improvement		Root penetration and organic matter helps restore soil structure.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight to Moderate Improvement		Woody vegetation takes up limited quantities of salts and other chemicals.	
• Animal Waste and other Organics - N		Slight to Moderate Improvement		Increase vegetative growth and N uptake.	
• Animal Waste and other Organics - P		Slight to Moderate Improvement		Increase vegetative growth and P uptake.	
• Animal Waste and other Organics - K		Slight to Moderate Improvement		Increase vegetative growth and K uptake.	
• Commercial Fertilizer - N		Slight to Moderate Improvement		Increase vegetative growth and N uptake.	

• Commercial Fertilizer – P	Slight to Moderate Improvement	Increase vegetative growth and P uptake.
• Commercial Fertilizer – K	Slight to Moderate Improvement	Increase vegetative growth and K uptake.
• Residual Pesticides	Slight to Moderate Improvement	Increased organic matter can tie up some pesticides.
Damage from Sediment Deposition	Neutral	Vegetation and surface litter trap sediment from off-site but vegetative cover reduces erosion.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Improvement	Deep rooted plants uptake excess water.
Excessive Runoff, Flooding, or Ponding	Slight Worsening	Vegetation slows surface flow rates and creates ponding.
Excessive Subsurface Water	Slight to Moderate Improvement	Deep rooted plants uptake excess water.
Drifted Snow	Slight to Moderate Improvement	Snow is captured by tree/shrub crowns and deposited within the grazed area.
Inadequate Outlets	Slight to Moderate Improvement	Vegetation slows and retains runoff; the need for larger outlets is reduced.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Adapted and managed vegetative production allows more efficient use of available water.
Reduced Capacity of Conveyances by Sediment Deposition	Moderate to Substantial Improvement	Vegetation collects sediment preventing it from being deposited in conveyances.
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate to Substantial Improvement	Vegetation collects sediment preventing it from being deposited in water bodies.
Aquifer Overdraft	Slight to Moderate Worsening	Deep rooted vegetation can draw water lowering the water table.
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	Moderate to Substantial Improvement	The action reduces the need for pesticide use and trees and shrubs take up pesticide residues.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Salinity	Slight Improvement	The action may promote contaminant uptake by plants.
• Harmful Levels of Heavy Metals	Slight Improvement	Establishing metal-accumulating trees and shrubs may remove heavy metals from the soil

		profile.
• Harmful Levels of Pathogens	Moderate to Substantial Improvement	Increased vegetative cover and soil microbial activity can enhance competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Moderate to Substantial Improvement	The action reduces runoff and the need for pesticide use. Also, trees and shrubs take up pesticide residues.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Vegetation provides cover, reduces wind velocities, and increases infiltration.
• Excessive Salinity	Slight Improvement	The action promotes contaminant uptake by plants.
• Harmful Levels of Heavy Metals	Slight Improvement	Some plants may take up heavy metals.
• Harmful Temperatures	Slight to Moderate Improvement	Near streams and other water bodies, trees and shrubs provide shade to moderate water temperature.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	Woody vegetation captures and delays pathogen movement and thereby increase their mortality.
• Harmful Levels of Petroleum	Slight Improvement	Increased microbial activity in the planted area breaks down petroleum contaminants.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Permanent vegetative cover reduces wind erosion and fugitive dust generation.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Permanent vegetative cover reduces wind erosion and fugitive dust generation.
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)	Substantial 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	Slight to Moderate Improvement	Tall vegetation slows surface air movement and intercepts chemical drift.

Objectionable Odors	Slight to Moderate Improvement	Vegetation will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.
Reduced Visibility	Slight to Substantial Improvement	Tall vegetation slows surface air movement and intercepts and captures air borne materials. Reduced wind erosion improves visibility.
Undesirable Air Movement	Moderate to Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	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	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	Vegetation is installed and managed to control undesired species.
Forage Quality and Palatability	Substantial Improvement	Feed and forage plants used by wildlife are managed to maintain optimal conditions.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Plants are chosen and managed to enhance food value for target species.
Inadequate Cover/Shelter	Moderate to Substantial Improvement	Plants are chosen and managed to enhance cover/shelter.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Substantial Improvement	Tall vegetation creates vertical habitat structure and enhanced space for wildlife.
Habitat Fragmentation	Moderate to Substantial Improvement	Vegetation is installed and managed to connect habitats.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Cover is designed to minimize limiting factors.
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 to Moderate Improvement	These sites may be used as feed and forage by livestock if the desired trees and shrubs are not harmed.
Inadequate Shelter	Moderate to Substantial Improvement	Tall vegetation provides shelter.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Moderate to Substantial Improvement	Tall vegetation moderates temperatures and weather effects.
HUMAN – ECONOMICS		
Land - Change in Land Use	Substantial	Substantial, if converting to woodland.
Land – Land in Production	Substantial decrease.	
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate to substantial increase	Moderate to substantial increase during planting, otherwise negligible.
Labor – Change in Management Level	Negligible	
Risk - Yield	Not Applicable.	Not Applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Substantial Increase	Substantial increase - species should be suitable for the planned purpose.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase because of establishment costs.
Profitability – Change in Profitability	Slight decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Construction impacts (mechanical) associated with site preparation.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Not Applicable	Not Applicable
Underutilization of Non-Fossil Energy Resources	Slight to Substantial Decrease	Practice can establish trees for biomass energy.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Tree/Shrub Pruning 660		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Slight Improvement		Removal of overstory canopy increases amounts and vigor of erosion-controlling ground cover.	
Wind		Neutral		Residual vegetation and debris maintain non-erosive conditions.	
Ephemeral Gully		Neutral		Residual vegetation and debris maintain non-erosive conditions.	
Classic Gully		Neutral		Residual vegetation and debris maintain non-erosive conditions.	
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 Worsening		Removal of woody material from a site removes organic material that could have become 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		Not Applicable		Not applicable.	
• Animal Waste and other Organics - N		Slight Improvement		Woody materials that have assimilated N from organic materials are removed or harvested from the site.	
• Animal Waste and other Organics - P		Slight Improvement		Woody materials that have assimilated P from organic materials are removed or harvested from the site.	
• Animal Waste and other Organics - K		Slight Improvement		Woody materials that have assimilated K from organic materials are removed or harvested from the site.	
• Commercial Fertilizer - N		Slight Improvement		Woody materials that have assimilated N from organic materials are removed or harvested from the site.	
• Commercial Fertilizer – P		Slight Improvement		Woody materials that have assimilated P from organic materials are removed or	

		harvested from the site.
• Commercial Fertilizer – K	Slight Improvement	Woody materials that have assimilated K from organic materials are removed or harvested from the site.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Neutral	The action has a negligible effect.
Excessive Runoff, Flooding, or Ponding	Neutral	The action has a negligible effect.
Excessive Subsurface Water	Neutral	The action has a negligible effect.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Neutral	The action has a negligible effect.
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	Neutral	The action has a negligible effect.
Reduced Storage of Water Bodies by Sediment Accumulation	Neutral	The action has a negligible effect.
Aquifer Overdraft	Neutral	Reduction in leaf surface area reduces soil moisture depletion due to evapotranspiration.
Insufficient Flows in Water Courses	Neutral	Reduction in leaf surface area reduces soil moisture depletion due to evapo-transpiration.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	Managing for desirable plant vigor reduces the need for pesticide applications.
• Excessive Nutrients and Organics	Slight Improvement	The action stimulates plants to take up and assimilate nutrients and organics more efficiently.
• 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 Improvement	Managing for desirable plant vigor reduces runoff, erosion, and the need for pesticide applications.
• Excessive Nutrients and Organics	Slight Improvement	The action stimulates plants to take up and assimilate nutrients and organics more efficiently.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.

• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Pruning increases health and vigor of selected tree/shrub species as well as desired understory vegetation.
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	Not Applicable	Not applicable.
Wildfire Hazard	Slight to Moderate Improvement	Activities are carried out to reduce ladder fuels.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight Improvement	Growth of herbaceous and shrubby plants are enhanced and available as food for wildlife.
Inadequate Cover/Shelter	Slight Improvement	Growth of herbaceous and shrubby plants are enhanced and available as cover/shelter for wildlife.
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	Slight to Moderate Improvement	Not applicable.
Inadequate Shelter	Slight to Substantial Worsening	Removing branches from lower portion of trees reduces available 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	Not applicable.	Not applicable.
Capital – Change in Equipment	Negligible	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Moderate increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Slight decrease due to improved growing conditions.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Substantial Increase	Substantial increase - consider effects on the nesting and breeding or arboreal species.
Risk – Cash Flow	Slight Increase	Slight increase due to implementation cost.
Profitability – Change in Profitability	Slight decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Increase	Pruning requires energy.
Underutilization of Non-Fossil Energy Resources	Slight to Moderate Decrease	The practice provides immediate biomass for energy and improves future biomass yield.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Underground Outlet 620		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		Not Applicable		Not applicable.	
Ephemeral Gully		Substantial Improvement		Concentrated flow is eliminated and excess water conveyed to safe outlet	
Classic Gully		Moderate to Substantial Improvement		Concentrated flow is reduced or eliminated and excess water conveyed to safe outlet.	
Streambank		Slight Worsening		Concentrated flows are directed to surface streams at an accelerated rate.	
Shoreline		Not Applicable		Not applicable.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Slight Improvement		Water is removed from site and not allowed to saturate soils.	
Road, Roadsides, and Construction Sites		Slight to Moderate Improvement		Concentrated flow is conveyed away from site to safe outlet.	
SOIL – CONDITION					
Organic Matter Depletion		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
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		Slight to Moderate Improvement		Concentrated water is safely carried off-site without erosion and resulting sedimentation.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Neutral		The action removes concentrated flows before they infiltrate.	
Excessive Runoff, Flooding, or Ponding		Moderate to Substantial Improvement		Ponding and flooding are conveyed to a safe outlet.	
Excessive Subsurface Water		Neutral		The action removes concentrated	

		flows before they infiltrate.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Moderate Improvement	The action provides local outlets for practices such as terraces, diversions, basins, etc
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	Concentrated water is safely carried off-site without erosion and resulting sedimentation.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Concentrated water is safely carried off-site without erosion and resulting sedimentation.
Aquifer Overdraft	Neutral	Removal of concentrated flows may result in changes in local subsurface water amounts but no aquifer level changes
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Neutral	Providing a stable outlet can decrease erosion and the delivery of sediment-bound contaminants to surface water. However, runoff water from terraces and diversions can be high in nutrients and organics, which are delivered directly to surface water.
• Excessive Suspended Sediment and Turbidity	Neutral	Slowing water in associated structures will cause sediment to settle.
• Excessive Salinity	Neutral	The action does not increase or decrease the amount of salt lost from a field.
• Harmful Levels of Heavy Metals	Slight Improvement	Decrease in erosion will lead to decrease in sediment bound contaminants, but practice can increase the delivery of soluble contaminants.
• Harmful Temperatures	Neutral	Water collected subsurface will remain relatively cool.
• Harmful Levels of Pathogens	Slight Improvement	Decrease in erosion will lead to decrease in sediment bound contaminants, but practice can

		increase the delivery of soluble contaminants.
• Harmful Levels of Petroleum	Slight Improvement	Decrease in erosion will lead to decrease in sediment bound contaminants, but practice can increase the delivery of soluble 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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• N_20 (Nitrous Oxide)	Neutral	Planning and management must consider nitrogen/nitrates in outflow
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Not Applicable	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Neutral	Planning and management must preclude transport of animal by-products in outflow.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Neutral	Activities are designed,

Proposed for Listing Under the Endangered Species Act		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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Substantial increase	Substantial increase, if land brought into production.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight increase	Slight increase to maintain risers.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight Decrease	Negligible to slight decrease due to improved drainage.
Risk - Flexibility	Slight to Moderate Increase	Slight to moderate increase depending on design criteria.
Risk - Timing	Moderate Increase	Moderate increase, based on degree of excess surface water.
Risk – Cash Flow	Moderate Increase	Moderate increase due to construction cost.
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 (mechanical).
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Upland Wildlife Habitat Management 645		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Moderate Improvement		Establishment of permanent vegetation reduces erosion by water.	
Wind		Moderate Improvement		Establishment of permanent vegetation reduces erosion by wind.	
Ephemeral Gully		Moderate Improvement		Establishment of permanent vegetation reduces erosion by water.	
Classic Gully		Slight to Moderate Improvement		There will be decreased overland flow, enhanced vegetation cover.	
Streambank		Slight Improvement		There will be decreased overland flow, enhanced vegetation cover.	
Shoreline		Slight Improvement		There will be decreased overland flow, enhanced vegetation cover.	
Irrigation Induced		Not Applicable		Not applicable.	
Mass Movement		Slight Improvement		Roots of vegetation binds the soil layers making the site resistant to gravity-induced movement.	
Road, Roadsides, and Construction Sites		Not Applicable		Not applicable.	
SOIL – CONDITION					
Organic Matter Depletion		Neutral		New vegetation may be established.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Not Applicable		Not applicable.	

Excessive Runoff, Flooding, or Ponding	Moderate Worsening	Vegetation causes flooding and ponding.
Excessive Subsurface Water	Slight to Moderate Improvement	Deep rooted plants uptake excess 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	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Improved vegetative cover will decrease sedimentation concerns.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Improved vegetative cover will decrease sedimentation concerns.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Slight Improvement	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.
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	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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Neutral	Sound management of upland vegetation tends to improve watershed conditions.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Vegetative cover reduces wind erosion and fugitive dust generation.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Vegetative cover reduces wind erosion and fugitive dust generation.
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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Slight Improvement	Reduction in wind erosion potential and fugitive dust
Undesirable Air Movement	Slight to Moderate Improvement	Creation of tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Management and improvement measures create or maintain the desired plant communities.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate 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	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	Vegetation is installed and managed to control undesired species.
Forage Quality and Palatability	Moderate to Substantial Improvement	Selected plant species will have adequate nutritive value and palatability for the intended use.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Substantial Improvement	Areas for food are created, restored, or enhanced.
Inadequate Cover/Shelter	Substantial Improvement	Areas for cover are created, restored, or enhanced.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Substantial Improvement	Improved plant diversity and quantity and quality of vegetation provides

		habitat/space for wildlife.
Habitat Fragmentation	Moderate to Substantial Improvement	Vegetation will be established to maintain or enhance the plant community connectivity.
Imbalance Among and Within Populations	Substantial Improvement	Habitat management is implemented to remove limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
• Declining Species, Species of Concern	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Slight.	Slight.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to Moderate Increase	Slight to moderate depending on size, species and intensity of wildlife management.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease due to improved habitat.
Risk - Flexibility	Slight to Moderate Increase	Substantial to moderate increase in habitat capabilities.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Negligible increase because of implementation costs.
Profitability – Change in Profitability	Slight decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Increase	Maintenance of this practice requires energy.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Use Exclusion 472		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Moderate Improvement	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Wind	Slight to Moderate Improvement	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Ephemeral Gully	Slight to Moderate Improvement	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Classic Gully	Slight to Moderate Improvement	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Streambank	Slight to Moderate Improvement	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Shoreline	Slight to Moderate Improvement	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Slight to Moderate Improvement	Control of animals, people and vehicles reduces disturbance of soil and vegetation.
SOIL – CONDITION		
Organic Matter Depletion	Slight to Moderate Improvement	Control of animals, people and vehicles help maintain conditions of soil and vegetation.
Rangeland Site Stability	Slight to Substantial Improvement	Barriers reduce the excessive disturbance of soil and vegetation by facilitating the effective control of timing, frequency, duration and intensity of use of an area by animals or people.
Compaction	Moderate to Substantial Improvement	Control of animals, people and vehicles lessens compactive forces on soil.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight to Moderate Improvement	Control of animals, people and vehicles may increase infiltration, leaching and plant uptake.
• Animal Waste and other Organics	Slight to Moderate Improvement	Control of animals, people and vehicles may increase

- N		infiltration, leaching and plant uptake.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Control of animals, people and vehicles may increase infiltration, leaching and plant uptake.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Control of animals, people and vehicles may increase infiltration, leaching and plant uptake.
• Commercial Fertilizer - N	Slight to Moderate Improvement	Control of animals, people and vehicles may increase infiltration, leaching and plant uptake.
• Commercial Fertilizer – P	Slight to Moderate Improvement	Control of animals, people and vehicles may increase infiltration, leaching and plant uptake.
• Commercial Fertilizer – K	Slight to Moderate Improvement	Control of animals, people and vehicles may increase infiltration, leaching and plant uptake.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Slight to Moderate Improvement	Control of animals, people and vehicles reduces erosion, runoff and resulting sedimentation.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Slight to Substantial Improvement	Barriers reduce the excessive disturbance of soil and vegetation by facilitating the effective control of timing, frequency, duration and intensity of use of an area by animals or people.
Excessive Seepage	Slight Improvement	Control of animals, people and vehicles influences vigor and health of vegetation which in turn can influence water uptake and infiltration.
Excessive Runoff, Flooding, or Ponding	Slight to Moderate Worsening	Control of animals, people and vehicles can improve vigor and health of vegetation which can increase retardance of water flows. Also, exclusion structures can trap debris further retarding flows.
Excessive Subsurface Water	Slight to Moderate Improvement	Control of animals, people and vehicles influences vigor and health of vegetation which in turn can influence water uptake.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	Control of animals, people and vehicles influences vigor and health of vegetation which can increase retardance of water

		flows reducing the need for larger outlets.
Inefficient Water use on Irrigated Land	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Control of animals, people and vehicles influences vegetation vigor and soil structure which can help optimize water use.
Reduced Capacity of Conveyances by Sediment Deposition	Slight to Moderate Improvement	Control of animals, people and vehicles can improve vigor and health of vegetation which can increase retardance of sediments.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight to Moderate Improvement	Control of animals, people and vehicles can improve vigor and health of vegetation which can increase retardance of sediments.
Aquifer Overdraft	Neutral	Control of animals, people and vehicles can improve soil structure and infiltration of water to the aquifer. However, the effect is countered by improved vegetation vigor which increases water uptake.
Insufficient Flows in Water Courses	Slight to Moderate Improvement	Control of animals, people and vehicles influences vigor and health of vegetation and soil condition in uplands and riparian areas which in turn can enhance water storage and infiltration to stabilize flow in water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight Improvement	Control of animals, people, and vehicles influences vegetation vigor and soil structure which can accelerate use and breakdown of nutrients/organics.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Slight Improvement	Control of animals, people, and vehicles influences vegetation vigor and soil structure which can accelerate attenuation of heavy metals.
• Harmful Levels of Pathogens	Slight Improvement	Control of animals and people lessens pathogen production in sensitive areas.
• Harmful Levels of Petroleum	Slight Improvement	Reducing vehicular access reduces the potential for petroleum contamination.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	Control of animals, people and vehicles influences vigor and health of vegetation and soil

		condition reducing runoff when applied with other management practices.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Slight Improvement	Control of animals, people and vehicles improves vigor and health of vegetation and soil condition, which in turn can influence water uptake and infiltration to reduce runoff. Reducing vehicles eliminates heavy metals from brakes and fuel.
• Harmful Temperatures	Neutral	Control of animals, people and vehicles influences vigor, health, and availability of vegetation when applied with other conservation practices
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Control of animals, people and vehicles influences vigor and health of vegetation and soil condition which in turn can influence water uptake and infiltration to reduce runoff and increase mortality of pathogens.
• Harmful Levels of Petroleum	Slight Worsening	Control of animals, people and vehicles influences vigor and health of vegetation and soil condition which in turn can influence water uptake and infiltration to reduce runoff and increase trapping and breakdown of petroleum products.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	Restricting traffic on an area can result in an improved stand of vegetation, which can reduce the generation of particulates.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	Restricting traffic on an area can result in an improved stand of vegetation, which can reduce the generation of particulates.
Excessive Ozone	Not Applicable	Not applicable.
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	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.

Reduced Visibility	Slight Improvement	Reduction in wind erosion potential and fugitive dust
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	Control of access encourages plants that are adapted and suited for the site.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Control of animals facilitates grazing management enhancing health and vigor of desired plant communities.
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	Control of animals, people and vehicles influences vigor and health of desirable vegetation thereby reducing threat of noxious and invasive plants when applied with other conservation practices.
Forage Quality and Palatability	Moderate to Substantial Improvement	Control of animals, people and vehicles influences quality and health of vegetation
Wildfire Hazard	Slight to Substantial Improvement	Access by people and vehicles to high hazard areas can be restricted.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Substantial Improvement	Control of animals, people and vehicles influences vigor, health, and availability of vegetation for food.
Inadequate Cover/Shelter	Slight to Substantial Improvement	Control of animals, people and vehicles influences vigor, health, and availability of vegetation cover/shelter.
Inadequate Water	Slight to Moderate Improvement	Control of access protects available water sources.
Inadequate Space	Slight to Substantial Improvement	Excluded use protects wildlife space requirements.
Habitat Fragmentation	Slight to Substantial Improvement	Excluded use can protect connections between habitats.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Control of animals, people and vehicles facilitates the effects of other population-balancing practices and activities.
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	Control of animals influences vigor and health of vegetation.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Moderate to Substantial Improvement	Barriers exclude livestock from unsafe areas and facilitate improved forage and water supplies.
HUMAN – ECONOMICS		
Land - Change in Land Use	Substantial.	
Land – Land in Production	Substantial decrease.	
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate decrease	Slight to moderate decrease with land taken out of production.
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Moderate Increase	Moderate increase due to unavailability of deferred area.
Risk - Flexibility	Moderate Increase	Moderate increase due to incorporating deferred area into grazing plan.
Risk - Timing	Substantial Increase	Substantial increase - forage must be available for livestock while target area is deferred.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to loss of grazing.
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 Decrease	Appropriate when used to avoid effects on historic properties.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Waste Facility Cover 367		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Not Applicable		Not applicable.	
• Animal Waste and other Organics - N		Neutral		Covered lagoons tend to have less opportunity for overflows.	
• Animal Waste and other Organics - P		Neutral		Covered lagoons tend to have less opportunity for overflows.	
• Animal Waste and other Organics - K		Neutral		Covered lagoons tend to have less opportunity for overflows.	
• Commercial Fertilizer - N		Neutral		Covered lagoons tend to have less opportunity for overflows.	
• Commercial Fertilizer – P		Neutral		Covered lagoons tend to have less opportunity for overflows.	
• Commercial Fertilizer – K		Neutral		Covered lagoons tend to have less opportunity for overflows.	
• Residual Pesticides		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Not Applicable		Not applicable.	
Excessive Runoff, Flooding, or Ponding		Slight Worsening		Excluded rainfall on pond will contribute to runoff.	
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		Not Applicable		Not applicable.	
Inefficient Water use on Non-Irrigated Land		Not Applicable		Not applicable.	
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	Neutral	Rainfall secluded from facility will add to runoff.
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	Slight Improvement	Reduced opportunity for overflow due to rainfall exclusion will reduce opportunity for groundwater contamination.
• Harmful Levels of Pathogens	Slight Improvement	Reduced opportunity for overflow due to rainfall exclusion will reduce opportunity for groundwater contamination.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Neutral	Exclusion of rainfall on the facility will reduce incidence of overflow and associated contaminants.
• Harmful Levels of Heavy Metals	Slight Improvement	Exclusion of rainfall on the facility will reduce incidents of manure overflow and associated contaminants.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Neutral	Exclusion of rainfall on the facility will reduce incidence of overflow and associated contaminants.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 decrease in potential ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Neutral	Anaerobic conditions, which are promoted by covering, provide for a temporary sequestration of carbon, however, stored carbon will be released as CO2 if

		material is burned.
• N_20 (Nitrous Oxide)	Neutral	Not applicable.
• CH_4 (Methane)	Slight to Moderate Improvement	Methane releases may be contained with cover and converted to CO2 with combustion.
Ammonia (NH_3)	Slight to Moderate Improvement	Proper nutrient management reduces NH3 production.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight to Moderate Improvement	Cover will reduce/eliminate volatilization of materials.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
• Declining Species, Species of Concern	Not Applicable	Not applicable.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.

Capital – Change in Equipment	Moderate to substantial increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight to moderate.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible to slight.	
Labor – Change in Management Level	Slight to moderate increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Moderate Decrease	Situational. Negligible to moderate decrease in risk due to management of biogas.
Profitability – Change in Profitability	Moderate Increase	Situational. Negligible to moderate increase in profitability where biogas is put to profitable use.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Not Applicable	Not Applicable
Underutilization of Non-Fossil Energy Resources	Slight to Substantial Decrease	Practice facilitates methane collection for renewable fuel use.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	3/18/2008
PRACTICE: Waste Storage Facility 313		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
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 Improvement		The action will allow waste application at rates and times to address the resource concern.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Slight Improvement		Storage will allow better management of waste as to rate and timing of application, which allows application when compaction is least likely.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Not Applicable		Not applicable.	
• Animal Waste and other Organics - N		Slight to Moderate Improvement		Storage allows better timing of applications as well as applications at sites not normally accessed due to soil limitations.	
• Animal Waste and other Organics - P		Slight to Moderate Improvement		Storage allows better timing of applications as well as applications at sites not normally accessed due to soil limitations.	
• Animal Waste and other Organics - K		Slight to Moderate Improvement		Storage allows better timing of applications as well as applications at sites not normally accessed due to soil limitations.	
• Commercial Fertilizer - N		Slight to Moderate Improvement		Storage allows better timing of applications as well as applications at sites not normally accessed due to soil limitations.	
• Commercial Fertilizer – P		Slight to Moderate Improvement		Storage allows better timing of applications as well as applications at sites not normally accessed due to soil limitations.	
• Commercial Fertilizer – K		Slight to Moderate Improvement		Storage allows better timing of applications as well as	

		applications at sites not normally accessed due to soil limitations.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Neutral	Theoretically there will be an increase in infiltration at pond site.
Excessive Runoff, Flooding, or Ponding	Neutral	Polluted runoff is collected and stored.
Excessive Subsurface Water	Neutral	Theoretically there will be an increase in infiltration at pond site.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight Improvement	Pond contents will provide limited source of moisture.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
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	Neutral	Reduced infiltration at pond site could slightly increase overdraft.
Insufficient Flows in Water Courses	Slight Worsening	Polluted runoff will be captured before it reaches water course.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	There could be some increase in infiltration of soluble contaminants in the case of seepage.
• Excessive Salinity	Slight Improvement	Storage provides flexibility in rate, timing, and location of waste application; however, there could be some increase in infiltration of soluble contaminants at storage site.
• Harmful Levels of Heavy Metals	Slight Improvement	Heavy metals are rarely associated with manure; however, storage provides flexibility in rate, timing, and location of waste application. There could be some increase in infiltration of soluble contaminants at storage site.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Storage provides flexibility in rate, timing, and location of waste application, reducing the potential for pathogen contamination. Increased

		infiltration of water containing pathogens at the storage site is possible.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Moderate to Substantial Improvement	Storage provides flexibility in rate, timing, and location of waste application, with the potential for reductions of contaminants available for transport.
• Excessive Suspended Sediment and Turbidity	Neutral	Better timing of waste application due to storage will minimize risk of runoff.
• Excessive Salinity	Slight to Moderate Improvement	Storage provides flexibility in rate, timing, and location of waste application, with the potential for reductions of contaminants available for transport.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Storage provides flexibility in rate, timing, and location of waste application, with the potential for reductions of contaminants available for transport.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 decrease in potential ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• N_20 (Nitrous Oxide)	Neutral	Not applicable.
• CH_4 (Methane)	Slight to Moderate Worsening	Breakdown and decay of organic material is conducive to the formation of CH4
Ammonia (NH_3)	Slight to Moderate Improvement	Proper nutrient management reduces NH3 production.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight to Moderate Worsening	Proper siting and operation of facility will reduce volatilization of materials. Covers or membranes should be considered during planning.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.

PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Storage allows nutrient application at a rate, time, and location most suited to the plant needs.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight decrease, structure built on cropland.
Capital – Change in Equipment	Substantial 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 storage

		structure.
Labor – Change in Management Level	Moderate to substantial increase	Moderate to substantial increase for timing and management of waste.
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Moderate to Substantial Increase	Moderate to substantial increase because of design criteria.
Risk - Timing	Substantial Increase	Substantial increase, depending on state and/or federal laws.
Risk – Cash Flow	Substantial Increase	Substantial 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	Construction impacts (mechanical); inundation.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Waste Treatment Lagoon 359		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
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 Improvement		The action will allow waste application at rates and times to address the resource concern.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Slight Improvement		Storage will allow better management of waste as to rate and timing of application, which allows application when compaction is least likely.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Not Applicable		Not applicable.	
• Animal Waste and other Organics - N		Slight to Substantial Improvement		Treatment reduces organic contaminants in wastes.	
• Animal Waste and other Organics - P		Slight to Substantial Improvement		Treatment reduces organic contaminants in wastes.	
• Animal Waste and other Organics - K		Slight to Substantial Improvement		Treatment reduces organic contaminants in wastes.	
• Commercial Fertilizer - N		Slight to Substantial Improvement		Treatment reduces organic contaminants in wastes.	
• Commercial Fertilizer – P		Slight to Substantial Improvement		Treatment reduces organic contaminants in wastes.	
• Commercial Fertilizer – K		Slight to Substantial Improvement		Treatment reduces organic contaminants in wastes.	
• Residual Pesticides		Not Applicable		Not applicable.	
Damage from Sediment Deposition		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Neutral		Theoretically there will be an increase in infiltration at pond site.	
Excessive Runoff, Flooding, or Ponding		Neutral		Polluted runoff is collected and stored, but less likely than	

		storage facility.
Excessive Subsurface Water	Neutral	Theoretically there will be an increase in infiltration at pond site.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight Improvement	Lagoon contents will provide limited source of moisture.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
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	Neutral	Reduced infiltration at lagoon site could slightly increase overdraft.
Insufficient Flows in Water Courses	Neutral	Polluted runoff will be captured before it reaches water course, but less likely than storage pond.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	There could be some increase in infiltration of soluble contaminants in the case of seepage.
• Excessive Salinity	Slight Improvement	Storage provides flexibility in rate, timing, and location of waste application; however, there could be some increase in infiltration of soluble contaminants at storage site.
• Harmful Levels of Heavy Metals	Slight Improvement	Heavy metals are rarely associated with manure; however, storage provides flexibility in rate, timing, and location of waste application. There could be some increase in infiltration of soluble contaminants at storage site.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Storage provides flexibility in rate, timing, and location of waste application, reducing the potential for pathogen contamination.. Increased infiltration of pathogens at storage site is possible. Treatment tends to encourage die-off of bacteria.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Moderate to Substantial	Storage provides flexibility in

	Improvement	rate, timing, and location of waste application, with the potential for reductions of contaminants available for transport.
• Excessive Suspended Sediment and Turbidity	Neutral	Better timing of waste application due to storage will minimize risk of runoff.
• Excessive Salinity	Slight to Moderate Improvement	Storage provides flexibility in rate, timing, and location of waste application, with the potential for reductions of contaminants available for transport.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Moderate to Substantial Improvement	Storage provides flexibility in rate, timing, and location of waste application, with the potential for reductions of contaminants available for transport.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 decrease in potential ozone precursor emissions.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate Improvement	Anaerobic conditions provide for a temporary sequestration of carbon. Field management of nutrients optimizes the storage of soil carbon.
• N_20 (Nitrous Oxide)	Slight to Moderate Improvement	Reduction in N in waste results in less N volatilization
• CH_4 (Methane)	Slight Worsening	Breakdown and decay of organic material is conducive to the formation of CH4
Ammonia (NH_3)	Slight to Moderate Improvement	Proper nutrient management reduces NH3 production.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Type of lagoon and location will determine odor production, however, a correctly sited and managed facility will be relatively odor free.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.

PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Storage allows nutrient application at a rate, time, and location most suited to the plant needs.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight decrease, structure build on cropland.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase	Slight to moderate increase due to bi-annual pumpouts.
Labor – Change in Management Level	Moderate to substantial increase	Moderate to substantial increase for timing and management of

		waste.
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Moderate to Substantial Increase	Moderate to substantial increase because of design criteria.
Risk - Timing	Substantial Increase	Substantial increase, depending on state and/or federal laws.
Risk – Cash Flow	Substantial Increase	Substantial 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	Construction impacts (mechanical); inundation.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	No Effect	Regular maintenance of this practice requires pumping; however it facilitates benefits from fertilizer credits.
Underutilization of Non-Fossil Energy Resources	Slight to Moderate Increase	Potential methane production is not utilized.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Wastewater Treatment Strip 635		Baseline Setting:			
		Appropriate Land Use(s): Headquarters			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
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 Improvement		Treatment process will add organic matter to the site.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight to Moderate Worsening		Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.	
• Animal Waste and other Organics - N		Slight to Moderate Worsening		Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.	
• Animal Waste and other Organics - P		Slight to Moderate Worsening		Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.	
• Animal Waste and other Organics - K		Slight to Moderate Worsening		Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.	
• Commercial Fertilizer - N		Slight to Moderate Worsening		Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.	
• Commercial Fertilizer – P		Slight to Moderate Worsening		Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.	
• Commercial Fertilizer – K		Slight to Moderate Worsening		Use of the practice requires adding contaminants to the soil surface, some of which will infiltrate.	

• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Worsening	Infiltration at strip has the potential to aggravate already saturated conditions.
Excessive Runoff, Flooding, or Ponding	Neutral	Polluted runoff will be directed to treatment strip with no discharge allowed.
Excessive Subsurface Water	Slight to Moderate Worsening	Infiltration in the treatment strip will add to 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	Permanent vegetation improves infiltration and water efficiency.
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	Neutral	Infiltrating water in the strip will increase groundwater.
Insufficient Flows in Water Courses	Slight Worsening	Runoff diverted to treatment strip and allowed to infiltrate.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Moderate Worsening	The action entails the application of waste which increases the potential for groundwater contamination.
• Excessive Salinity	Slight Worsening	Infiltrating water in treatment strip may increase soluble salts moving to groundwater.
• Harmful Levels of Heavy Metals	Neutral	Heavy metals are rarely associated with manure, however, infiltrating water in treatment strip will increase soluble contaminants moving to groundwater.
• Harmful Levels of Pathogens	Slight Worsening	Infiltrating water in treatment strip will increase soluble contaminants moving to groundwater, however there will be die-off as pathogens are trapped in the vegetation and increased microbial activity enhances competition with pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.

• Excessive Nutrients and Organics	Moderate to Substantial Improvement	Infiltration and plant uptake in the treatment strip will remove contaminants from polluted runoff and waste water.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	Vegetation protects soil surface and traps sediment, nutrients and other materials.
• Excessive Salinity	Slight Improvement	Infiltration in the treatment strip may remove some salts from polluted runoff and waste water.
• Harmful Levels of Heavy Metals	Neutral	Heavy metals are rarely associated with manure; however, infiltration and plant uptake in the treatment strip will remove contaminants from polluted runoff and waste water.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Moderate to Substantial Improvement	Infiltration and plant uptake in the treatment strip will remove contaminants from polluted runoff and waste water.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 CO2 from the air and stores it in the form of carbon in the plants and soil.
• N_20 (Nitrous Oxide)	Neutral	Not applicable.
• CH_4 (Methane)	Not Applicable	Not applicable.
Ammonia (NH_3)	Neutral	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Not Applicable	Not applicable.
Reduced Visibility	Neutral	Not applicable.
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 Moderate Improvement	Treatment strip will receive excess nutrients which could be toxic and diminish plant 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	Not Applicable	Not applicable.
Inadequate Cover/Shelter	Not Applicable	Not applicable.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Neutral	Strip provides only limited additional space for most species.
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	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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
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	Slight Increase	Slight increase due to design criteria.
Risk - Timing	Not applicable.	Not applicable.

Risk – Cash Flow	Slight Increase	Slight increase due to construction costs.
Profitability – Change in Profitability	Situational	Slight increase or 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	Slight Increase	Maintenance of this practice requires regular cleanout.
Underutilization of Non-Fossil Energy Resources		

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Water and Sediment Control Basin 638		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		Not Applicable		Not applicable.	
Ephemeral Gully		Slight to Moderate Improvement		Controlled flow will reduce gulley erosion down slope of basin.	
Classic Gully		Slight to Substantial Improvement		Water diverted from gulley and spread in a nonerosive manner.	
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		Slight to Substantial Improvement		Runoff can be controlled or diverted from construction site.	
SOIL – CONDITION					
Organic Matter Depletion		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
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		Slight to Substantial Improvement		The action is designed to trap sediment.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Slight to Moderate Worsening		Retarded water in basin will infiltrate causing seepage problems below basin.	
Excessive Runoff, Flooding, or Ponding		Slight to Moderate Improvement		Basin will retard flows reducing runoff.	
Excessive Subsurface Water		Slight to Moderate Worsening		Retarded water in basin will infiltrate causing increased subsurface water.	
Drifted Snow		Not Applicable		Not applicable.	
Inadequate Outlets		Slight Improvement		Basin will retard flows reducing	

		the runoff and controlling water releases.
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	Moderate to Substantial Improvement	Basin traps and retains sediment.
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate to Substantial Improvement	Basin traps and retains sediment.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Slight Improvement	Basin will retard flows reducing the runoff and controlling water releases.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	Water containing pesticides may seep from the basin.
• Excessive Nutrients and Organics	Slight Worsening	Nutrients impounded could contaminate groundwater.
• Excessive Salinity	Slight Worsening	Infiltrating water in the basin can move soluble salts to the ground water
• Harmful Levels of Heavy Metals	Slight Worsening	Infiltrating water in the basin will move soluble contaminants to the ground water.
• Harmful Levels of Pathogens	Slight Worsening	Infiltrating water in the basin may leach pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight to Moderate Improvement	The action collects and stores adsorbed pesticides.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants.
• Excessive Suspended Sediment and Turbidity	Moderate to Substantial Improvement	Basin retains sediment and minimizes turbidity
• Excessive Salinity	Slight Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments.
• Harmful Temperatures	Slight to Moderate Worsening	Water retained in basin is generally warmer than receiving waters to which outlets drain.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble contaminants

• Harmful Levels of Petroleum	Slight to Moderate Improvement	Basins will tend to accumulate contaminants attached to sediments, and infiltrating waters will remove soluble 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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight Worsening	Any food species are eliminated in the area used for the basin.
Inadequate Cover/Shelter	Slight Worsening	Any cover is eliminated in the area used for the basin.
Inadequate Water	Slight to Moderate Improvement	Surface runoff retained will provide temporary water to wildlife as sediment is trapped, improving water quality in watershed.
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	Neutral	Activities are designed,

Proposed for Listing Under the Endangered Species Act		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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Slight Improvement	Captured water in basins can supplement stock water.
Stress and Mortality	Not Applicable	Not applicable.
HUMAN – ECONOMICS		
Land - Change in Land Use	Substantial	Substantial, convert to water and sediment storage.
Land – Land in Production	Substantial decrease	Substantial decrease, change cropland to water & sediment storage.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight Decrease	Slight decrease due to improved farmability of sloping land.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to construction costs.
Profitability – Change in Profitability	Situational	Moderate decrease to slight increase.
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	No Effect	This practice requires energy for maintenance, however energy is saved with improved farmability.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Water Harvesting Catchment 636		Baseline Setting:			
		Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight Improvement	Runoff is collected and given less infiltration time.
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	Not Applicable	Not applicable.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Neutral	The action collects and stores water preventing both infiltration and runoff.
• 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Neutral	Catchment draining for seasonal protection is generally done during fall, when retained water is cooler.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed for Listing Under the Endangered	Not Applicable	Not applicable.

Species Act		
• Declining Species, Species of Concern	Not Applicable	Not applicable.
Noxious and Invasive Plants	Not Applicable	Not applicable.
Forage Quality and Palatability	Not Applicable	Not applicable.
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	Moderate to Substantial Improvement	The action will enhance wet habitat for some species and diminish habitat for others, depending on location in a watershed.
Inadequate Space	Slight to Moderate Improvement	Additional habitat/space is available once water is available.
Habitat Fragmentation	Slight to Moderate Improvement	Multiple water sources can reconnect habitats.
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	Not Applicable	Not applicable.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	Collected water provides drinking for livestock.
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to substantial	
Land – Land in Production	Slight to substantial.	
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Not applicable.	Not applicable.
Capital – Annual Cost	Slight increase	Slight increase, offset by improvements in crop production.
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Slight decrease due to improved drainage.

Risk - Flexibility	Slight Decrease	Slight decrease due to more conductive growing conditions.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Moderate to Substantial Increase	Moderate to substantial increase due to construction 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 (mechanical).
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	The need for pumping is reduced by this practice.
Underutilization of Non-Fossil Energy Resources		

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Water Well 642		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Slight to Moderate Improvement		Increased vegetated cover due to better distribution of water reduces soil erosion.	
Wind		Slight to Moderate Improvement		Increased vegetated cover due to better distribution of water reduces soil erosion.	
Ephemeral Gully		Slight to Moderate Improvement		Increased vegetated cover due to better distribution of water reduces soil erosion.	
Classic Gully		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Neutral		Not Applicable	
Compaction		Neutral		The action involves production rather than distribution of available water.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight Improvement		Where well flows are used for irrigation, contaminants can be leached below the root zone.	
• Animal Waste and other Organics - N		Slight Improvement		Where well flows are used for irrigation, contaminants can be leached below the root zone.	
• Animal Waste and other Organics - P		Slight Improvement		Where well flows are used for irrigation, contaminants can be leached below the root zone.	
• Animal Waste and other Organics - K		Slight Improvement		Where well flows are used for irrigation, contaminants can be leached below the root zone.	
• Commercial Fertilizer - N		Slight Improvement		Where well flows are used for irrigation, contaminants can be leached below the root zone.	
• Commercial Fertilizer – P		Slight Improvement		Where well flows are used for irrigation, contaminants can be leached below the root zone.	
• Commercial Fertilizer – K		Slight Improvement		Where well flows are used for irrigation, contaminants can be leached below the root zone.	

• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Slight to Moderate Improvement	Increased water availability increases vegetative growth and cover decreasing erosion and sedimentation.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Neutral	Not Applicable
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.
Excessive Subsurface Water	Slight to Moderate Improvement	Water is removed from subsurface water source.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight to Moderate Improvement	Well development will provide a dependable supply of water allowing more concentrated management.
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
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	Slight to Moderate Worsening	Wells make it possible for water to be withdrawn from aquifer.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Salinity	Neutral	In coastal areas pumping fresh groundwater may allow the intrusion of saltwater.
• 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Worsening	Use of wells to irrigate previously non irrigated land will increase the likelihood of soluble and sediment-attached contaminants moving of-site. Probable less contaminants on grazing lands
• Harmful Levels of Petroleum	Not Applicable	Not applicable.

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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight Improvement	Increased availability and managed application of irrigation water enhances plant growth, health and vigor.
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	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	Provides dependable water supply to livestock and wildlife in areas where surface water is scant.
Inadequate Space	Not Applicable	Not applicable.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Water helps remove limiting factors.
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 to Moderate Improvement	Improved distribution of animals makes forage more readily available to livestock.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	Wells facilitate the availability and distribution of water.
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Slight to Substantial	Substantial for irrigation, N/A for animal watering facility.
Land – Land in Production	Substantial Increase	Substantial for irrigation, N/A for animal watering facility.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight to moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible to moderate increase.	
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Substantial Decrease	Substantial decrease due to provision of water.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Substantial Increase	Substantial increase due to implementation costs.
Profitability – Change in Profitability	Situational	Slight decrease to substantial increase.
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	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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Watering Facility 614		Baseline Setting:			
		Appropriate Land Use(s): All Land Uses			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Moderate Improvement	Increased vegetated cover due to better distribution of water reduces soil erosion.
Wind	Slight to Moderate Improvement	Increased vegetated cover due to better distribution of water reduces soil erosion.
Ephemeral Gully	Slight to Moderate Improvement	Increased vegetated cover due to better distribution of water reduces soil erosion.
Classic Gully	Slight Improvement	Increased grass cover due to better distribution of water will retard flows decreasing opportunity for classic erosion.
Streambank	Moderate to Substantial Improvement	By providing an alternate water source animal traffic on streambanks is removed reducing erosion.
Shoreline	Moderate to Substantial Improvement	By providing an alternate water source animal traffic on shorelines is removed reducing erosion.
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	Not Applicable	Not applicable.
Rangeland Site Stability	Neutral	Traffic may increase around the practice.
Compaction	Neutral	Traffic may increase around the practice, but the practice will help reduce excess moisture where traffic occurs.
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	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Neutral	Traffic may increase around the practice.
Excessive Seepage	Neutral	The action may result in minor amounts of increased infiltration due to retarding flows with better vegetative cover.
Excessive Runoff, Flooding, or Ponding	Neutral	The action may result in minor amounts of increased infiltration (less surface flows) due to retarding flows with better vegetative cover.
Excessive Subsurface Water	Neutral	The action may result in minor amounts of increased infiltration due to retarding flows with better vegetative cover.
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	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	The action should reduce erosion and resulting sediment due to increased vegetative cover resulting from better water distribution for animals.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	The action should reduce erosion and resulting sediment due to increased vegetative cover resulting from better water distribution for animals.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Neutral	The action may result in minor amounts of increased infiltration Less surface flows) due to retarding flows with better vegetative cover.
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	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight Worsening	The action tends to concentrate animals, increasing pathogens available for transport.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment	Slight to Moderate Improvement	Water development will

and Turbidity		decrease livestock trampling in wet areas and nearby streams.
• Excessive Salinity	Slight Improvement	Better distribution of animals away from surface water reduces the risk of salt contamination from manures.
• Harmful Levels of Heavy Metals	Slight Improvement	Improved vegetation due to better distribution of water will filter and reduce water borne contaminants. In addition, better distribution of animals results in less concentration of contaminants.
• Harmful Temperatures	Slight Improvement	Purpose of practice is to protect vegetation along water courses, which in turn moderates stream temperatures.
• Harmful Levels of Pathogens	Slight Improvement	Improved vegetation due to better distribution of water will filter and reduce water borne contaminants. In addition, better distribution of animals results in less concentration of contaminants.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Available water to facilitate irrigation or grazing management improves growth and vigor of plants.
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	Not Applicable	Not applicable.
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	Slight to Moderate Improvement	The action supplies water to alternative locations and protects stream and riparian areas.
Inadequate Space	Slight to Moderate Improvement	Additional habitat/space is available once water is available.
Habitat Fragmentation	Slight to Moderate Improvement	Multiple water sources can reconnect habitats.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Water helps remove limiting factors.
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 to Substantial Improvement	Improved distribution of animals makes forage more readily available to livestock.
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Substantial Improvement	Facilities supply water at remote locations.
Stress and Mortality	Moderate to Substantial Improvement	Available water reduces stress and mortality.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Moderate Increase	Moderate if livestock can access additional land.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight increase.	
Labor – Change in Management Level	Slight to moderate increase.	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Slight Decrease	Slight decrease due to opportunity for improved grazing distribution.
Risk - Timing	Not applicable.	Not applicable.

Risk – Cash Flow	Slight Increase	Slight increase due to implementation cost.
Profitability – Change in Profitability	Slight increase.	
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	No Effect	Pumping requires energy; however, many facilities do not require pumps and those that do may be designed to use renewable energy.
Underutilization of Non-Fossil Energy Resources	Slight to Substantial Decrease	Facilities can use wind or solar powered pumps or nose pumps.

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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Waterspreading 640		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		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Slight Worsening		Because of higher concentration and velocities from water collection.	
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 Improvement		The action increases water infiltration and plant uptake, increasing biomass production.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
Subsidence		Not Applicable		Not applicable.	
Contaminants:					
• Salts and other Chemicals		Slight Improvement		Increased infiltration may permit leaching of some salts below the root zone.	
• Animal Waste and other Organics - N		Slight Improvement		Increased water availability will allow increased plant nutrient uptake.	
• Animal Waste and other Organics - P		Slight Improvement		Increased water availability will allow increased plant nutrient uptake.	
• Animal Waste and other Organics - K		Slight Improvement		Increased water availability will allow increased plant nutrient uptake.	
• Commercial Fertilizer - N		Slight Improvement		Increased water availability will allow increased plant nutrient uptake.	
• Commercial Fertilizer – P		Slight Improvement		Increased water availability will allow increased plant nutrient uptake.	
• Commercial Fertilizer – K		Slight Improvement		Increased water availability will allow increased plant nutrient uptake.	
• Residual Pesticides		Neutral		Increased soil water availability may increase organic matter tie-up and microbial degradation of pesticide residues.	

Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Slight Improvement	Reduces runoff, ponding, and increase infiltration.
Excessive Subsurface Water	Slight Worsening	Reduces runoff, ponding, and increase infiltration.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight Improvement	Reduces needed capacity of outlets due to less runoff.
Inefficient Water use on Irrigated Land	Slight Improvement	Water is collected for more efficient use.
Inefficient Water use on Non-Irrigated Land	Slight to Substantial Improvement	Water is distributed for more efficient use.
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	Slight Improvement	Increases infiltration for aquifer recharge.
Insufficient Flows in Water Courses	Slight Worsening	Flow is diverted from water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Worsening	The action increases infiltration
• Excessive Nutrients and Organics	Slight Worsening	The action impounds water which has the potential to transport nutrients to groundwater.
• Excessive Salinity	Slight Worsening	The action results in increased infiltration and potential for moving soluble salts to ground water.
• Harmful Levels of Heavy Metals	Slight Worsening	The action results in increased infiltration and potential for leaching soil contaminates.
• Harmful Levels of Pathogens	Slight Worsening	The action results in increased infiltration and potential for leaching soil contaminates.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Slight Improvement	The action reduces runoff.
• Excessive Nutrients and Organics	Slight to Moderate Improvement	The action impounds surface water which reduces the potential to transport nutrients and organics downstream.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Slight Improvement	The action increases infiltration, increasing leaching potential and reducing the potential for moving salts to surface water.

• Harmful Levels of Heavy Metals	Slight Improvement	The action increases infiltration and reduces surface runoff.
• Harmful Temperatures	Neutral	Diverted water does not generally return to surface water source.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Slight Improvement	Increases infiltration
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Slight to Moderate Improvement	Site modification to improve irrigation application enhances the health and vigor of desired species.
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	Slight Improvement	Improved soil moisture facilitates improved health and vigor of desirable vegetation therefore reducing invasion of noxious weed.
Forage Quality and Palatability	Not Applicable	Not applicable.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Slight to Moderate Improvement	Improved soil moisture may increase plant diversity and production as food for wildlife.
Inadequate Cover/Shelter	Slight to Moderate Improvement	Improved soil moisture may increase plant diversity and production used as cover for wildlife.

Inadequate Water	Slight Improvement	Spreading temporarily concentrates natural precipitation.
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	Production will be improved with uniform and consistent application of water.
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	Negligible to slight.	
Land – Land in Production	Slight Increase	Negligible to slight increase.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to moderate increase.	
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease due to water distribution.
Risk - Flexibility	Moderate Increase	Moderate increase due to design criteria.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase because of construction costs.
Profitability – Change in Profitability	Situational	Slight increase or 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	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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Well Decommissioning 351		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		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
Inefficient Water use on Non-Irrigated Land		Not Applicable		Not applicable.	
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	Slight to Moderate Improvement	Decommissioned wells eliminate withdrawals from the aquifer.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight to Substantial Improvement	The action will prevent pesticide residues from contaminating a well.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	The action seals a well which reduces the potential of contamination.
• Excessive Salinity	Slight to Substantial Improvement	Sealing the well will prevent soluble salts on the surface from reaching the groundwater through the well, or stop artesian flow.
• Harmful Levels of Heavy Metals	Slight to Substantial Improvement	The action will prevent surface contaminants from reaching the groundwater through the well.
• Harmful Levels of Pathogens	Slight to Substantial Improvement	The action will prevent surface contaminants from reaching the groundwater through the well.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Not Applicable	Not applicable.
• 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	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 – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		

Productivity, Health, and Vigor	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not Applicable	Not applicable.
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	Not applicable.	Not applicable.
Land – Land in Production	Substantial decrease	Substantial decrease, if land taken out of production.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Slight to moderate.	Slight to moderate.
Capital – Annual Cost	Slight to moderate decrease.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Slight to substantial decrease.	
Labor – Change in Management Level	Negligible	
Risk - Yield	Situational	Negligible to substantial.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Not applicable.	Not applicable.
Profitability – Change in Profitability	Moderate to substantial decrease.	
HUMAN - CULTURAL		

Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Wetland Creation 658		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Moderate Improvement	Wetland vegetation would protect shorelines from wind and wave action.
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	Water ponding promotes growth of wetland vegetation and reduces decomposition of 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	Not Applicable	Not applicable.
• Animal Waste and other Organics - N	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Animal Waste and other Organics - P	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Animal Waste and other Organics - K	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer - N	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer – P	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer – K	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Provides temporary flood storage reducing flooding and ponding.

Excessive Subsurface Water	Slight Worsening	Increases infiltration to subsurface water.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Substantial Improvement	Provides temporary flood storage reducing needed outlet capacity.
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	Not Applicable	Not applicable.
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate Improvement	Wetlands trap sediment.
Aquifer Overdraft	Slight Improvement	Increases infiltration for aquifer recharge.
Insufficient Flows in Water Courses	Slight Worsening	Vegetated areas intercept precipitation and retain runoff with a net, elevated release to water courses.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	The action captures pesticide residues and facilitates their degradation.
• Excessive Nutrients and Organics	Slight Improvement	The action traps nutrients and organics which are broken down and used by wetland plants.
• 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 Improvement	The action captures pesticide residues and facilitates their degradation.
• Excessive Nutrients and Organics	Moderate Improvement	Wetland systems will utilize dissolved nutrients and trap sediment-attached nutrients and organics.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	System traps sediment.
• Excessive Salinity	Slight Improvement	Any salts in surface runoff will be detained in the wetland. Some wetland plants may take up salts.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Vegetation and anaerobic conditions trap heavy metals.
• Harmful Temperatures	Neutral	Improved hydrological conditions are likely.
• Harmful Levels of Pathogens	Slight Improvement	Pathogens are trapped in the wetland.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10	Not Applicable	Not applicable.

Micrometers in Diameter (PM 10)		
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 to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Slight Worsening	Anaerobic conditions in wetlands would increase production and release of methane.
Ammonia (NH_3)	Neutral	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.
Reduced Visibility	Slight Improvement	Reduction of particulates due to reduction in wind speed and increased soil cover.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health for their intended use.
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	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	Substantial Improvement	Areas for food are created.
Inadequate Cover/Shelter	Substantial Improvement	Areas for cover/shelter are created.
Inadequate Water	Slight to Moderate Improvement	Created wetlands will benefit some species, but their creation can alter hydrology of the area.
Inadequate Space	Moderate to Substantial Improvement	Additional wetland space is created.
Habitat Fragmentation	Moderate to Substantial Improvement	Multiple wetlands can restore the number and connectivity of this kind of habitat.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Habitat management is implemented to remove limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
• Declining Species, Species of Concern	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
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	Substantial	Substantial, convert to wetland.
Land – Land in Production	Substantial decrease	Substantial decrease, convert from cropland to wetland.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	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 land taken out of production.
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Slight decrease due to a more conducive habitat.
Risk - Flexibility	Slight to Moderate Increase	Substantial increase in habitat capabilities.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Slight increase due to installation costs.
Profitability – Change in Profitability	Situational	Moderate decrease to slight increase.
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	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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Wetland Enhancement 659		Baseline Setting: Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Moderate Improvement	Wetland vegetation would protect shorelines from wind and wave action.
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 Improvement	Water ponding promotes growth of wetland vegetation and reduces decomposition of 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	Not Applicable	Not applicable.
• Animal Waste and other Organics - N	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Animal Waste and other Organics - P	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Animal Waste and other Organics - K	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer - N	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer – P	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer – K	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Residual Pesticides	Neutral	Increased organic matter may tie up pesticides.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Provides temporary flood storage reducing flooding and

		ponding.
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Substantial Improvement	Provides temporary flood storage reducing needed outlet capacity.
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	Not Applicable	Not applicable.
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate Improvement	Wetlands trap sediment.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	The action captures pesticide residues and facilitates their degradation.
• Excessive Nutrients and Organics	Slight Improvement	The action traps nutrients and organics which are broken down and used by wetland plants.
• 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 Improvement	The action captures pesticide residues and facilitates their degradation.
• Excessive Nutrients and Organics	Moderate Improvement	Wetland systems will utilize dissolved nutrients and trap sediment-attached nutrients and organics.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	System traps sediment.
• Excessive Salinity	Slight Improvement	Any salts in surface runoff will be detained in the wetland. Some wetland plants may take up salts.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Vegetation and anaerobic conditions trap heavy metals.
• Harmful Temperatures	Neutral	Improved hydrological conditions are likely.
• Harmful Levels of Pathogens	Slight Improvement	Pathogens are trapped in the wetland.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Slight Worsening	Anaerobic conditions in wetlands would increase production and release of methane.
Ammonia (NH_3)	Neutral	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health for their intended use.
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	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	Substantial Improvement	Existing areas for food are enhanced.
Inadequate Cover/Shelter	Substantial Improvement	Areas for cover/shelter are enhanced.
Inadequate Water	Slight to Moderate Improvement	Enhancement of wetlands will

		improve habitat and water quality for many species; the number and types of species that will benefit is dependent on the degree to which hydrological conditions are improved.
Inadequate Space	Moderate to Substantial Improvement	Additional wetland space is enhanced.
Habitat Fragmentation	Moderate to Substantial Improvement	Multiple wetlands are enhanced to maintain the number and connectivity of this kind of habitat.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Habitat management is implemented to remove limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
• Declining Species, Species of Concern	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
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	Substantial	Substantial, convert to wetland.
Land – Land in Production	Substantial decrease	Substantial decrease, convert from cropland to wetland.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	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 land taken out of production.
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Slight decrease due to a more conducive habitat.
Risk - Flexibility	Slight to Moderate Increase	Substantial increase in habitat capabilities.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Slight increase due to installation costs.
Profitability – Change in Profitability	Situational	Moderate decrease to slight increase.

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	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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Wetland Restoration 657		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Moderate Improvement	Wetland vegetation would protect shorelines from wind and wave action.
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 Improvement	Water ponding promotes growth of wetland vegetation and reduces decomposition of 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	Not Applicable	Not applicable.
• Animal Waste and other Organics - N	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Animal Waste and other Organics - P	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Animal Waste and other Organics - K	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer - N	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer – P	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Commercial Fertilizer – K	Slight Improvement	Enhanced wetland vegetation may increase nutrient uptake.
• Residual Pesticides	Neutral	Increased organic matter may tie up pesticides.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Slight to Substantial Improvement	Provides temporary flood storage reducing flooding and

		ponding.
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Slight to Substantial Improvement	Provides temporary flood storage reducing needed outlet capacity.
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	Not Applicable	Not applicable.
Reduced Storage of Water Bodies by Sediment Accumulation	Moderate Improvement	Wetlands trap sediment.
Aquifer Overdraft	Not Applicable	Not applicable.
Insufficient Flows in Water Courses	Not Applicable	Not applicable.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Slight Improvement	The action captures pesticide residues and facilitates their degradation.
• Excessive Nutrients and Organics	Slight Improvement	The action traps nutrients and organics which are broken down and used by wetland plants.
• 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 Improvement	The action captures pesticide residues and facilitates their degradation.
• Excessive Nutrients and Organics	Moderate Improvement	Wetland systems will utilize dissolved nutrients and trap sediment-attached nutrients and organics.
• Excessive Suspended Sediment and Turbidity	Slight to Moderate Improvement	System traps sediment.
• Excessive Salinity	Slight Improvement	Any salts in surface runoff will be detained in the wetland. Some wetland plants may take up salts.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Vegetation and anaerobic conditions trap heavy metals.
• Harmful Temperatures	Neutral	Improved hydrological conditions are likely.
• Harmful Levels of Pathogens	Slight Improvement	Pathogens are trapped in the wetland.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Slight Worsening	Anaerobic conditions in wetlands would increase production and release of methane.
Ammonia (NH_3)	Neutral	Not applicable.
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.
Reduced Visibility	Slight Improvement	Reduce wind erosion and intercepting fine particulates and precursors
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health for their intended use.
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	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	Substantial Improvement	Areas for food are restored.
Inadequate Cover/Shelter	Substantial Improvement	Areas for cover/shelter are restored.

Inadequate Water	Slight to Moderate Improvement	Restoration of degraded wetlands will improve habitat and water quality for many species; the number and types of species (for example nesting waterfowl or juvenile fish) that will benefit is dependent on the degree to which hydrological conditions and connections in the floodplain are improved.
Inadequate Space	Moderate to Substantial Improvement	Additional wetland space is restored.
Habitat Fragmentation	Moderate to Substantial Improvement	Multiple wetlands can restore the number and connectivity of this kind of habitat.
Imbalance Among and Within Populations	Moderate to Substantial Improvement	Habitat management is implemented to remove limiting factors.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
• Declining Species, Species of Concern	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
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	Substantial	Substantial, convert to wetland.
Land – Land in Production	Substantial decrease	Substantial decrease, convert from cropland to wetland.
Capital – Change in Equipment	Moderate increase.	
Capital - Total Investment Cost	Substantial.	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 land taken out of production.
Labor – Change in Management Level	Slight increase.	
Risk - Yield	Slight Decrease	Slight decrease due to a more conducive habitat.
Risk - Flexibility	Slight to Moderate Increase	Substantial increase in habitat capabilities.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Slight increase due to installation costs.

Profitability – Change in Profitability	Situational	Moderate decrease to slight increase.
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	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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Wetland Wildlife Habitat Management 644		Baseline Setting:			
		Appropriate Land Use(s): Forest, Grazed Forest, Grazed Range, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Water, Watershed Protection, Wildlife			
RESOURCES, CONSIDERATIONS AND CONCERNS		**PHYSICAL EFFECTS**		**RATIONALE**	
SOIL - EROSION					
Sheet and Rill		Not Applicable		Not applicable.	
Wind		Not Applicable		Not applicable.	
Ephemeral Gully		Not Applicable		Not applicable.	
Classic Gully		Not Applicable		Not applicable.	
Streambank		Not Applicable		Not applicable.	
Shoreline		Moderate Improvement		Wetland vegetation would protect shorelines from wind and wave action.	
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		Not Applicable		Not applicable.	
Rangeland Site Stability		Not Applicable		Not applicable.	
Compaction		Not Applicable		Not applicable.	
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		Not Applicable		Not applicable.	
WATER – QUANTITY					
Rangeland Hydrologic Cycle		Not Applicable		Not applicable.	
Excessive Seepage		Not Applicable		Not applicable.	
Excessive Runoff, Flooding, or Ponding		Slight to Substantial Improvement		Provides temporary flood storage reducing flooding and ponding.	
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		Not Applicable		Not applicable.	
Inefficient Water use on Non-Irrigated Land		Not Applicable		Not applicable.	

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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• 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	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Not Applicable	Not applicable.
• Excessive Suspended Sediment and Turbidity	Moderate Improvement	There will be improved vegetative cover with a reduction of runoff and sedimentation.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Not Applicable	Not applicable.
• Harmful Temperatures	Neutral	Water released from impoundments may be warmer or cooler than receiving waters, depending on site conditions.
• Harmful Levels of Pathogens	Slight Improvement	Pathogens are trapped in the wetland.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
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 to Moderate Improvement	The accumulation of organic matter and sediments sequester carbon.
• N_20 (Nitrous Oxide)	Not Applicable	Not applicable.
• CH_4 (Methane)	Slight Worsening	Anaerobic conditions in wetlands would increase production and release of methane.
Ammonia (NH_3)	Neutral	Not applicable.
Chemical Drift	Not Applicable	Not applicable.

Objectionable Odors	Slight Worsening	Methane production and transport, as well as other odors, will be objectionable to some people.
Reduced Visibility	Neutral	Not applicable.
Undesirable Air Movement	Slight to Moderate Improvement	Creation of tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Slight to Substantial Improvement	Tall vegetation provides shade and moderates temperatures.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Moderate to Substantial Improvement	Plants selected are adapted and suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Moderate to Substantial Improvement	Plants are selected and managed to maintain optimal productivity and health for their intended use.
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	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	Substantial Improvement	Areas for food are created, restored, or enhanced.
Inadequate Cover/Shelter	Substantial Improvement	Areas for cover/shelter are created, restored, or enhanced.
Inadequate Water	Slight to Substantial Improvement	Actively managing wetlands (e.g., water levels), improves habitat for some species, and adversely affects others that become entrapped (e.g., fish); the taxa that benefit depend on the degree to which hydrological conditions are conserved.
Inadequate Space	Moderate to Substantial Improvement	Additional wetland space is maintained.
Habitat Fragmentation	Moderate to Substantial Improvement	Multiple wetlands are managed to maintain the number and connectivity of this kind of habitat.
Imbalance Among and Within Populations	Substantial Improvement	Habitat management is implemented to remove limiting factors.

Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
• Declining Species, Species of Concern	Moderate to Substantial Improvement	Activities are designed, installed, and mitigated to an extent to enhance species of concern.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Slight to Moderate Improvement	These sites may be used as feed and forage by livestock if the intended purpose is maintained.
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	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Slight.	Slight.
Capital – Annual Cost	Negligible	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible to substantial increase	Negligible to substantial increase depending if water level is natural or artificial maintained.
Labor – Change in Management Level	Negligible	
Risk - Yield	Slight to Moderate Decrease	Slight to moderate decrease due to improved habitat.
Risk - Flexibility	Slight to Moderate Increase	Substantial to moderate increase in habitat capabilities.
Risk - Timing	Not applicable.	Not applicable.
Risk – Cash Flow	Slight Increase	Negligible increase because of implementation costs.
Profitability – Change in Profitability	Situational	Slight increase or decrease.
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Not applicable.	Not applicable.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Windbreak/Shelterbelt Renovation 650		Baseline Setting:			
		Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Substantial Improvement	Vegetation restored across the slope and surface litter reduces erosive water energy.
Wind	Substantial Improvement	Restoration of tall vegetation reestablishes a wind shadow, reduces erosive wind velocities and provides a stable area which stops saltating particles.
Ephemeral Gully	Slight to Substantial Improvement	Vegetation restored across the slope reduces erosive energy of concentrated flows.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Slight Improvement	Roots of restored vegetation binds the soil layers making the site resistant to gravity-induced movement.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Moderate to Substantial Improvement	Restored roots and vegetative matter and its breakdown increases organic matter.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight to Moderate Improvement	Restored root penetration and organic matter helps restore soil structure.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Most woody species take up limited quantities of salts.
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.
• Commercial Fertilizer - N	Slight to Moderate Improvement	Vigorously growing woody

		vegetation increases nutrient uptake.
• Commercial Fertilizer – P	Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.
• Commercial Fertilizer – K	Slight to Moderate Improvement	Vigorously growing woody vegetation increases nutrient uptake.
• Residual Pesticides	Slight Improvement	Increased organic matter may tie up pesticides.
Damage from Sediment Deposition	Slight to Moderate Worsening	Restored vegetation and surface litter traps sediment.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Slight to Moderate Improvement	Restored plants uptake excess water.
Excessive Runoff, Flooding, or Ponding	Slight Worsening	Vegetation will slow runoff and create ponding.
Excessive Subsurface Water	Slight to Moderate Improvement	Restored plants uptake excess water.
Drifted Snow	Substantial Improvement	Snow is captured within and down wind of restored tree/shrub rows.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Substantial Improvement	Restored tall vegetation reduces wind speeds and evapotranspiration allowing more efficient use of available water.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Restored tall vegetation reduces wind speeds and evapotranspiration allowing more efficient use of available water.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Restored vegetation collects sediment preventing it from being deposited elsewhere.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Restored vegetation collects sediment preventing it from being deposited elsewhere.
Aquifer Overdraft	Slight to Moderate Worsening	Restored deep rooted vegetation can draw water lowering the water table.
Insufficient Flows in Water Courses	Slight to Moderate Worsening	Restored tall vegetation uses available water and restricts runoff.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Substantial Improvement	Restored vegetation will uptake excess nutrients.
• Excessive Salinity	Neutral	The action may increase vegetative uptake in the shelterbelt.

• 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 reduces soil erosion from wind and may intercept pesticide drift.
• Excessive Nutrients and Organics	Substantial Improvement	Restored plants and soil organisms uptake nutrients.
• Excessive Suspended Sediment and Turbidity	Slight Improvement	Restored vegetation traps sediment preventing it from being deposited elsewhere.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Slight Improvement	The action reduces wind erosion, reducing transport of heavy metals attached to particulates. Some plants may take up heavy metals..
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Slight Improvement	Increased microbial activity in the restored area breaks down petroleum contaminants.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	When properly renovated, the practice reduces particulate emissions from the soil surface.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	When properly renovated, the practice reduces particulate emissions from the soil surface.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade and minimal biofiltering of ozone concentrations due to interception by tree and shrub foliage.
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)	Slight to Moderate Improvement	Interception of NH3 by plants
Chemical Drift	Slight to Substantial Improvement	Properly renovated windbreaks reduce surface air movement and intercept chemical drift.
Objectionable Odors	Slight to Moderate Improvement	Vegetation will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.
Reduced Visibility	Slight to Moderate Improvement	Reduce wind erosion and intercepting fine particulates and

		precursors
Undesirable Air Movement	Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Moderate to Substantial Improvement	Temperatures in leeward areas are increased accelerating plant germination and growth.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Substantial Improvement	Renovation maintains adapted and suited plants.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Substantial Improvement	Plants are renovated 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	Moderate to Substantial Improvement	Forage quality and palatability is improved in the protected area.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides food for wildlife.
Inadequate Cover/Shelter	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Moderate to Substantial Improvement	Renovated tall vegetation creates vertical habitat structure and enhanced space for wildlife.
Habitat Fragmentation	Moderate to Substantial Improvement	Vegetation is renovated to connect habitats.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Habitat management is implemented to remove limiting factors.
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 to Substantial Improvement	The quality and quantity of feed and forage plants is enhanced by improving the microclimate.
Inadequate Shelter	Substantial Improvement	Restored tall vegetation provides shelter.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Substantial Improvement	Restored tall vegetation moderates temperatures and wind effects reducing stress caused by weather extremes.
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Not applicable.	Not applicable.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Moderate.	Moderate.
Capital – Annual Cost	Slight increase.	
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Substantial Increase	Substantial increase - species should be suitable for planned purpose.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to implementation 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	Consider impacts to historic landscapes.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	Practice will improve water use efficiency and reduce plant damage/mortality. When used for homesteads & farmsteads it reduces heat loss.
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.

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

STATE	Nebraska	FIELD OFFICE	Any	DATE	5/7/2008
PRACTICE: Windbreak/Shelterbelt Establishment 380		Baseline Setting: Appropriate Land Use(s): Crop, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Urban, Water, Watershed Protection, Wildlife			

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Slight to Substantial Improvement	Vegetation planted across the slope and surface litter reduces erosive water energy.
Wind	Substantial Improvement	Tall vegetation creates a wind shadow, reduces erosive wind velocities and provides a stable area which stops saltating particles.
Ephemeral Gully	Slight to Substantial Improvement	Vegetation across the slope reduces erosive energy of concentrated flows.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Not Applicable	Not applicable.
Mass Movement	Slight Improvement	Roots of vegetation binds the soil layers making the site resistant to gravity-induced movement.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Moderate to Substantial Improvement	Increased vegetative matter and its breakdown increases soil organic matter.
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Slight to Moderate Improvement	Root penetration and organic matter helps restore soil structure.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Slight Improvement	Most woody species take up limited quantities of salts.
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Establishing woody vegetation increases nutrient uptake.
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Establishing woody vegetation increases nutrient uptake.
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Establishing woody vegetation increases nutrient uptake.
• Commercial Fertilizer - N	Slight to Moderate Improvement	Establishing woody vegetation increases nutrient uptake.
• Commercial Fertilizer – P	Slight to Moderate Improvement	Establishing woody vegetation increases nutrient uptake.

• Commercial Fertilizer – K	Slight to Moderate Improvement	Establishing woody vegetation increases nutrient uptake.
• Residual Pesticides	Slight Improvement	Increased organic matter may tie up pesticides.
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	Slight to Moderate Improvement	Plants uptake excess water.
Excessive Runoff, Flooding, or Ponding	Slight Worsening	Vegetation will slow runoff and create ponding.
Excessive Subsurface Water	Slight to Moderate Improvement	Plants uptake excess water.
Drifted Snow	Substantial Improvement	Snow is captured within and down wind of tree/shrub rows.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Substantial Improvement	Tall vegetation reduces wind speeds and evapotranspiration allowing more efficient use of available water.
Inefficient Water use on Non-Irrigated Land	Slight to Moderate Improvement	Tall vegetation reduces wind speeds and evapotranspiration allowing more efficient use of available water.
Reduced Capacity of Conveyances by Sediment Deposition	Slight Improvement	Vegetation across the slope collects sediment preventing it from being deposited elsewhere.
Reduced Storage of Water Bodies by Sediment Accumulation	Slight Improvement	Vegetation across the slope collects sediment preventing it from being deposited elsewhere.
Aquifer Overdraft	Slight to Moderate Worsening	Deep rooted vegetation can draw water lowering the water table.
Insufficient Flows in Water Courses	Slight to Moderate Worsening	Tall vegetation uses available water and restricts runoff.
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Substantial Improvement	Permanent vegetation will uptake excess nutrients.
• Excessive Salinity	Neutral	The action may increase vegetative uptake in the shelterbelt.
• 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 reduces soil erosion from wind and may intercept pesticide drift.
• Excessive Nutrients and Organics	Slight Improvement	Permanent woody vegetation will utilize nutrients and filter suspended organic material from runoff.
• Excessive Suspended Sediment	Slight to Moderate Improvement	Vegetation across the slope traps

and Turbidity		sediment preventing it from being deposited elsewhere.
• Excessive Salinity	Not Applicable	Not applicable.
• Harmful Levels of Heavy Metals	Slight Improvement	The action reduces wind erosion, reducing transport of heavy metals attached to particulates. Some plants may take up heavy metals..
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Not Applicable	Not applicable.
• Harmful Levels of Petroleum	Slight Improvement	Increased microbial activity in the planted area breaks down petroleum contaminants.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Slight to Moderate Improvement	When properly spaced, particulate emissions from the soil surface are reduced or eliminated.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	When properly spaced, particulate emissions from the soil surface are reduced or eliminated.
Excessive Ozone	Neutral	There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade and minimal biofiltering of ozone concentrations due to interception by tree and shrub foliage.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight to Moderate 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)	Slight to Moderate Improvement	Interception of NH3 by plants
Chemical Drift	Slight to Substantial Improvement	Trees slow surface air movement and intercept chemical drift.
Objectionable Odors	Slight to Moderate Improvement	Vegetation will reduce wind movement and intercept VOCs, fine particulates, and fugitive dust.
Reduced Visibility	Slight to Moderate Improvement	Reduce wind erosion and intercepting fine particulates and precursors
Undesirable Air Movement	Substantial Improvement	Tall vegetation creates turbulence and slows undesired, leeward winds.
Adverse Air Temperature	Moderate to Substantial Improvement	Temperatures in leeward areas are increased accelerating plant germination and growth.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Substantial Improvement	Plants selected are adapted and

		suited.
PLANTS - CONDITION		
Productivity, Health, and Vigor	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	Moderate to Substantial Improvement	Forage quality and palatability is improved in the protected area.
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides food for wildlife.
Inadequate Cover/Shelter	Moderate to Substantial Improvement	Improved plant diversity and quality and quantity of vegetation provides cover for wildlife.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Moderate to Substantial Improvement	Tall vegetation creates vertical habitat structure and enhanced space for wildlife.
Habitat Fragmentation	Moderate to Substantial Improvement	Vegetation is installed to connect habitats.
Imbalance Among and Within Populations	Slight to Substantial Improvement	Habitat management is implemented to remove limiting factors.
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 to Substantial Improvement	The quality and quantity of feed and forage plants is enhanced by improving the microclimate.
Inadequate Shelter	Substantial Improvement	Tall vegetation provides shelter.
Inadequate Stock Water	Not Applicable	Not applicable.
Stress and Mortality	Substantial Improvement	Tall vegetation moderates

		temperatures and wind effects reducing stress caused by weather extremes.
HUMAN – ECONOMICS		
Land - Change in Land Use	Substantial	Substantial, cropland converted to woodland.
Land – Land in Production	Substantial decrease	Substantial decrease, cropland taken out of production.
Capital – Change in Equipment	Slight Increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Not applicable.	Not applicable
Capital – Credit and Farm Program Eligibility	Situational.	
Labor - Labor	Negligible	
Labor – Change in Management Level	Negligible	
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Not applicable.	Not applicable.
Risk - Timing	Substantial Increase	Substantial increase - species should be suitable for the planned purpose.
Risk – Cash Flow	Slight to Moderate Increase	Slight to moderate increase due to establishment 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	Consider impacts to historic landscapes.
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight Decrease	Practice will improve water use efficiency and reduce plant damage/mortality. When used for homesteads & farmsteads it reduces heat loss.
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.