# CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | Nebraska | FIELD OFFICE | Any | DATE | 10/10/2008 |
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| **PRACTICE: Underground Outlet 620** | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |

| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE |
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| **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 |

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| | | flows before they infiltrate. |
| Drifted Snow | Not Applicable | Not applicable. |
| Inadequate Outlets | Moderate to Substantial 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 | Neutral | Runoff is delivered to receiving stream with slight changes in timing and quantity |
| **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 | Slight Worsening | Underground outlets can provide a direct conduit for runoff to surface waters |
| • Excessive Nutrients and Organics | Slight Worsening | Underground outlets can provide a direct conduit for runoff to surface waters |
| • 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 Worsening | Underground outlets can provide a direct conduit for runoff contaminated with pathogens to surface waters |
| • Harmful Levels of Petroleum | Slight Worsening | Underground outlets can provide |

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| | | a direct conduit for runoff contaminated with petroleum to surface waters |
| **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 | 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 | Removal of excess surface water can postively affect plant growth 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 | Neutral | Activities are designed, |

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| Concern | | 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. | Equipment required to install practice. |
| Capital - Total Investment Cost | Substantial. | Materials, equipment and labor to install practice. |
| Capital – Annual Cost | Slight increase. | Annual structure management costs. |
| 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 Moderate Increase | Construction impacts possible |
| **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: |
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| **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. |