

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|------------|---------------------------------------|-----|--|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Agrichemical Handling Facility 309 | | 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 | | 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 | | Substantial Improvement | | Provides for spill containment of fertilizer mixing operation. | |
| • Commercial Fertilizer – P | | Substantial Improvement | | Provides for spill containment of fertilizer mixing operation. | |
| • Commercial Fertilizer – K | | Substantial Improvement | | Provides for spill containment of fertilizer mixing operation. | |
| • Residual Pesticides | | Substantial Improvement | | Provides for spill containment of pesticide mixing operation. | |
| 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 | |

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| PRACTICE: Agrichemical Handling Facility 309 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Substantial Improvement | Provides for spill containment of pesticide mixing operation | | | |
| • Excessive Nutrients and Organics | Substantial Improvement | Provides for spill containment of fertilizer mixing operation | | | |
| • 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 | Provides for spill containment of pesticide mixing operation | | | |
| • Excessive Nutrients and Organics | Substantial Improvement | Provides for spill containment of fertilizer mixing operation | | | |
| • 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------|---------------------------------------|-----|-------------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Agrichemical Handling Facility 309 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Not Applicable | Not applicable. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> • Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> • 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: | | | | | |
| <ul style="list-style-type: none"> • Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> • 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 | | | | | |
| Land – Land in Production | | | | | |
| Capital – Change in Equipment | | | | | |
| Capital - Total Investment Cost | | | | | |
| Capital – Annual Cost | | | | | |
| Capital – Credit and Farm Program Eligibility | | | | | |
| Labor - Labor | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|-------------------|---------------------------------------|------------------|-------------|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Agrichemical Handling Facility 309 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Labor – Change in Management Level | | | | | |
| Risk - Yield | | | | | |
| Risk - Flexibility | | | | | |
| Risk - Timing | | | | | |
| Risk – Cash Flow | | | | | |
| Profitability – Change in Profitability | | | | | |
| 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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Fish Passage 396 | | 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 | Removing obstructions to natural flows will decrease streambank erosion. | | | |
| Shoreline | Slight to Substantial Improvement | If a dam is removed, shoreline erosion upstream of dam should decrease. | | | |
| 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 | Moderate Worsening | If action to provide fish passage is removal of a dike or levy, temporary inundation of floodplain will occur seasonally. | | | |
| Excessive Subsurface Water | Not Applicable | Not applicable. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight Improvement | Installing larger outlets for fish passage will also drain area more quickly. | | | |

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|---|-----------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fish Passage 396 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Removing barriers will increase sediment transport downstream. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Moderate to Substantial Worsening | If a dam is removed for fish passage, water storage will be eliminated and sediment will move downstream. | | | |
| Aquifer Overdraft | Not Applicable | Not applicable. | | | |
| Insufficient Flows in Water Courses | Slight to Substantial Improvement | Assuring sufficient instream flows for fish passage will increase instream flows. | | | |
| 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 | Slight to Substantial Improvement | Excessive water temperatures are an ecological barrier to fish passage; riparian restoration associated with improving fish passage increases stream shading important for maintaining cool water. | | | |
| • 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fish Passage 396 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Not Applicable | Not applicable. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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 | Moderate to Substantial Improvement | Barrier removal improves passage for fish to access food and habitat. | | | |
| Inadequate Cover/Shelter | Moderate to Substantial Improvement | Improving fish passage opens up additional habitat for fish to seek cover and shelter. | | | |
| Inadequate Water | Moderate to Substantial Improvement | Restoring fish passage to critical aquatic habitats in a watershed decreases the risk of inadequate water for aquatic species. | | | |
| Inadequate Space | Moderate to Substantial Improvement | Providing fish passage increases the amount of space available to fish. | | | |
| Habitat Fragmentation | Moderate to Substantial Improvement | Fish habitat is reconnected. | | | |
| Imbalance Among and Within Populations | Moderate to Substantial Improvement | Providing fish passage throughout a watershed will generally improve population distribution. | | | |

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| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fish Passage 396 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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. |

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| | | | | | |
|--|-------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Stream Habitat Improvement and Management 395 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Stream Habitat Improvement and Management 395 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 – SUITABILITY | | | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> 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. | | | |
| <ul style="list-style-type: none"> 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.. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Stream Habitat Improvement and Management 395 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Slight to Substantial Improvement | Habitat management is implemented to remove limiting factors. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Substantial Improvement | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Substantial Improvement | 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|--|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Stream Habitat Improvement and Management 395 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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

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|---|-----------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Firebreak 394 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Slight Worsening | A strip with bare soil or reduction in vegetative cover and surface litter has potential for increases in erosive water energy. | | | |
| Wind | Slight Worsening | A strip with bare soil or reduction in vegetative cover and surface litter has potential for increased exposure of the soil surface to erosive wind energy. | | | |
| Ephemeral Gully | Slight Worsening | A strip with bare soil or reduction in vegetative cover and surface litter has potential for increases in erosive water energy. | | | |
| Classic Gully | Slight Worsening | A strip with bare soil or reduction in vegetative cover and surface litter has potential for increases in erosive water energy. | | | |
| Streambank | Neutral | A streambank may be used as an anchor or end point for a fire break or as a fire break with vegetation removed. | | | |
| Shoreline | Neutral | A shoreline may be used as an anchor or end point for a fire break or as a fire break with vegetation removed. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Not Applicable | Not applicable. | | | |
| Road, Roadsides, and Construction Sites | Neutral | Roads and road sides maintained as fire breaks have erosion control measures installed. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Moderate to Substantial Worsening | Nutrient cycling is halted on strips left unvegetated. | | | |
| Rangeland Site Stability | Neutral | To prevent the spread of wildfire and to control prescribed burns. | | | |
| Compaction | Slight to Moderate Worsening | Equipment used to maintain minimum vegetation can compact forest soils. | | | |
| Subsidence | Not Applicable | Not applicable. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|-------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Firebreak 394 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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 Worsening | If chemical methods are used to apply the practice, pesticide residues may remain in the soil. | | | |
| Damage from Sediment Deposition | Neutral | Bare soil needs to be protected from erosion. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Neutral | Bare soil needs to be protected from erosion. | | | |
| 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 Worsening | Bare soil in firebreak is subject to erosion. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight Worsening | Bare soil in firebreak is subject to erosion. | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Firebreak 394 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Excessive Suspended Sediment and Turbidity | Slight Worsening | Bare soil firebreaks are subject to erosion. | | | |
| • 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 Improvement | There is a minimal reduction of ozone precursors through reduced incidence of wildfire. | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Moderate to Substantial Improvement | There is a decrease in CO ₂ emissions from reduced incidence of wildfire. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Slight to Moderate Improvement | Reduces smoke emissions from reducing fire activity. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Substantial Improvement | Plants selected are adapted and suited. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight to Substantial Improvement | Plants are selected and managed to maintain health and vigor appropriate for the intended purpose. | | | |
| 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 Moderate Worsening | Undesired species can colonize areas left bare. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|---|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Firebreak 394 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Forage Quality and Palatability | Not Applicable | Not applicable. | | | |
| Wildfire Hazard | Substantial Improvement | Fuel loadings are isolated. | | | |
| 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 | Slight Worsening | Breaks in vegetative cover may interrupt continuity of habitat for certain wildlife species. | | | |
| Habitat Fragmentation | Neutral | Breaks in vegetative cover may interrupt habitat connectivity. | | | |
| Imbalance Among and Within Populations | Not Applicable | Not applicable. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|--|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Firebreak 394 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|---|-----|------|--------|
| PRACTICE: Filter Strip 393 | | 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 | Neutral | Captures sediment in tailwater runoff but does not reduce erosion. | | | |
| Mass Movement | Not Applicable | Not applicable. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL - CONDITION | | | | | |
| Organic Matter Depletion | Substantial Improvement | Decreased erosion, increased root mass and less oxidation from lack of soil disturbance under permanent cover will increase or maintain organic matter. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Substantial Improvement | Root penetration and organic matter helps restore soil structure. | | | |
| Subsidence | Neutral | Drainage has the predominant impact on subsidence. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight Improvement | Selected plants can take up excess salts. | | | |
| • Animal Waste and other Organics - N | Slight to Moderate Improvement | Growing vegetation will take up N from organics, especially if vegetations is periodically harvested. | | | |
| • Animal Waste and other Organics - P | Slight to Moderate Improvement | Growing vegetation will take up P from organics, especially if vegetations is periodically harvested. | | | |
| • Animal Waste and other Organics - K | Slight to Moderate Improvement | Growing vegetation will take up K from organics, especially if vegetations is periodically harvested. | | | |
| • Commercial Fertilizer - N | Slight to Moderate Improvement | Growing vegetation will take up N from organics, especially if vegetations is periodically harvested. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|--------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Filter Strip 393 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Commercial Fertilizer – P | Slight to Moderate Improvement | Growing vegetation will take up P from organics, especially if vegetations is periodically harvested. | | | |
| • Commercial Fertilizer – K | Slight to Moderate Improvement | Growing vegetation will take up K from organics, especially if vegetations is periodically harvested. | | | |
| • Residual Pesticides | Slight to Moderate Improvement | Increased organic matter adsorbs pesticides and increased biological activity will break them down. | | | |
| 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 | Not Applicable | Not applicable. | | | |
| Excessive Runoff, Flooding, or Ponding | Neutral | Buffers slow runoff, potentially increasing 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 | Substantial Improvement | Collects sediment preventing it from being deposited elsewhere. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Substantial Improvement | Collects sediment preventing it from being deposited elsewhere. | | | |
| Aquifer Overdraft | Not Applicable | Not applicable. | | | |
| Insufficient Flows in Water Courses | Slight Worsening | Permanent vegetation uses available water and reduces runoff. | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | Slight Improvement | The action may attract beneficial insects or trap insect pests, reducing the need for pesticide applications. The potential increase in infiltration is offset by increased soil organic matter and biological activity. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|---|-----|------|--------|
| PRACTICE: Filter Strip 393 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Excessive Nutrients and Organics | Slight to Substantial Improvement | Permanent vegetation will take up available nutrients and increase organic matter. The increased organic matter will increase cation exchange capacity which will hold nutrients. | | | |
| <ul style="list-style-type: none"> Excessive Salinity | Slight Improvement | The action will result in increased uptake by plants. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | Slight Improvement | Higher organic matter levels increases buffering capacity of the soil. Some plants can take up some heavy metals. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | Slight Improvement | The action captures and delays pathogen movement, but pathogen mortality may also be delayed because vegetative cover may protect pathogens from desiccation. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |
| In Surface Water: | | | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pesticides | Slight to Substantial Improvement | The action reduces runoff and traps adsorbed pesticides. Also, the strips may attract beneficial insects or trap insect pests, reducing the need for pesticide applications. | | | |
| <ul style="list-style-type: none"> Excessive Nutrients and Organics | Substantial Improvement | Solid organics and sediment-attached nutrients are filtered out. Soluble nutrients infiltrate the soil and may be taken up by plants or utilized by soil organisms. | | | |
| <ul style="list-style-type: none"> Excessive Suspended Sediment and Turbidity | Substantial Improvement | Vegetation protects soil surface and traps sediment, nutrients and other materials. | | | |
| <ul style="list-style-type: none"> Excessive Salinity | Slight Improvement | The action slows runoff, which may increase water infiltration, reducing the potential for transport of salts to surface water. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | Moderate to Substantial Improvement | Runoff containing heavy metals is slowed, trapping sediment and increasing infiltration into the soil where metals are often tied up. Some plants can take up heavy metals. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Filter Strip 393 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Harmful Temperatures | Neutral | Filter strips used in conjunction with riparian forest buffers improve watershed function. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | Slight Improvement | Filter strips capture and delay pathogen movement, but mortality may also be delayed because vegetative cover may protect pathogens from dessication. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Petroleum | Slight Improvement | Filter strip slows runoff and increases infiltration of petroleum contaminants. Increased microbial activity in the filter strip breaks down petroleum contaminants. | | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | Slight Improvement | Areas converted to permanent vegetation reduce the area susceptible to wind erosion. | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight Improvement | Areas converted to permanent vegetation reduce the area susceptible to wind erosion. | | | |
| Excessive Ozone | Neutral | There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation. | | | |
| Excessive Greenhouse Gas: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | Slight Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> CH₄ (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 – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Substantial Improvement | Plants selected are adapted and suited. | | | |
| PLANTS - CONDITION | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Filter Strip 393 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Productivity, Health, and Vigor | Substantial Improvement | Plants are selected and managed to maintain optimal productivity and health. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Not Applicable | Not applicable. | | | |
| Noxious and Invasive Plants | Moderate to Substantial Improvement | Filter strips are installed and managed to control target species. Dense, permanent cover limits invasion by noxious plants. | | | |
| Forage Quality and Palatability | Not Applicable | Not applicable. | | | |
| Wildfire Hazard | Not Applicable | Not applicable. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Substantial Improvement | Increased quality and quantity of vegetation provides more food and cover for wildlife. | | | |
| Inadequate Cover/Shelter | Slight to Substantial Improvement | Increased quality and quantity of vegetation provides more cover for wildlife. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Substantial Improvement | Filter strips may be installed and managed to enhance space requirements for wildlife. | | | |
| Habitat Fragmentation | Slight Improvement | Vegetation will help support wildlife habitat connectivity. | | | |
| Imbalance Among and Within Populations | Slight Improvement | Vegetation can be installed and managed to favor target wildlife and fish species. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Filter Strip 393 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|--|-----|------|--------|
| 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 | Slight to Substantial Improvement | Reduces runoff and erosion. | | | |
| Streambank | Slight to Substantial Improvement | Roots of vegetation binds the soil making it resistant to water flow erosion. | | | |
| Shoreline | Slight to Substantial Improvement | Roots of vegetation binds the soil making it resistant to water flow erosion. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Slight to Substantial 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|-------------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Riparian Forest Buffer 391 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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 | 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|------------|--|-----|---|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Riparian Forest Buffer 391 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| • 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 | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
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| PRACTICE: Riparian Forest Buffer 391 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | 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 – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | Buffer establishment and management creates or maintains the desired plant community. | | | |
| PLANTS - CONDITION | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|------------|--|-----|--|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Riparian Forest Buffer 391 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| Productivity, Health, and Vigor | | Substantial Improvement | | Plants are selected and managed to maintain optimal productivity and health. | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> 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. | |
| <ul style="list-style-type: none"> 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Substantial Improvement | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Substantial Improvement | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|--|--|-----|------|--------|
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| PRACTICE: Riparian Forest Buffer 391 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Not applicable. | Not applicable. | | | |
| Land – Land in Production | Not applicable. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Riparian Herbaceous Cover 390 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Crop, Grazed Rbge, 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|---|------|--------|
| PRACTICE: Riparian Herbaceous Cover 390 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Grazed Rabege, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Water, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • 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 - 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|-----|--|--------|
| 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 | |
| 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 | | Slight to Substantial 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. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|---|--------------|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Riparian Herbaceous Cover 390 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Crop, Grazed Rbge, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Water, Watershed Protection, Wildlife | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| 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 CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | | Not applicable. | | |
| • CH ₄ (Methane) | Not Applicable | | Not applicable. | | |
| Ammonia (NH ₃) | Not Applicable | | Not applicable. | | |
| Chemical Drift | Not Applicable | | Not applicable. | | |
| Objectionable Odors | Not Applicable | | Not applicable. | | |
| Reduced Visibility | 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 – SUITABILITY | | | | | |
| 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| PRACTICE: Riparian Herbaceous Cover 390 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Grazed Rabege, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Water, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Slight Improvement | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Slight Improvement | 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|---|------|--------|
| PRACTICE: Riparian Herbaceous Cover 390 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Grazed Rabege, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Water, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| 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 | | Not applicable. | Not applicable. | | |
| Land – Land in Production | | Not applicable. | Moderate to substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Slight to moderate. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Negligible to slight. | | |
| Labor - Labor | | 0 | Slight to moderate increase. | | |
| Labor – Change in Management Level | | 0 | Not applicable. | | |
| Risk - Yield | | Not applicable. | Not applicable. | | |
| Risk - Flexibility | | Not applicable. | Not applicable. | | |
| Risk - Timing | | Not applicable. | Moderate Decrease | | |
| Risk – Cash Flow | | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | |
| Profitability – Change in Profitability | | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Not applicable. | No | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Not Applicable | No | | |
| Underutilization of Non-Fossil Energy Resources | | Practice facilitates methane collection for renewable fuel use. | Yes | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Irrigation Field Ditch 388 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | | Neutral | | A ditch constructed across the slope may intercept runoff water and shorten the slope length. | |
| Wind | | Not Applicable | | Not applicable. | |
| Ephemeral Gully | | Neutral | | A ditch constructed across the slope may intercept runoff 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 | | 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 | | Ditch intercepts runoff that might otherwise cause deposition | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | | Not Applicable | | Not applicable. | |
| Excessive Seepage | | Neutral | | May provide outlet for seepage, however canals may provide a source of seepage. | |
| Excessive Runoff, Flooding, or Ponding | | Slight Improvement | | May collect and conveys runoff to safe outlet. | |
| Excessive Subsurface Water | | Slight Worsening | | May provide a water source for infiltration that will add to subsurface water. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------|---|--|------|--------|
| PRACTICE: Irrigation Field Ditch 388 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| Drifted Snow | Not Applicable | | Not applicable. | | |
| Inadequate Outlets | Slight Worsening | | Return flows and spillage may add runoff to already inadequate outlets. | | |
| Inefficient Water use on Irrigated Land | Substantial Improvement | | Ditches facilitate proper use of irrigation water. | | |
| Inefficient Water use on Non-Irrigated Land | Not Applicable | | Not applicable. | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight Worsening | | Return flows may convey sediment causing additional deposition. | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight Worsening | | Return flows may convey sediment causing additional deposition. | | |
| Aquifer Overdraft | Not Applicable | | Not applicable. | | |
| Insufficient Flows in Water Courses | Slight Improvement | | Return flows can add additional flow 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 | Not Applicable | | Not applicable. | | |
| • Excessive Salinity | Not Applicable | | Not applicable. | | |
| • Harmful Levels of Heavy Metals | Slight Worsening | | Return flows from canals may deliver contaminants to surface water. | | |
| • Harmful Temperatures | Slight Worsening | | Return flows to ditches may be warmer than receiving waters. | | |
| • Harmful Levels of Pathogens | Slight Worsening | | May collect runoff and return flows may deliver possible contaminants to surface water | | |
| • Harmful Levels of Petroleum | Slight Worsening | | May collect runoff and return flows may deliver possible contaminants to surface water | | |
| AIR – QUALITY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Irrigation Field Ditch 388 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Slight Improvement | Increased soil moisture will decrease fugitive dust emissions | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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 | Slight Improvement | Water will be temporarily available in the ditch. | | | |
| 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Irrigation Field Ditch 388 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Field Border 386 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Recreation | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Moderate to Substantial Improvement | Permanent vegetation planted across the slope reduces erosive water energy. | | | |
| Wind | Moderate to Substantial Improvement | Stiff-stemmed, permanent vegetation traps saltating particles. More roughened surface slows wind velocities. | | | |
| Ephemeral Gully | Slight to Substantial Improvement | Vegetation across the slope reduces erosive energy of concentrated flows where they exit the field. | | | |
| Classic Gully | Slight to Moderate Improvement | Permanent vegetation reduces runoff and erosive energy of concentrated flows where they exit the field which helps to stabilize classic gullies. | | | |
| Streambank | Slight Improvement | Increased vegetation can reduce concentrated runoff flowing over streambanks. | | | |
| Shoreline | Slight Improvement | Increased vegetation can reduce concentrated runoff flowing over shorelines. | | | |
| Irrigation Induced | Neutral | Captures sediment in tailwater runoff but does not reduce erosion. | | | |
| Mass Movement | Slight Worsening | Increased infiltration and water retention increases the potential for mass movement. | | | |
| Road, Roadsides, and Construction Sites | Neutral | If field border also borders a road, permanent vegetation may reduce runoff. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Moderate to Substantial Improvement | Permanent cover and lack of soil disturbance reduces decomposition of soil organic materials such as roots and allows accumulation. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Slight to Substantial Improvement | Root penetration and organic matter helps restore soil structure. | | | |
| Subsidence | Neutral | Drainage has the predominant impact on subsidence. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight Improvement | Selected plants can take up excess salts. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Field Border 386 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Recreation | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Animal Waste and other Organics - N | Slight to Moderate Improvement | Growing vegetation will take up N from organics, especially if vegetations is periodically harvested. | | | |
| • Animal Waste and other Organics - P | Slight to Moderate Improvement | Growing vegetation will take up P from organics, especially if vegetations is periodically harvested. | | | |
| • Animal Waste and other Organics - K | Slight to Moderate Improvement | Growing vegetation will take up K from organics, especially if vegetations is periodically harvested. | | | |
| • Commercial Fertilizer - N | Slight to Moderate Improvement | Growing vegetation will take up N from organics, especially if vegetations is periodically harvested. | | | |
| • Commercial Fertilizer – P | Slight to Moderate Improvement | Growing vegetation will take up P from organics, especially if vegetations is periodically harvested. | | | |
| • Commercial Fertilizer – K | Slight to Moderate Improvement | Growing vegetation will take up K from organics, especially if vegetations is periodically harvested. | | | |
| • Residual Pesticides | Slight to Moderate Improvement | Increased organic matter adsorbs pesticides and increased biological activity will break them down. | | | |
| Damage from Sediment Deposition | Slight to Moderate Improvement | Permanent cover decreases erosion, but vegetation and surface litter traps sediment. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | Not applicable. | | | |
| Excessive Seepage | Slight to Moderate Worsening | Reduces runoff and traps drifting snow resulting in increased water infiltration that may move laterally to a seep area, particularly during fallow periods. | | | |
| Excessive Runoff, Flooding, or Ponding | Slight to Moderate Improvement | Permanent vegetation will reduce runoff and increase infiltration. | | | |
| Excessive Subsurface Water | Slight Worsening | Reduces runoff resulting in increased water infiltration which increases subsurface water. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|--------------------------------|---|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Field Border 386 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Recreation | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| 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 Moderate Improvement | | Traps sediment at edge of the field. | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Moderate Improvement | | Traps sediment at edge of the field. | | |
| Aquifer Overdraft | Not Applicable | | Not applicable. | | |
| Insufficient Flows in Water Courses | Slight Worsening | | Permanent vegetation uses available water and reduces runoff. | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | Slight to Moderate Improvement | | The action may attract beneficial insects or trap insect pests, reducing the need for pesticide applications. | | |
| • Excessive Nutrients and Organics | Slight to Moderate Improvement | | Permanent vegetation will take up available nutrients and increase organic matter. The increased organic matter will increase cation exchange capacity which will hold nutrients. | | |
| • Excessive Salinity | Slight Improvement | | The action will result in increased uptake by plants. | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | | Higher organic matter levels increases buffering capacity of the soil. Some plants can take up some heavy metals. | | |
| • Harmful Levels of Pathogens | Neutral | | Permanent vegetation increases soil organic matter and microbial activity, which competes with pathogens. However, permanent vegetation may delay mortality of some pathogens by slowing desiccation. | | |
| • Harmful Levels of Petroleum | Not Applicable | | Not applicable. | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Slight to Moderate Improvement | | The action reduces runoff and erosion. Also, the borders may attract beneficial insects or trap insect pests, reducing the need for pesticide applications. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|--------------------------------|---|-----|------|--------|
| PRACTICE: Field Border 386 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Recreation | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Excessive Nutrients and Organics | Slight to Moderate Improvement | Permanent vegetation will take up available nutrients and increase organic matter. The increased organic matter will increase cation exchange capacity which will hold nutrients. | | | |
| <ul style="list-style-type: none"> Excessive Suspended Sediment and Turbidity | Slight to Moderate Improvement | Vegetation protects soil surface and traps sediment. | | | |
| <ul style="list-style-type: none"> Excessive Salinity | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | Slight Improvement | Decreased erosion and runoff reduces heavy metal delivery to surface water. Some plants can take up heavy metals. | | | |
| <ul style="list-style-type: none"> Harmful Temperatures | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | Slight Improvement | Less erosion and runoff reduces delivery of pathogens. More moist environment in permanent vegetation may slow pathogen mortality, however. | | | |
| <ul style="list-style-type: none"> 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 Improvement | Permanent vegetation around the field edge reduces particulate emissions from vehicle traffic. | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight Improvement | Permanent vegetation around the field edge reduces particulate emissions from vehicle traffic. | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | Slight Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> CH₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Slight to Moderate Improvement | Interception of NH ₃ by plants | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Field Border 386 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Recreation | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Reduced Visibility | Slight to Moderate Improvement | Tall vegetation slows surface air movement and intercepts and captures air borne materials. | | | |
| Undesirable Air Movement | Slight Improvement | Tall shrubs create turbulence and slows undesired, leeward winds. | | | |
| Adverse Air Temperature | Slight to Moderate Improvement | Tall vegetation provides shade and moderates temperatures. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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 | Not Applicable | Not applicable. | | | |
| Wildfire Hazard | Not Applicable | Not applicable. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Substantial Improvement | Increased quality and quantity of vegetation provides more food for wildlife. | | | |
| Inadequate Cover/Shelter | Slight to Moderate Improvement | Plants may be chosen and managed to enhance value as cover/shelter. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Substantial Improvement | Permanent vegetation may provide added habitat and connectivity for selected wildlife species. | | | |
| Habitat Fragmentation | Slight to Moderate Improvement | Vegetation will help support wildlife habitat structure, diversity, extent and connectivity. | | | |
| Imbalance Among and Within Populations | Slight to Moderate Improvement | Habitat management is implemented to remove limiting factors. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Field Border 386 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Recreation | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Neutral | 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|--------------|--|------|--------|
| PRACTICE: Forest Slash Treatment 384 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Forest, Grazed Forest, Crop (horticulture), Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Slight to Moderate Improvement | | Some slash is disposed of and the remainder redistributed to control erosion. | | |
| Wind | Slight to Moderate Improvement | | Some slash is disposed of and the remainder redistributed to control erosion. | | |
| Ephemeral Gully | Slight to Moderate Improvement | | Some slash is disposed of and the remainder redistributed to control erosion. | | |
| Classic Gully | Slight Improvement | | Some slash is disposed of and the remainder redistributed to control erosion and initiation of head-cutting. | | |
| 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 Substantial Improvement | | Some slash is disposed of and the remainder redistributed close to the ground or incorporated to facilitate decomposition. | | |
| Rangeland Site Stability | Not Applicable | | Not applicable. | | |
| Compaction | Slight to Moderate Worsening | | Use of heavy equipment compacts soil. | | |
| Subsidence | Not Applicable | | Not applicable. | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Not Applicable | | Not applicable. | | |
| • Animal Waste and other Organics - N | Not Applicable | | Not applicable. | | |
| • Animal Waste and other Organics - P | Not Applicable | | Not applicable. | | |
| • Animal Waste and other Organics - K | Not Applicable | | Not applicable. | | |
| • Commercial Fertilizer - N | Not Applicable | | Not applicable. | | |
| • Commercial Fertilizer - P | Not Applicable | | Not applicable. | | |
| • Commercial Fertilizer - K | Not Applicable | | Not applicable. | | |
| • Residual Pesticides | Not Applicable | | Not applicable. | | |
| Damage from Sediment Deposition | Slight to Moderate Improvement | | Residual woody debris traps sediment. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|-------------------|--|------------|--|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Forest Slash Treatment 384 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Forest, Grazed Forest, Crop (horticulture), Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| 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 | | Neutral | | Residual debris is arranged to not impede outlets. | |
| Inefficient Water use on Irrigated Land | | Not Applicable | | Not applicable. | |
| Inefficient Water use on Non-Irrigated Land | | Slight Improvement | | Excess woody debris that can tie up water is removed. | |
| Reduced Capacity of Conveyances by Sediment Deposition | | Slight Improvement | | Residual woody debris traps sediment on-site. | |
| Reduced Storage of Water Bodies by Sediment Accumulation | | Slight Improvement | | Residual woody debris traps sediment on-site. | |
| 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 | | Slight Worsening | | Use of heavy equipment may lead to fuel or lubricant spills. | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | | Not Applicable | | Not applicable. | |
| • Excessive Nutrients and Organics | | Not Applicable | | Not applicable. | |
| • Excessive Suspended Sediment and Turbidity | | Slight Improvement | | Distribution of residual slash reduces sediment delivery. | |
| • 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 | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|--------------|-----|---|--------|
| PRACTICE: Forest Slash Treatment 384 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Forest, Grazed Forest, Crop (horticulture), Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | | RATIONALE | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | Slight Worsening | | | Exhaust from equipment operation and dust from mechanical activities add particulate matter to the air. | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight Worsening | | | Exhaust from equipment operation and dust from mechanical activities add particulate matter to the air. | |
| Excessive Ozone | Slight Improvement | | | There is a minimal reduction of ozone precursors through reduced incidence of wildfire. | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Slight to Substantial Improvement | | | Risk of wildfire and release of CO ₂ is diminished and decomposition of residual slash eventually becomes SOM. | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | | | Not applicable. | |
| • CH ₄ (Methane) | Not Applicable | | | Not applicable. | |
| Ammonia (NH ₃) | Not Applicable | | | Not applicable. | |
| Chemical Drift | Not Applicable | | | Not applicable. | |
| Objectionable Odors | Not Applicable | | | Not applicable. | |
| Reduced Visibility | Not Applicable | | | Not applicable. | |
| Undesirable Air Movement | Not Applicable | | | Not applicable. | |
| Adverse Air Temperature | Not Applicable | | | Not applicable. | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | | | Site is altered to allow establishment or planting of more suited and desired species. | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Substantial Improvement | | | Site is altered to allow more suitable species to grow resulting in increased productivity, improved health and vigor. | |
| Threatened or Endangered Plant Species: | | | | | |
| • Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | | | When threatened or endangered plants are present, protection and recovery are addressed in the planning process. | |
| • Declining Species, Species of Concern | Neutral | | | When threatened or endangered plants are present, protection and recovery are addressed in the planning process. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|--------------|-----|---|--------|
| PRACTICE: Forest Slash Treatment 384 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Forest, Grazed Forest, Crop (horticulture), Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | | RATIONALE | |
| Noxious and Invasive Plants | Moderate to Substantial Improvement | | | Site conditions are managed to minimize undesired vegetation. | |
| Forage Quality and Palatability | Moderate to Substantial Improvement | | | Access to forage increases for grazing and browsing animals. | |
| Wildfire Hazard | Moderate to Substantial Improvement | | | Activities reduce fuel load buildup. | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Neutral | | | Temporary site conditions may decrease food species used by wildlife. | |
| Inadequate Cover/Shelter | Neutral | | | Temporary site conditions may decrease cover/shelter for wildlife. | |
| Inadequate Water | Not Applicable | | | Not applicable. | |
| Inadequate Space | Neutral | | | Conditions created are temporary. The action is designed to recreate woody habitat/space. | |
| Habitat Fragmentation | Neutral | | | Conditions created are temporary. The action is designed to recreate/reconnect woody habitat. | |
| Imbalance Among and Within Populations | Neutral | | | Activities have a variable effect depending on species. | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Moderate to Substantial Improvement | | | Removal of slash increases forage access. | |
| 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. | | | Moderate to substantial increase. | |
| Capital – Change in Equipment | 0 | | | Substantial. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|--|--------------|-----|------------------------------|--------|
| PRACTICE: Forest Slash Treatment 384 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Forest, Grazed Forest, Crop (horticulture), Mined, Native or Naturalized Pasture, Natural Area, Recreation, Urban, Watershed Protection, Wildlife | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | | RATIONALE | |
| Capital - Total Investment Cost | Substantial. | | | Slight to moderate. | |
| Capital – Annual Cost | 0 | | | Situational. | |
| Capital – Credit and Farm Program Eligibility | 0 | | | Negligible to slight. | |
| Labor - Labor | 0 | | | Slight to moderate increase. | |
| Labor – Change in Management Level | 0 | | | Not applicable. | |
| Risk - Yield | Not applicable. | | | Not applicable. | |
| Risk - Flexibility | Not applicable. | | | Not applicable. | |
| Risk - Timing | Not applicable. | | | Moderate Decrease | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | | | Moderate Increase | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | | | 0.01 | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | | | No | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | | | No | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | | | Yes | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fuel Break 383 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Slight to Moderate Worsening | An area of land with a reduction in vegetative cover and surface litter has potential for increases in erosive water energy. | | | |
| Wind | Slight to Moderate Worsening | An area of land with a reduction in vegetative cover and surface litter has potential for increases in erosive water energy. | | | |
| Ephemeral Gully | Slight to Moderate Worsening | An area of land with a reduction in vegetative cover and surface litter has potential for increases in erosive water energy. | | | |
| Classic Gully | Slight to Moderate Worsening | An area of land with a reduction in vegetative cover and surface litter has potential for increases in erosive water energy. | | | |
| Streambank | Not Applicable | Not applicable. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Not Applicable | Reduction in vegetation diminishes binding force of live roots on mass-movement prone sites. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Moderate to Substantial Worsening | Nutrient cycling is diminished on areas with reduced vegetation. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Slight to Moderate Worsening | Equipment used to treat vegetation can compact soils. | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|-------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fuel Break 383 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Residual Pesticides | Slight Worsening | If chemical methods are used to apply the practice, pesticide residues may remain in the soil. | | | |
| Damage from Sediment Deposition | Not Applicable | Deposition is increased due to a reduction in vegetation. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | Runoff is increased due to a reduction in vegetation. | | | |
| Excessive Seepage | Not Applicable | Not applicable. | | | |
| Excessive Runoff, Flooding, or Ponding | Not Applicable | Not applicable. | | | |
| Excessive Subsurface Water | Not Applicable | Removal of vegetation reduces uptake of 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 | Not Applicable | Not applicable. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight Worsening | Runoff and sediment are increased due to a reduction in vegetation. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight Worsening | Runoff and sediment are increased due to a reduction in vegetation. | | | |
| 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 | Some herbicides, if used, require a petroleum-based carrier. Use of heavy equipment may lead to fuel or lubricant spills. | | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Not Applicable | Herbicides, if used, could reach surface water. | | | |
| • Excessive Nutrients and Organics | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fuel Break 383 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Excessive Suspended Sediment and Turbidity | Slight Worsening | Areas with reduced vegetation are subject to increased sediment delivery. | | | |
| <ul style="list-style-type: none"> Excessive Salinity | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Harmful Temperatures | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> 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 Improvement | There is a minimal reduction of ozone precursors through reduced incidence of wildfire. | | | |
| Excessive Greenhouse Gas: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | Moderate to Substantial Improvement | Risk of wildfire and release of CO ₂ is diminished. | | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> CH₄ (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 | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Substantial Improvement | Residual plants are adapted and suited. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight to Substantial Improvement | Fewer residual plants are using site resources. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> 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. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | When threatened or endangered plants are present, protection and recovery are addressed in the planning process. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fuel Break 383 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Noxious and Invasive Plants | Slight to Moderate Worsening | Undesired species can colonize areas where vegetation has been treated. | | | |
| Forage Quality and Palatability | Not Applicable | Access to forage increases for grazing and browsing animals. | | | |
| Wildfire Hazard | Substantial Improvement | Fuel loadings are isolated. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Not Applicable | The treated area can provide additional food sources. | | | |
| Inadequate Cover/Shelter | Not Applicable | Vegetation is treated and reduced in quantity. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight Worsening | Breaks in vegetative cover may interrupt continuity of habitat for certain wildlife species and create diversity for other species\. | | | |
| Habitat Fragmentation | Not Applicable | Breaks in vegetative cover may interrupt habitat connectivity. | | | |
| Imbalance Among and Within Populations | Neutral | Activities have a variable effect depending on species. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Forage species can be favored on a long-term basis to maintain practice function. | | | |
| Inadequate Shelter | Not Applicable | Vegetation is reduced in quantity. | | | |
| 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|--|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fuel Break 383 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Neutral | 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. | | | |
| Wind | Neutral | 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. | | | |
| Ephemeral Gully | Neutral | 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. | | | |
| Classic Gully | Neutral | 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. | | | |
| Streambank | Neutral | 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. This promotes vegetative growth and streambank stabilization. | | | |
| Shoreline | Neutral | 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. This promotes vegetative growth and shoreline stabilization. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Neutral | 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. | | | |
| Road, Roadsides, and Construction Sites | Neutral | 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. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Neutral | 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. | | | |
| Rangeland Site Stability | Neutral | This practice is applied to facilitate the application of conservation practices by providing a means to control movement of animals and people | | | |
| Compaction | Neutral | 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. | | | |
| Subsidence | Neutral | 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. | | | |
| Contaminants: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------------|---|-----|------|--------|
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Salts and other Chemicals | Neutral | 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. | | | |
| <ul style="list-style-type: none"> Animal Waste and other Organics - N | Neutral | 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. | | | |
| <ul style="list-style-type: none"> Animal Waste and other Organics - P | Neutral | 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. | | | |
| <ul style="list-style-type: none"> Animal Waste and other Organics - K | Neutral | 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. | | | |
| <ul style="list-style-type: none"> Commercial Fertilizer - N | Neutral | 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. | | | |
| <ul style="list-style-type: none"> Commercial Fertilizer - P | Neutral | 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------------|---|-----|------|--------|
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Commercial Fertilizer – K | Neutral | 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. | | | |
| <ul style="list-style-type: none"> Residual Pesticides | Neutral | 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. | | | |
| Damage from Sediment Deposition | Neutral | 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. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Neutral | 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 | Not Applicable | Not applicable. | | | |
| Excessive Runoff, Flooding, or Ponding | Neutral | 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 Subsurface Water | Not Applicable | Not applicable. | | | |
| Drifted Snow | Neutral | Fences may act as a physical barrier and can increase drifting at gate locations. | | | |
| Inadequate Outlets | Not Applicable | Not applicable. | | | |
| Inefficient Water use on Irrigated Land | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------------|---|-----|------|--------|
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Inefficient Water use on Non-Irrigated Land | Neutral | 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. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Neutral | 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. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Neutral | 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. | | | |
| Aquifer Overdraft | Not Applicable | Not applicable. | | | |
| Insufficient Flows in Water Courses | Neutral | Control of animals and people 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 | Neutral | The action improves plant vigor which increases nutrient uptake. | | | |
| • Excessive Salinity | Neutral | Control of animals and people influences vigor and health of vegetation and soil condition which in turn can enhance infiltration and water uptake. | | | |
| • 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Excessive Nutrients and Organics | Neutral | The action improves plant vigor which increases nutrient uptake. | | | |
| • Excessive Suspended Sediment and Turbidity | Neutral | A fence is a facilitating practice for management. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Neutral | Control of animals and people influences vigor and health of vegetation and soil condition which in turn can influence water uptake and infiltration to reduce runoff, when applied with other conservation practices. | | | |
| • Harmful Temperatures | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Pathogens | Neutral | Control access of animals and/or people to stream areas. | | | |
| • 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Neutral | Control of animals facilitates grazing management which encourages growth of plants that are adapted and suitable for the site. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Neutral | Control of animals facilitates grazing management enhancing health and vigor of desired plant communities. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Not Applicable | Not applicable. | | | |
| Noxious and Invasive Plants | Neutral | Control of animals and people 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 | Neutral | Control of animals improves vigor and health of vegetation. | | | |
| 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 | Slight to Moderate Worsening | Fencing can decrease access to space needed by certain wildlife. | | | |
| Habitat Fragmentation | Slight to Moderate Worsening | Fencing can decrease access to space and fragment habitat needed by certain wildlife. | | | |
| Imbalance Among and Within Populations | Neutral | Fences built to specifications allow wildlife unrestricted passage. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS - DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Neutral | Control of animals influences vigor and health of vegetation. | | | |
| Inadequate Shelter | Moderate to Substantial Improvement | Solid fences can provide protection from winds. | | | |
| Inadequate Stock Water | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fence 382 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Stress and Mortality | Moderate to Substantial Improvement | Control of animals promotes improved forage and reduces stress. | | | |
| HUMAN – ECONOMICS | | | | | |
| Land - Change in Land Use | Not applicable. | Not applicable. | | | |
| Land – Land in Production | Not applicable. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Silvopasture Establishment 381 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Grazed Forest, Grazed Range, Native or Naturalized Pasture, Natural Area | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | | Substantial Improvement | | Establishing a combination of trees or shrubs and compatible forages will reduce erosion by water. | |
| Wind | | Substantial Improvement | | Tall vegetation creates a wind shadow, reduces erosive wind velocities and, along with understory forage, provides a stable area which stops saltating particles. | |
| Ephemeral Gully | | Substantial Improvement | | Establishing a combination of trees or shrubs and compatible forages will reduce 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 | | Slight Improvement | | 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 | | Roots, vegetative matter and livestock waste and their breakdown increases organic matter. | |
| Rangeland Site Stability | | Not Applicable | | Not applicable. | |
| Compaction | | Neutral | | Root penetration and organic matter helps restore soil structure and counteracts compactive forces of hooves as livestock traverse the grazed area. | |
| Subsidence | | Not Applicable | | Not applicable. | |
| Contaminants: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|--|-----|------|--------|
| PRACTICE: Silvopasture Establishment 381 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Grazed Forest, Grazed Range, Native or Naturalized Pasture, Natural Area | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Salts and other Chemicals | Neutral | Contaminants taken up by forage plants will be returned to the soil as manure. Most tree species take up limited amounts of salt. | | | |
| • Animal Waste and other Organics - N | Slight Improvement | Increased N uptake because of forage plants and trees growth. | | | |
| • Animal Waste and other Organics - P | Slight Improvement | Increased P uptake because of forage plants and trees growth. | | | |
| • Animal Waste and other Organics - K | Slight Improvement | Increased K uptake because of forage plants and trees growth. | | | |
| • Commercial Fertilizer - N | Slight Improvement | Increased N uptake because of forage plants and trees growth. | | | |
| • Commercial Fertilizer - P | Slight Improvement | Increased P uptake because of forage plants and trees growth. | | | |
| • Commercial Fertilizer - K | Slight Improvement | Increased K uptake because of forage plants and trees growth. | | | |
| • Residual Pesticides | Not Applicable | Not applicable. | | | |
| Damage from Sediment Deposition | Neutral | Increased vegetative cover decreases erosion. Vegetation and surface litter trap sediment. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | Not Applicable | | | |
| Excessive Seepage | Slight Improvement | 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 | Slight to Moderate Improvement | Snow is captured by tree/shrub crowns and deposited within the grazed area. | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|------------|---|-----|---|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Silvopasture Establishment 381 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Grazed Forest, Grazed Range, Native or Naturalized Pasture, Natural Area | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| 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 | | Trees and shrubs take up pesticide residues. Also, pesticide degradation may be improved by increased soil organic matter and biological activity. | |
| • Excessive Nutrients and Organics | | Slight to Moderate Improvement | | Permanent vegetation will uptake excess nutrients. | |
| • Excessive Salinity | | Slight Improvement | | The action may increase salt uptake by plants. | |
| • Harmful Levels of Heavy Metals | | Slight Improvement | | The action may result in some increased heavy metal uptake by plants. | |
| • Harmful Levels of Pathogens | | Neutral | | Vegetation captures and delays pathogen movement and thereby increases their mortality. Where pastures are grazed animals will introduce pathogens to site. | |
| • Harmful Levels of Petroleum | | Slight Improvement | | Increased organic matter in soil increases microbial activity enhancing the break down of chemicals and petroleum contaminants. | |
| In Surface Water: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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| PRACTICE: Silvopasture Establishment 381 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Grazed Forest, Grazed Range, Native or Naturalized Pasture, Natural Area | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Harmful Levels of Pesticides | | Moderate Improvement | Trees and shrubs take up pesticide residues and may intercept pesticide drift. Also, the practice reduces runoff and erosion. | | |
| • Excessive Nutrients and Organics | | Substantial Improvement | Permanent vegetation will uptake excess nutrients. | | |
| • Excessive Suspended Sediment and Turbidity | | Slight to Substantial Improvement | Improved plant vigor and cover reduces erosion. | | |
| • 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 Improvement | Some plants may take up heavy metals. | | |
| • Harmful Temperatures | | Slight to Moderate Improvement | Tall vegetation established near surface waters provides shade and reduces direct sunlight heating. | | |
| • Harmful Levels of Pathogens | | Slight to Moderate Improvement | Ground vegetation captures and delays pathogen movement and thereby increase their mortality. | | |
| • Harmful Levels of Petroleum | | Slight Improvement | Increased microbial activity in the tree/shrub sets breaks down petroleum contaminants. | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | | Slight to Moderate Improvement | Tall vegetation slows winds to reduce erosive wind velocities, vegetation filters particulates from the air and the planted areas stop saltating particles. | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | | Slight to Moderate Improvement | Tall vegetation slows winds to reduce erosive wind velocities, vegetation filters particulates from the air and the planted areas stop 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Silvopasture Establishment 381 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Grazed Forest, Grazed Range, Native or Naturalized Pasture, Natural Area | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • CO ₂ (Carbon Dioxide) | Substantial Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | 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 Moderate 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 – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | 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 | 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 | Proper management and selection of adapted species will increase quality and palatability of forage. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Silvopasture Establishment 381 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Grazed Forest, Grazed Range, Native or Naturalized Pasture, Natural Area | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Wildfire Hazard | Slight to Substantial Improvement | Overstory trees are spaced and managed to reduce hazard. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Moderate to Substantial Improvement | Plants are chosen and managed to enhance food for wildlife. | | | |
| Inadequate Cover/Shelter | Substantial Improvement | Plants are chosen and managed to enhance value as cover/shelter. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Moderate Improvement | Tall vegetation creates vertical habitat structure/space. | | | |
| Habitat Fragmentation | Not Applicable | Not applicable. | | | |
| Imbalance Among and Within Populations | Moderate to Substantial Improvement | Cover is designed to minimize limiting factors. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Substantial Improvement | Plant species in the understory will be selected that accommodate seasonal livestock production and nutritional needs. | | | |
| 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 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|------------|--|-----|-------------------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Silvopasture Establishment 381 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Grazed Forest, Grazed Range, Native or Naturalized Pasture, Natural Area | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| Labor – Change in Management Level | | 0 | | Not applicable. | |
| Risk - Yield | | Not applicable. | | Not applicable. | |
| Risk - Flexibility | | Not applicable. | | Not applicable. | |
| Risk - Timing | | Not applicable. | | Moderate Decrease | |
| Risk – Cash Flow | | Situational. Negligible to moderate decrease in risk due to management of biogas. | | Moderate Increase | |
| Profitability – Change in Profitability | | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | | 0.01 | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Not applicable. | | No | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Not Applicable | | No | |
| Underutilization of Non-Fossil Energy Resources | | Practice facilitates methane collection for renewable fuel use. | | Yes | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|---|--------------|--|------|--------|
| 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 | | |
| • 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|-----|--|--------|
| 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 | |
| • 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 and Turbidity | | Slight to Moderate Improvement | | Vegetation across the slope 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 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|-----|---|--------|
| 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 | |
| • CO ₂ (Carbon Dioxide) | | Slight to Moderate Improvement | | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | |
| • N ₂ O (Nitrous Oxide) | | Not Applicable | | Not applicable. | |
| • CH ₄ (Methane) | | Not Applicable | | Not applicable. | |
| Ammonia (NH ₃) | | Slight to Moderate Improvement | | Interception of NH ₃ 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 – SUITABILITY | | | | | |
| 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 | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|-----|---|--------|
| 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 | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | 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 | | Not applicable. | | Not applicable. | |
| Land – Land in Production | | Not applicable. | | Moderate to substantial increase. | |
| Capital – Change in Equipment | | 0 | | Substantial. | |
| Capital - Total Investment Cost | | Substantial. | | Slight to moderate. | |
| Capital – Annual Cost | | 0 | | Situational. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|---|------------------------------|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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 | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|--|-----|------|--------|
| PRACTICE: Multi-Story Cropping 379 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Forest | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Moderate to Substantial Improvement | Vegetation and surface litter reduce raindrop impact and slow runoff water increasing infiltration. | | | |
| Wind | Moderate to Substantial Improvement | Trees or shrubs create turbulence, reduce erosive wind velocities and provide a stable area which stops saltating particles. | | | |
| Ephemeral Gully | Slight to Substantial Improvement | Canopy and soil cover reduce erosive energy of concentrated water flows limiting the detachment of soil particles. | | | |
| Classic Gully | Slight to Substantial Improvement | Canopy and soil cover reduce erosive energy of concentrated water flows limiting the detachment of soil particles. | | | |
| Streambank | Not Applicable | Not applicable. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Slight to Substantial Improvement | Increase in vegetation, surface cover and binding force of live roots reduces potential for mass-movement on open canopied slope positions. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Substantial Improvement | Increase in biological activity, roots and vegetative matter cycling from permanent vegetation increases surface and SOM organic components. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Slight to Substantial Improvement | Root penetration, organic matter cycling, and biological activity help to restore soil structure. | | | |
| Subsidence | Slight Improvement | Canopy cover and organic matter provide soil buffer during extended tropical droughts to reduce OM oxidation and lose. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight to Moderate Improvement | Plants may take up some salts, and increased root penetration improves infiltration that may lead to increased leaching. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|---|-----|------|--------|
| PRACTICE: Multi-Story Cropping 379 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Forest | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Animal Waste and other Organics - N | Moderate to Substantial Improvement | Woody plants and short and long rotation crops may take up excess N. | | | |
| • Animal Waste and other Organics - P | Moderate to Substantial Improvement | Woody plants and short and long rotation crops may take up excess P. | | | |
| • Animal Waste and other Organics - K | Moderate to Substantial Improvement | Woody plants and short and long rotation crops may take up excess K. | | | |
| • Commercial Fertilizer - N | Moderate to Substantial Improvement | Woody plants and short and long rotation crops may take up excess N. | | | |
| • Commercial Fertilizer - P | Moderate to Substantial Improvement | Woody plants and short and long rotation crops may take up excess P. | | | |
| • Commercial Fertilizer - K | Moderate to Substantial Improvement | Woody plants and short and long rotation crops may take up excess K. | | | |
| • Residual Pesticides | Moderate Improvement | Plants take up pesticide residues and soil organic carbon binds pesticide residues. | | | |
| Damage from Sediment Deposition | Slight to Substantial Improvement | 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; increased OM holds water. | | | |
| Excessive Runoff, Flooding, or Ponding | Slight to Moderate Worsening | Trees or shrubs can retard flood water movement from the site. | | | |
| Excessive Subsurface Water | Slight to Moderate Improvement | Plants uptake excess water; increased OM holds water. | | | |
| Drifted Snow | Slight to Moderate Improvement | Tree or shrubs create turbulence, slows wind, and traps snow. | | | |
| Inadequate Outlets | Not Applicable | Not applicable. | | | |
| 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 | Slight Improvement | Reduced erosion and sedimentation from managed vegetative cover and surface OM components reduces transport and deposition off/on site. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|---|-----|------|--------|
| PRACTICE: Multi-Story Cropping 379 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Forest | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Moderate to Substantial Improvement | Reduced erosion and sedimentation from managed vegetative cover and surface OM components reduces transport and deposition off/on site. | | | |
| 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 | Management of mixed multistoried crops reduces need for chemicals to manage pests. Also, pesticide degradation may be improved by increased soil organic matter and biological activity. | | | |
| • Excessive Nutrients and Organics | Neutral | Plants and soil organisms uptake nutrients. Increase in tannins due to organic matter. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | Management of diverse species and organic matter may promote increased uptake. | | | |
| • Harmful Levels of Pathogens | Slight Improvement | Management of multi layered canopy cover and organic matter results in increased plant vigor and microbial activity reduces harmful pathogens. | | | |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Moderate Improvement | Management of mixed multistoried crops reduces need for chemicals to manage pests. Also, pesticide degradation may be improved by interception of chemical drift by varied canopy layers. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Improvement | Plants and soil organisms uptake nutrients. | | | |
| • Excessive Suspended Sediment and Turbidity | Moderate to Substantial Improvement | Varied canopy layers and surface cover and organic matter management reduces sediment-laden runoff from reaching surface water conveyances. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|--|-----|------|--------|
| PRACTICE: Multi-Story Cropping 379 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Forest | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Excessive Salinity | Slight Improvement | Varied canopy layers and surface cover and organic matter management increases infiltration and need for irrigation or chemical inputs.. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Harmful Temperatures | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | Slight to Moderate Improvement | Management of multi layered canopy cover and organic matter impedes movement of harmful pathogens. | | | |
| <ul style="list-style-type: none"> Harmful Levels of Petroleum | Slight Improvement | Increased microbial activity in the tree/shrub and ground cover layers breaks down petroleum contaminants. | | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | Slight to Moderate Improvement | Permanent vegetation traps air and slows movement of air, reducing wind velocities and wind stress on crops while providing a stable area to intercept air particles. | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight to Moderate Improvement | Permanent vegetation traps air and slows movement of air, reducing wind velocities and wind stress on crops while providing a stable area to intercept air particles. | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | Slight to Moderate Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in living plants (stem, roots, foliage, etc.) and organic soil carbon components. | | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> CH₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------------------|--------------|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Multi-Story Cropping 379 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Forest | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| Chemical Drift | Substantial Improvement | | Multiple dense management of varied canopy layers reduces surface air movement and intercepts and captures air borne chemicals and particles. | | |
| Objectionable Odors | Slight to Moderate Improvement | | Multiple dense management of varied canopy layers reduces surface air movement and intercepts and traps odors. | | |
| Reduced Visibility | Not Applicable | | Not applicable. | | |
| Undesirable Air Movement | Slight Improvement | | Multiple canopy layers create turbulence and slow surface air movement. | | |
| Adverse Air Temperature | Moderate to Substantial Improvement | | Multiple canopy layers provide shade. | | |
| PLANTS – SUITABILITY | | | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> 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. | | |
| <ul style="list-style-type: none"> 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 | | Planned vegetation is installed and managed to control undesired species. | | |
| Forage Quality and Palatability | Moderate to Substantial Improvement | | Plants are managed to maintain optimal conditions. | | |
| Wildfire Hazard | Slight to Moderate Improvement | | Management of multiple layers and surface organic matter reduce ladder fuel load buildup. | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Substantial Improvement | | If suitable plant species are chosen and managed to enhance food value for target species. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Multi-Story Cropping 379 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Forest | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Inadequate Cover/Shelter | Slight to Substantial Improvement | Suitable plant species are selected and managed to enhance cover/shelter for wildlife. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Substantial Improvement | Multiple cover densities and canopy layers establish diverse habitat structure, spatially and temporally. | | | |
| Habitat Fragmentation | Slight to Substantial Improvement | Vegetation is installed and managed to connect habitats. | | | |
| Imbalance Among and Within Populations | Neutral | Activities have a variable effect depending on species. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Moderate to Substantial Improvement | Forage species can be favored on a long-term basis to maintain practice function. | | | |
| Inadequate Shelter | Slight to Substantial Improvement | Multiple-canopy layers can be desired to improve shelter function when domestic animals are used. | | | |
| 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|--|---------------------------------|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Multi-Story Cropping 379 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Forest | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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

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|---|-----------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-----------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Pond 378 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Substantial 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Pond 378 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Not Applicable | Not applicable. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Pond 378 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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 | Not applicable. | Not applicable. | | | |
| Land – Land in Production | Not applicable. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|---|--|------------|-------------|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Pond 378 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|-----|---|--------|
| PRACTICE: Atmospheric Resources Quality Management 370 | | Baseline Setting: Various land uses, all without Atmospheric Resources Quality Management | | | |
| | | Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, 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 | | An increase in soil surface cover reduces the opportunity for soil detachment due to water energy. | |
| Wind | | Slight to Substantial Improvement | | Vegetative cover increases infiltration and surface moisture, and may reduce wind velocity. | |
| Ephemeral Gully | | Slight to Moderate Improvement | | An increase in soil surface cover reduces the opportunity for soil detachment due to concentrated flow. | |
| 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 | | Increasing vegetative cover may increase biomass production and soil organic matter. | |
| Rangeland Site Stability | | Not Applicable | | Not applicable. | |
| Compaction | | Slight Improvement | | Reduced field traffic may reduce compaction. | |
| Subsidence | | Slight to Moderate Improvement | | Carbon sequestering activities reduces the loss of organic carbon in the soil. | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | | Not Applicable | | Not applicable. | |
| • Animal Waste and other Organics - N | | Moderate to Substantial Improvement | | Proper waste utilization will limit manure applied to soils. | |
| • Animal Waste and other Organics - P | | Moderate to Substantial Improvement | | Proper waste utilization will limit manure applied to soils. | |
| • Animal Waste and other Organics - K | | Moderate to Substantial Improvement | | Proper waste utilization will limit manure applied to soils. | |
| • Commercial Fertilizer - N | | Moderate to Substantial Improvement | | Nutrient management will limit nitrogen application to the soil. | |
| • Commercial Fertilizer – P | | Moderate to Substantial Improvement | | Nutrient management will limit phosphorus application to the soil. | |
| • Commercial Fertilizer – K | | Moderate to Substantial Improvement | | Nutrient management will limit potassium application to the soil. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|---|------|--------|
| PRACTICE: Atmospheric Resources Quality Management 370 | | Baseline Setting: Various land uses, all without Atmospheric Resources Quality Management | | | |
| | | Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> Residual Pesticides | | Neutral | Proper handling and application of pesticides/herbicides will reduce drift. | | |
| 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 Worsening | Fugitive dust control by sprinkling water in arid regions. | | |
| Insufficient Flows in Water Courses | | Not Applicable | Not applicable. | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pesticides | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Excessive Nutrients and Organics | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Excessive Salinity | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| In Surface Water: | | | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pesticides | | Slight to Substantial Improvement | Various mitigation techniques are available to reduce pesticide drift. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|--|------|--------|
| PRACTICE: Atmospheric Resources Quality Management 370 | | Baseline Setting: Various land uses, all without Atmospheric Resources Quality Management | | | |
| | | Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> Excessive Nutrients and Organics | | Slight Improvement | Nutrient management activities that reduce ammonia emissions will reduce the amount of ammonia deposited in surface water. Residue management to reduce particulate emissions will also reduce the potential for nutrient delivery to surface water. | | |
| <ul style="list-style-type: none"> Excessive Suspended Sediment and Turbidity | | Slight Improvement | Treatments will reduce runoff and particulate generation. | | |
| <ul style="list-style-type: none"> Excessive Salinity | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Temperatures | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | | Slight to Substantial Improvement | Various management measures are available to reduce fugitive dust emissions from agricultural sources. | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | | Slight to Substantial Improvement | Various management measures are available to reduce fugitive dust emissions from agricultural sources. | | |
| Excessive Ozone | | Slight to Moderate Improvement | Gaseous emissions that contribute to tropospheric ozone formation emitted from agricultural operations are reduced. | | |
| Excessive Greenhouse Gas: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | | Moderate to Substantial Improvement | There will be an increase in carbon storage capabilities that reduce CO ₂ emissions. | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | | Slight to Substantial Improvement | Proper handling and application of nutrients reduces emissions. | | |
| <ul style="list-style-type: none"> CH₄ (Methane) | | Slight to Substantial Improvement | Reduction and/or alternate use of methane emissions | | |
| Ammonia (NH ₃) | | Slight to Substantial Improvement | Proper handling/use of nutrients and animal by-products reduces emissions | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|--|------|--------|
| PRACTICE: Atmospheric Resources Quality Management 370 | | Baseline Setting: Various land uses, all without Atmospheric Resources Quality Management | | | |
| | | Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Chemical Drift | | Slight to Substantial Improvement | Various management measures are available to reduce chemical drift from agricultural sources. | | |
| Objectionable Odors | | Slight to Substantial Improvement | Treatments reduce VOC emissions, generation of particulates, and transport of volatile materials. | | |
| Reduced Visibility | | Slight to Substantial Improvement | reduced of both primary and secondary particulate sources | | |
| Undesirable Air Movement | | Moderate to Substantial Improvement | A variety of measures and practices create turbulence to slow undesired wind speeds. | | |
| Adverse Air Temperature | | Not Applicable | Not applicable. | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | | Substantial Improvement | When species are selected, they are adapted and suited for optimal carbon sequestration and biofiltration. | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | | Slight to Substantial Improvement | Management of chemical drift and/or other pollutants will improve plant health, growth and productivity. | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | Effect is negligible unless carried out on a regional or airshed scale. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | Effect is negligible unless carried out on a regional or airshed scale. | | |
| Noxious and Invasive Plants | | Not Applicable | Not applicable. | | |
| Forage Quality and Palatability | | Not Applicable | Not applicable. | | |
| Wildfire Hazard | | Slight to Substantial Improvement | Management including Prescribed Burning reduces fuel loadings. | | |
| 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|---|------|--------|
| PRACTICE: Atmospheric Resources Quality Management 370 | | Baseline Setting: Various land uses, all without Atmospheric Resources Quality Management | | | |
| | | Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Imbalance Among and Within Populations | | Not Applicable | Not applicable. | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | Not Applicable | Not applicable. | | |
| Inadequate Shelter | | Slight Improvement | Techniques used to improve air quality can also improve the quality of shelter for domestic animals. | | |
| Inadequate Stock Water | | Not Applicable | Not applicable. | | |
| Stress and Mortality | | Slight to Substantial Improvement | Adequate ventilation will be maintained to control animal exposure to harmful air pollutants. | | |
| HUMAN – ECONOMICS | | | | | |
| Land - Change in Land Use | | Not applicable. | Not applicable. | | |
| Land – Land in Production | | Not applicable. | Moderate to substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Slight to moderate. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Negligible to slight. | | |
| Labor - Labor | | 0 | Slight to moderate increase. | | |
| Labor – Change in Management Level | | 0 | Not applicable. | | |
| Risk - Yield | | Not applicable. | Not applicable. | | |
| Risk - Flexibility | | Not applicable. | Not applicable. | | |
| Risk - Timing | | Not applicable. | Moderate Decrease | | |
| Risk – Cash Flow | | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | |
| Profitability – Change in Profitability | | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|-------------------|--|------------|------------------|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Atmospheric Resources Quality Management 370 | | Baseline Setting: Various land uses, all without Atmospheric Resources Quality Management | | | |
| | | Appropriate Land Use(s): Crop, Forest, Grazed Forest, Grazed Range, Hay, Headquarters, Mined, Native or Naturalized Pasture, Natural Area, Pasture, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Not applicable. | | No | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Not Applicable | | No | |
| Underutilization of Non-Fossil Energy Resources | | Practice facilitates methane collection for renewable fuel use. | | Yes | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------------|--|-----|------|--------|
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------|---|-----|------|--------|
| PRACTICE: Waste Facility Cover 367 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|--|-----|------|--------|
| PRACTICE: Waste Facility Cover 367 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Ozone | Neutral | There is a decrease in potential ozone precursor emissions. | | | |
| Excessive Greenhouse Gas: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | Neutral | Anaerobic conditions, which are promoted by covering, provide for a temporary sequestration of carbon, however, stored carbon will be released as CO ₂ if material is burned. | | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | Neutral | Not applicable. | | | |
| <ul style="list-style-type: none"> CH₄ (Methane) | Slight to Moderate Improvement | Methane releases may be contained with cover and converted to CO ₂ with combustion. | | | |
| Ammonia (NH ₃) | Slight to Moderate Improvement | Proper nutrient management reduces NH ₃ 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 – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Not Applicable | Not applicable. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|---------------------------------------|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Waste Facility Cover 367 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Anaerobic Digester, Controlled Temperature 366 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | 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 | 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 | Neutral | | Seepage is minimal. | | |
| 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|--|-----|------|--------|
| PRACTICE: Anaerobic Digester, Controlled Temperature 366 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Slight to Substantial Improvement | Digesters reduce the nutrient content and volume of manure and other organics. The action reduces the potential for nutrient losses to surface water. | | | |
| • Excessive Suspended Sediment and Turbidity | Not Applicable | Not applicable. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Neutral | Harmful levels of heavy metals are rarely associated with manure. Digester provides storage and treatment of manure and other organics which would normally reach surface water. | | | |
| • Harmful Temperatures | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Pathogens | Slight to Substantial Improvement | Digester provides storage and treatment of manure and other organics which would normally reach surface 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) | Slight to Substantial Improvement | Facilities with a cover will reduce ammonia volatilization and methane losses to the atmosphere. | | | |
| Excessive Ozone | Neutral | There is a decrease in potential ozone precursor emissions. | | | |
| Excessive Greenhouse Gas: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Anaerobic Digester, Controlled Temperature 366 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • CO ₂ (Carbon Dioxide) | Slight to Substantial Improvement | Anaerobic conditions reduce carbon dioxide emissions. | | | |
| • N ₂ O (Nitrous Oxide) | Slight to Substantial Improvement | N ₂ O releases are contained with cover | | | |
| • CH ₄ (Methane) | Slight to Substantial Improvement | Methane releases are contained with cover and converted to CO ₂ with combustion. | | | |
| Ammonia (NH ₃) | Slight to Substantial Improvement | Ammonia volatilization is contained with cover | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Slight to Substantial Improvement | Cover will retain gas emissions and eliminate contact with atmosphere. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|---|---|-----|------|--------|
| PRACTICE: Anaerobic Digester, Controlled Temperature 366 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> 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 | Potential change from cropland to headquarters. | Slight Decrease | | | |
| Land – Land in Production | 0 | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | 0 | Substantial increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Situational | | | |
| Labor - Labor | Situational. Change in labor use patterns. | Substantial increase. | | | |
| Labor – Change in Management Level | 0 | Slight Decrease | | | |
| Risk - Yield | Potential for decrease due to improved waste management. | Slight to Moderate Increase | | | |
| Risk - Flexibility | Slight to moderate increase due to digester management demands. | Slight Increase | | | |
| Risk - Timing | Some risk associated with timing of construction. | Slight to Substantial Decrease | | | |
| Risk – Cash Flow | Slight to substantial decrease if power generation and marketing is implemented and successful. | Slight to Substantial Increase | | | |
| Profitability – Change in Profitability | Slight to substantial increase if power generation and marketing is implemented and successful. | 0.05 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts; effects to historic structures at headquarters. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not applicable. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Utilization is improved when captured biogas is used for energy production. | Yes | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------------|---|-----|------|--------|
| PRACTICE: Anaerobic Digester, Ambient Temperature 365 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | 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 | 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 | Neutral | Seepage is minimal. | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-----------------------------------|--|-----|------|--------|
| PRACTICE: Anaerobic Digester, Ambient Temperature 365 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Earthen waste storage ponds do have limited seepage. The amount of seepage depends on the viability of the lining materials chosen. Seepage will contain some level of salinity. | | | |
| • Harmful Levels of Heavy Metals | Neutral | Heavy metals are rarely associated with manure. Earthen waste storage ponds do have limited seepage which may contain some metals. | | | |
| • Harmful Levels of Pathogens | Neutral | Unlined earthen waste storage ponds do leak and may allow movement of pathogens to groundwater. | | | |
| • 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 | Digesters reduce the nutrient content and volume of manure and other organics. The action reduces the potential for nutrient losses to surface water. | | | |
| • Excessive Suspended Sediment and Turbidity | Not Applicable | Not applicable. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Neutral | Harmful levels of heavy metals are rarely associated with manure. Digester provides storage and treatment of manure and other organics which would normally reach surface water. | | | |
| • Harmful Temperatures | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Pathogens | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |
| AIR – QUALITY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Anaerobic Digester, Ambient Temperature 365 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 Substantial Improvement | Facilities with a cover will reduce ammonia volatilization and methane losses to the atmosphere. | | | |
| Excessive Ozone | Neutral | There is a decrease in potential ozone precursor emissions. | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Slight to Substantial Improvement | Anaerobic conditions reduce carbon dioxide emissions. | | | |
| • N ₂ O (Nitrous Oxide) | Slight to Substantial Improvement | N ₂ O releases are contained with cover | | | |
| • CH ₄ (Methane) | Slight to Substantial Improvement | Methane releases are contained with cover and converted to CO ₂ with combustion. | | | |
| Ammonia (NH ₃) | Slight to Substantial Improvement | Ammonia volatilization is contained with cover | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Slight to Substantial Improvement | Cover will retain gas emissions and eliminate contact with atmosphere. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|---|---|-----|------|--------|
| PRACTICE: Anaerobic Digester, Ambient Temperature 365 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Potential change from cropland to headquarters. | Slight Decrease | | | |
| Land – Land in Production | 0 | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | 0 | Substantial increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Situational | | | |
| Labor - Labor | Situational. Change in labor use patterns. | Substantial increase. | | | |
| Labor – Change in Management Level | 0 | Slight Decrease | | | |
| Risk - Yield | Potential for decrease due to improved waste management. | Slight to Moderate Increase | | | |
| Risk - Flexibility | Slight to moderate increase due to digester management demands. | Slight Increase | | | |
| Risk - Timing | Some risk associated with timing of construction. | Slight to Substantial Decrease | | | |
| Risk – Cash Flow | Slight to substantial decrease if power generation and marketing is implemented and successful. | Slight to Substantial Increase | | | |
| Profitability – Change in Profitability | Slight to substantial increase if power generation and marketing is implemented and successful. | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts; effects to historic structures at headquarters. | No | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|---|---|------------------|-------------|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Anaerobic Digester, Ambient Temperature 365 | | Baseline Setting: Animal wastes are produced on the operating unit and there are existing waste impoundments. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not applicable. | | No | | |
| Underutilization of Non-Fossil Energy Resources | Utilization is improved when captured biogas is used for energy production. | | Yes | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Diversion 362 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Slight Improvement | A channel across the slope reduces the slope length and the opportunity for runoff water to detach soil particles. | | | |
| Wind | Not Applicable | Not applicable. | | | |
| Ephemeral Gully | Slight to Substantial Improvement | A channel constructed across the slope intercepts surface flow and decreases soil detachment by water. | | | |
| Classic Gully | Slight to Substantial Improvement | Overland flow is diverted from gully. | | | |
| Streambank | Slight Improvement | Reduces overland flow to stream. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Slight to Moderate Improvement | Water is diverted from the top of the slope. | | | |
| Road, Roadsides, and Construction Sites | Slight to Moderate Improvement | Overland flows are intercepted. | | | |
| 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 | Runoff and sedimentation from sensitive areas are reduced. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | Not applicable. | | | |
| Excessive Seepage | Slight Worsening | Seepage may increase due to temporary storage behind the diversion. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-----------------------------------|--|-----|------|--------|
| PRACTICE: Diversion 362 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Runoff, Flooding, or Ponding | Slight to Substantial Improvement | Water is diverted and prevented from ponding or flooding. | | | |
| Excessive Subsurface Water | Slight to Moderate Improvement | Intercepts shallow subsurface flows. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight to Moderate Worsening | Increases the need for larger outlet capacity. | | | |
| Inefficient Water use on Irrigated Land | Slight to Moderate Improvement | May help capture and reuse runoff. | | | |
| Inefficient Water use on Non-Irrigated Land | Slight to Moderate Improvement | May collect or direct water for water-spreading or water-harvesting systems. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Moderate Improvement | May decrease sediment load by trapping. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Moderate Improvement | May decrease sediment load by trapping. | | | |
| Aquifer Overdraft | Not Applicable | Not applicable. | | | |
| Insufficient Flows in Water Courses | Slight Improvement | Runoff can be directed to another water course. | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | Slight Improvement | The action diverts water from the pesticide application site. | | | |
| • Excessive Nutrients and Organics | Slight Worsening | The action increases infiltration which may provide transport for 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 | Slight Improvement | The action diverts water from the pesticide application site. | | | |
| • Excessive Nutrients and Organics | Neutral | Diversion will trap some sediment, reducing the amount of sediment-adsorbed nutrients delivered off-site. Because diversions concentrate overland flows, there can be an increase in solubles offsite. | | | |
| • Excessive Suspended Sediment and Turbidity | Slight to Moderate Improvement | Diversion collect and slow runoff to a non-erosive velocity. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Diversion 362 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | Controlled runoff reduces erosion and heavy metals attached to associated sediment. | | | |
| • Harmful Temperatures | Neutral | The action controls surface erosion and surface water movement. | | | |
| • Harmful Levels of Pathogens | Slight Improvement | Enables better runoff management | | | |
| • Harmful Levels of Petroleum | Slight Worsening | Runoff is more efficiently transported 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight to Moderate Improvement | Water is managed to optimize moisture requirements for 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|---|-----|------|--------|
| PRACTICE: Diversion 362 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Not Applicable | Not applicable. | | | |
| Habitat Fragmentation | Not Applicable | Not applicable. | | | |
| Imbalance Among and Within Populations | Neutral | Fish and wildlife habitat considerations are addressed in the design. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|---|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Diversion 362 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Closure of Waste Impoundments 360 | | Baseline Setting: Headquarters area includes a waste impoundment that is no longer needed as part of a waste management system. | | | |
| | | 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 | Neutral | The criteria for this practice requires the finished grade match existing grades. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Not Applicable | Not applicable. | | | |
| • Animal Waste and other Organics - N | Neutral | Organic materials removed from the impoundment will be applied at agronomic rates or otherwise utilized. | | | |
| • Animal Waste and other Organics - P | Neutral | Organic materials removed from the impoundment will be applied at agronomic rates or otherwise utilized. | | | |
| • Animal Waste and other Organics - K | Neutral | Organic materials removed from the impoundment will be applied at agronomic rates or otherwise utilized. | | | |
| • 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|--|------|--------|
| PRACTICE: Closure of Waste Impoundments 360 | | Baseline Setting: Headquarters area includes a waste impoundment that is no longer needed as part of a waste management system. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Excessive Subsurface Water | | Neutral | Could be neutral to slight improvement where excess water originates in part from leaking waste impoundments | | |
| 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 | | Slight Improvement | Conversion of waste storage pond to fresh water pond will increase the opportunity for fresh water storage and later availability. | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | | Not Applicable | Not applicable. | | |
| • Excessive Nutrients and Organics | | Slight to Moderate Improvement | The action eliminates potential waste leakage from impoundments. | | |
| • Excessive Salinity | | Slight Improvement | The action eliminates a potential source of salinity to the groundwater. | | |
| • Harmful Levels of Heavy Metals | | Neutral | Heavy metals are rarely associated with manure, but this practice could eliminate the source. | | |
| • Harmful Levels of Pathogens | | Slight to Moderate Improvement | The action eliminates a potential source of pathogens to the groundwater. | | |
| • 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 | Emptying and closing unused waste storage facilities eliminates potential sources of spills or overflows from poorly managed facilities. | | |
| • Excessive Suspended Sediment and Turbidity | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------|---|-----|------|--------|
| PRACTICE: Closure of Waste Impoundments 360 | | Baseline Setting: Headquarters area includes a waste impoundment that is no longer needed as part of a waste management system. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Slight Improvement | Reduces emissions from aged waste impoundments | | | |
| Ammonia (NH ₃) | Slight Improvement | Reduces emissions from aged waste impoundments | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Slight Improvement | Reduces VOC and particulate emissions from aged waste impounds | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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 | Neutral | Filling in the pond will make maintenance somewhat easier so undesirable species can be controlled. | | | |
| Forage Quality and Palatability | Not Applicable | Not applicable. | | | |
| Wildfire Hazard | Not Applicable | Not applicable. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|---|-----|------|--------|
| PRACTICE: Closure of Waste Impoundments 360 | | Baseline Setting: Headquarters area includes a waste impoundment that is no longer needed as part of a waste management system. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|------------|---|-----|------------------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Closure of Waste Impoundments 360 | | Baseline Setting: Headquarters area includes a waste impoundment that is no longer needed as part of a waste management system. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | | No | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | | No | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | | No | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|--------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Waste Treatment Lagoon 359 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Waste Treatment Lagoon 359 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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 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 | 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|--------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Waste Treatment Lagoon 359 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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 ₂ O (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 CH ₄ | | | |
| Ammonia (NH ₃) | Slight to Moderate Improvement | Proper nutrient management reduces NH ₃ 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 – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Waste Treatment Lagoon 359 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Imbalance Among and Within Populations | Not Applicable | Not applicable. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------|---|-----------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Waste Treatment Lagoon 359 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Dike 356 | | 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 Improvement | Reduces overland flow | | | |
| Streambank | Slight to Moderate Worsening | Causes higher water depths and velocities. | | | |
| 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 | Prevents overland flow from entering construction sites. | | | |
| 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 Worsening | Seepage may increase due to temporary storage behind the dikes. | | | |
| Excessive Runoff, Flooding, or Ponding | Slight to Substantial Improvement | Water is kept within the channel and prevents flooding. | | | |
| Excessive Subsurface Water | Slight Worsening | Seepage may increase due to temporary storage behind the dikes. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight to Moderate Worsening | Prevents water from leaving or entering the channel. | | | |
| Inefficient Water use on Irrigated Land | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Dike 356 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Inefficient Water use on Non-Irrigated Land | Not Applicable | Not applicable. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight Improvement | Helps keep velocities up and improve sediment transport. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight Worsening | Improve sediment transport to downstream 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 to Moderate Improvement | The action excludes surface water from the pesticide application site. | | | |
| • 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 Moderate Improvement | The action excludes surface water from the pesticide application site. | | | |
| • Excessive Nutrients and Organics | Not Applicable | Not applicable. | | | |
| • Excessive Suspended Sediment and Turbidity | Neutral | If a dike is constructed to hold water, suspended sediment and turbidity decreases; if dike is constructed as flood control measure, suspended sediment and turbidity will increase because of erosive effect of flowing, channelized water. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Not Applicable | Not applicable. | | | |
| • Harmful Temperatures | Neutral | Surface water temperature is dependent on site conditions and location of dike. | | | |
| • 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Dike 356 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Ozone | Not Applicable | Not applicable. | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Not Applicable | Not applicable. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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 | Moderate Worsening | Restricting floodplains eliminates refuge habitat for stream and river-dwelling wildlife species. | | | |
| Inadequate Cover/Shelter | Moderate Worsening | Restricting floodplains eliminates refuge habitat for stream and river-dwelling wildlife species. | | | |
| Inadequate Water | Slight Improvement | Dikes will retain water benefiting some species, however if placed in floodplains aquatic habitats will be fragmented. | | | |
| Inadequate Space | Slight Improvement | Dikes will retain water benefiting some species, however if placed in floodplains aquatic habitats will be fragmented. | | | |
| Habitat Fragmentation | Slight Worsening | Aquatic habitats are fragmented. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Dike 356 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Imbalance Among and Within Populations | Neutral | Dikes will retain water benefiting some species, however if placed in floodplains aquatic habitats will be fragmented. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|---|--|------------|-------------|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Dike 356 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Monitoring Well 353 | | 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Monitoring Well 353 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 has no direct effect on any resource concern. Wells do provide an access to aquifers to monitor water quality. | | | |
| • Excessive Nutrients and Organics | Neutral | The action will have a neutral effect on this resource concern. However, it does provide an access to monitor groundwater quality. | | | |
| • Excessive Salinity | Neutral | Monitoring wells have no effect on any resource concern. They do provide an access to an aquifer to monitor its quality. | | | |
| • Harmful Levels of Heavy Metals | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Pathogens | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Petroleum | Neutral | Monitoring wells have no effect on any resource concern. They do provide an access to an aquifer to monitor its quality. | | | |
| 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Monitoring Well 353 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Not Applicable | Not applicable. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Slight decrease | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|---|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Monitoring Well 353 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|--------------|---|------|--------|
| PRACTICE: Well Decommissioning 351 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): All Land Uses | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| 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 ₂ O (Nitrous Oxide) | Not Applicable | | Not applicable. | | |
| • CH ₄ (Methane) | Not Applicable | | Not applicable. | | |
| Ammonia (NH ₃) | Not Applicable | | Not applicable. | | |
| Chemical Drift | Not Applicable | | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|--------------|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Well Decommissioning 351 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): All Land Uses | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| 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 – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | | Not applicable. | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Not Applicable | | Not applicable. | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | | Not applicable. | | |
| <ul style="list-style-type: none"> 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | | Not applicable. | | |
| Inadequate Shelter | 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. | | Slight decrease | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|---|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Well Decommissioning 351 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|--|-----|------|--------|
| 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 gully erosion down slope of basin | | | |
| Classic Gully | Slight to Moderate Improvement | Controlled flow will reduce gully 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|--|-----|------|--------|
| 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 | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| 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 | | |
| • 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 ₂ O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| • CH ₄ (Methane) | | Not Applicable | Not applicable. | | |
| Ammonia (NH ₃) | | Not Applicable | Not applicable. | | |
| Chemical Drift | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------|--|-----|------|--------|
| 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 | | | |
| 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 – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|--|--|-----|------|--------|
| 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 | | | |
| 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 | Not applicable. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Dam, Diversion 348 | | 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 Worsening | If protection isn't provided the diverted flows may cause 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 | Slight to Substantial Improvement | Flows are diverted into other channels to provide relief | | | |
| Excessive Subsurface Water | Not Applicable | Not applicable. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight to Substantial Improvement | Diversion of some of the flow into additional outlets provides relief | | | |
| Inefficient Water use on Irrigated Land | Slight to Substantial Improvement | Diverted water maybe be used for irrigation | | | |
| Inefficient Water use on Non-Irrigated Land | Slight to Substantial Improvement | Water can be diverted for beneficial use | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------------------------|---|-----|------|--------|
| PRACTICE: Dam, Diversion 348 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Slight to Moderate Worsening | Diverted water reduces flows in downstream channel | | | |
| 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 | Slight to Moderate Worsening | Diversion of stream flow during warm periods when irrigation is needed will decrease depth of flow, making stream more susceptible to solar radiation and increased 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Dam, Diversion 348 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Not Applicable | Not applicable. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> 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 Worsening | Reducing stream flows will decrease food supplies for stream species but will increase food supplies for pond or lake species of fish and wildlife. | | | |
| Inadequate Cover/Shelter | Moderate Worsening | Reducing stream flows will reduce habitat for aquatic species that live in streams. | | | |
| Inadequate Water | Slight to Moderate Worsening | Reducing stream flows will reduce habitat for aquatic species and water supply for riparian species. | | | |
| Inadequate Space | Slight to Moderate Worsening | Reducing stream flows will reduce available habitat for aquatic and riparian species. | | | |
| Habitat Fragmentation | Slight to Moderate Worsening | Aquatic and riparian habitats are fragmented. | | | |
| Imbalance Among and Within Populations | Slight to Moderate Worsening | Aquatic and riparian habitats are fragmented or reduced by diversions, affecting population dynamics of some species. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|---|--|-----|------|--------|
| PRACTICE: Dam, Diversion 348 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Dams can also provide stock water. | | | |
| Stress and Mortality | Not Applicable | Not applicable. | | | |
| HUMAN – ECONOMICS | | | | | |
| Land - Change in Land Use | Not applicable. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Residue and Tillage Management, Ridge Till 346 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> • Commercial Fertilizer – P • Commercial Fertilizer – K • Residual Pesticides | Not Applicable | Not applicable. | | | |
| | Not Applicable | Not applicable. | | | |
| | 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 Improvement | Ridge till reduces erosion which results in less sediment. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight 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: | | | | | |
| <ul style="list-style-type: none"> • Harmful Levels of Pesticides • Excessive Nutrients and Organics | Not Applicable | The action increases soil organic matter and biological activity. | | | |
| | Neutral | The action increases infiltration that contributes to nutrient leaching. Also, high organic carbon will cause microbes to immobilize nutrients. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|-----------------------------------|--|------|--------|
| PRACTICE: Residue and Tillage Management, Ridge Till 346 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • 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 | | Slight Improvement | Not applicable. | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | | Not Applicable | 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 | | 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 | | Moderate Improvement | 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 CO ₂ emissions and increases soil carbon storage. | | |
| • N ₂ O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-----------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Residue and Tillage Management, Ridge Till 346 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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 – SUITABILITY | | | | | |
| 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Residue and Tillage Management, Ridge Till 346 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|--|------------|---|-----------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Residue and Tillage Management, Ridge Till 346 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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 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. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|---|------|--------|
| PRACTICE: Residue and Tillage Management, Mulch Till 345 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> 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: | | | | | |
| <ul style="list-style-type: none"> Harmful Levels of Pesticides | | Slight Improvement | The action increases soil organic matter and biological activity. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| PRACTICE: Residue and Tillage Management, Mulch Till 345 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Excessive Nutrients and Organics | | Neutral | 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 | | 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 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|---|---|-----|------|--------|
| PRACTICE: Residue and Tillage Management, Mulch Till 345 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Crop, Hay, Pasture | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Slight to Moderate Improvement | Reduced use of machinery reduces CO ₂ emissions and increases soil carbon storage. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | 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 Improvement | Reduction in wind erosion potential and fugitive dust | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|---|------|--------|
| PRACTICE: Residue and Tillage Management, Mulch Till 345 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | 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. | Slight decrease | | |
| Land – Land in Production | | Slight decrease, structure built on cropland. | Substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Moderate increase. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Slight to substantial increase | | |
| Labor - Labor | | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | Not applicable. | | |
| Risk - Yield | | Not applicable. | Moderate to Substantial Increase | | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | Substantial Increase | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|------------|---|-----|-----------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Residue and Tillage Management, Mulch Till 345 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | | No | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | | No | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|--|-----|------|--------|
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|---|--|-----|------|--------|
| PRACTICE: Residue Management, Seasonal 344 | Baseline Setting: | | | | |
| | Appropriate Land Use(s): Crop, Hay, Pasture | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| PRACTICE: Residue Management, Seasonal 344 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • 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 CO ₂ emissions and increases soil carbon storage. | | |
| • N ₂ O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| • CH ₄ (Methane) | | Not Applicable | Not applicable. | | |
| Ammonia (NH ₃) | | Not Applicable | Not applicable. | | |
| Chemical Drift | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--------------------------------|---|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Residue Management, Seasonal 344 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| 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 – SUITABILITY | | | | | |
| 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|---|---|-----|------|--------|
| PRACTICE: Residue Management, Seasonal 344 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|--|-----|------|--------|
| PRACTICE: Critical Area Planting 342 | | Baseline Setting: Planning area has a need for Critical Area Planting. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Substantial Improvement | Increased vegetation and cover, and stabilization of erosive conditions will improve infiltration and decrease soil detachment by water. | | | |
| Wind | Substantial Improvement | An increase in vegetation and cover will protect the soil surface and decrease soil detachment by wind. | | | |
| Ephemeral Gully | Substantial Improvement | An increase in vegetation and cover will improve infiltration, protect the soil surface and decrease soil detachment by concentrated flow. | | | |
| Classic Gully | Moderate to Substantial Improvement | Increased vegetation and cover will decrease erosion and runoff. | | | |
| Streambank | Moderate to Substantial Improvement | Increased vegetation and cover will decrease erosion and runoff. | | | |
| Shoreline | Moderate to Substantial Improvement | Increased vegetation and cover will decrease erosion. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Not Applicable | Not applicable. | | | |
| Road, Roadsides, and Construction Sites | Substantial Improvement | Increased vegetation and cover will decrease erosion and runoff. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Substantial Improvement | Increased cover and growing vegetation will increase soil organic matter. | | | |
| Rangeland Site Stability | Substantial Improvement | Increase in soil cover by vegetation will improve soil surface organic matter and surface stability. | | | |
| Compaction | Slight to Substantial Improvement | Increased root growth will decrease compaction. | | | |
| Subsidence | Neutral | If it affects drainage the practice can have an impact on subsidence. | | | |
| Contaminants: | | | | | |
| <ul style="list-style-type: none"> • Salts and other Chemicals | Slight Improvement | Increased vegetation will increase salt uptake and increased organic matter may tie up salts and other chemicals. | | | |
| <ul style="list-style-type: none"> • Animal Waste and other Organics - N | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|---|------|--------|
| PRACTICE: Critical Area Planting 342 | | Baseline Setting: Planning area has a need for Critical Area Planting. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • 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 | Increased organic matter adsorbs pesticides and increased biological activity will break pesticides down. Selected vegetation may reduce the need for pesticides. | | |
| Damage from Sediment Deposition | | Slight to Substantial Improvement | Growing vegetation and cover result in less erosion and sediment deposition. | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | | Slight to Substantial Improvement | Growing vegetation and cover result in higher infiltration and lower runoff. | | |
| Excessive Seepage | | Neutral | Growing plants will take up excess water but planting area is so small there is a neutral effect. | | |
| Excessive Runoff, Flooding, or Ponding | | Neutral | Growing plants will take up excess water but planting area is so small there is a neutral effect. | | |
| Excessive Subsurface Water | | Neutral | Growing plants will take up excess water but planting area is so small there is a neutral effect. | | |
| 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 | Permanent vegetation reduces runoff and sediment yield. | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | | Moderate to Substantial Improvement | Permanent vegetation reduces sediment yield. | | |
| 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Critical Area Planting 342 | | Baseline Setting: Planning area has a need for Critical Area Planting. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Excessive Nutrients and Organics | Slight Improvement | Permanent vegetation will uptake excess nutrients. | | | |
| • Excessive Salinity | Neutral | Vegetation takes up moisture and salts. | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | Higher organic matter levels increases buffering capacity of the soil. Vegetation can take up some heavy metals. | | | |
| • Harmful Levels of Pathogens | Slight Improvement | The action increases organic matter promoting microbial activity which competes 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 | Slight to Moderate Improvement | The action reduces erosion and sediment-attached nutrient delivery to surface water. Permanent vegetation will uptake nutrients. | | | |
| • Excessive Suspended Sediment and Turbidity | Moderate to Substantial Improvement | Vegetation reduces erosion and sediment delivery. | | | |
| • Excessive Salinity | Neutral | Less runoff reduces transport of soluble salts. Growing vegetation can use excess water which reduces seepage. | | | |
| • Harmful Levels of Heavy Metals | Slight to Moderate Improvement | Decreased erosion and runoff reduces heavy metal delivery to surface water. Increased soil organic matter increases capacity of soils to retain heavy metals. Permanent vegetation can uptake heavy metals. | | | |
| • 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 | Permanent cover helps reduce wind erosion and generation of fugitive dust. | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight to Moderate Improvement | Permanent cover helps reduce wind erosion and generation of fugitive dust. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|---|------|--------|
| PRACTICE: Critical Area Planting 342 | | Baseline Setting: Planning area has a need for Critical Area Planting. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> • CO₂ (Carbon Dioxide) | | Slight Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | |
| <ul style="list-style-type: none"> • N₂O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • CH₄ (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 – SUITABILITY | | | | | |
| Plants not Adapted or Suited | | Substantial Improvement | Plants selected are adapted and suited. | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | | Substantial Improvement | Proper plant selection, nutrient modification, and management improves plant growth and vigor. | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> • Plant Species Listed or Proposed for Listing Under the Endangered Species Act | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • Declining Species, Species of Concern | | Not Applicable | Not applicable. | | |
| Noxious and Invasive Plants | | Moderate to Substantial Improvement | Establishment of permanent vegetation may provide competition that would slow the spread of noxious plants. | | |
| Forage Quality and Palatability | | Not Applicable | Not applicable. | | |
| Wildfire Hazard | | Not Applicable | Not applicable. | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | | Slight to Moderate Improvement | Increased quality and quantity of vegetation provides more food for wildlife. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|---|-----|------|--------|
| PRACTICE: Critical Area Planting 342 | | Baseline Setting: Planning area has a need for Critical Area Planting. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Inadequate Cover/Shelter | Slight to Moderate Improvement | Increased quality and quantity of vegetation provides more cover for wildlife. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. | | | |
| Habitat Fragmentation | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. | | | |
| Imbalance Among and Within Populations | Slight Improvement | Habitat management is implemented to remove limiting factors. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Slight Improvement | Established vegetation may add forage for domestic animals. | | | |
| 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|------------|---|-----|------------------------------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Critical Area Planting 342 | | Baseline Setting: Planning area has a need for Critical Area Planting. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | | Substantial Increase | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | | Slight to moderate decrease. | |
| Profitability – Change in Profitability | | 0 | | 0.02 | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | | No | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | | No | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | | No | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|---|-----|------|--------|
| PRACTICE: Cover Crop 340 | | Baseline Setting: Planning area requires vegetative cover for natural resource protection or improvement. | | | |
| | | 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 | Moderate to Substantial Improvement | Increased cover during erosive periods will reduce soil detachment by water. | | | |
| Wind | Moderate to Substantial Improvement | Increased cover during erosive periods will reduce soil detachment by wind. | | | |
| Ephemeral Gully | Moderate to Substantial Improvement | Increased cover during erosive periods will reduce concentrated flow and associated soil detachment. | | | |
| Classic Gully | Slight Improvement | Less runoff reduces potential gully erosion. | | | |
| Streambank | Not Applicable | Not applicable. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Slight Worsening | Increased infiltration and water retention increases the potential for mass movement. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Slight to Moderate Improvement | More biomass produced will increase organic matter. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Slight to Moderate Improvement | Increased biomass and roots improve aggregation, which gives better resistance to compaction. | | | |
| Subsidence | Neutral | If it affects drainage the practice can have an impact on subsidence. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight Improvement | Increased organic matter will buffer salts. | | | |
| • Animal Waste and other Organics - N | Slight to Moderate Improvement | Vegetation will utilize excessive N, increasing N utilization if vegetation is removed from the field. | | | |
| • Animal Waste and other Organics - P | Slight to Moderate Improvement | Vegetation will utilize excessive P, increasing P utilization if vegetation is removed from the field. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|--------------------------------|---|-----|------|--------|
| PRACTICE: Cover Crop 340 | | Baseline Setting: Planning area requires vegetative cover for natural resource protection or improvement. | | | |
| | | 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 | | | |
| • Animal Waste and other Organics - K | Slight to Moderate Improvement | Vegetation will utilize excessive K, increasing K utilization if vegetation is removed from the field. | | | |
| • Commercial Fertilizer - N | Slight to Moderate Improvement | Vegetation will utilize excessive N, increasing N utilization if vegetation is removed from the field. | | | |
| • Commercial Fertilizer - P | Slight to Moderate Improvement | Vegetation will utilize excessive P, increasing P utilization if vegetation is removed from the field. | | | |
| • Commercial Fertilizer - K | Slight to Moderate Improvement | Vegetation will utilize excessive K, increasing K utilization if vegetation is removed from the field. | | | |
| • Residual Pesticides | Slight to Moderate Improvement | Increased organic matter adsorbs pesticides and increased biological activity will break pesticides down. Selected vegetation may reduce the need for pesticides. | | | |
| Damage from Sediment Deposition | Slight to Moderate Improvement | Less erosion results in less sediment. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | Not applicable. | | | |
| Excessive Seepage | Slight Improvement | Growing plants will take up excess water. However, infiltration will increase, which may offset some of the benefits. | | | |
| Excessive Runoff, Flooding, or Ponding | Slight to Moderate Improvement | Growing plants will reduce runoff and increase infiltration. | | | |
| Excessive Subsurface Water | Slight Improvement | Growing plants will take up excess water. However, infiltration will increase, which may offset some of the benefits. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight Improvement | Improved vegetative cover conditions reduces runoff and regulates flow to outlets. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-----------------------------------|---|-----|------|--------|
| PRACTICE: Cover Crop 340 | | Baseline Setting: Planning area requires vegetative cover for natural resource protection or improvement. | | | |
| | | 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 | | | |
| Inefficient Water use on Irrigated Land | Neutral | Cover crop may deplete soil moisture prior to planting main crop. If cover crop residue is left on surface, it will improve infiltration and reduce evaporation. | | | |
| Inefficient Water use on Non-Irrigated Land | Slight to Substantial Improvement | Improves infiltration, soil structure, and winter water use that may otherwise be lost. For dry climates (<20 inches/year); cover crops will compete for main crop's moisture. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Substantial Improvement | Reduces erosion which results in less sediment transport. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Substantial Improvement | Reduces erosion which results in less sediment accumulation. | | | |
| Aquifer Overdraft | Slight Improvement | Increased infiltration may improve aquifer recharge. | | | |
| 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, biological activity, and pesticide uptake. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Improvement | The action utilizes excess nutrients and increases organic matter. The additional organic matter will increase cation exchange capacity which will hold nutrients. | | | |
| • Excessive Salinity | Slight Improvement | Cover crops can take up salts and water reducing the leaching potential of salts. | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | Higher organic matter levels increases buffering capacity of the soil. Some cover crops can take up some heavy metals. | | | |
| • Harmful Levels of Pathogens | Slight to Moderate Improvement | The action increases organic matter promoting microbial activity which competes with pathogens. | | | |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|---|------|--------|
| PRACTICE: Cover Crop 340 | | Baseline Setting: Planning area requires vegetative cover for natural resource protection or improvement. | | | |
| | | 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 | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | | Slight to Moderate Improvement | The action reduces runoff and erosion. | | |
| • Excessive Nutrients and Organics | | Slight to Moderate Improvement | The action reduces erosion and runoff and transport of nutrients. Cover crops can uptake excess nutrients. | | |
| • Excessive Suspended Sediment and Turbidity | | Slight to Moderate Improvement | Vegetation will reduce erosion and transport of sediment. | | |
| • Excessive Salinity | | Neutral | Less runoff reduces transport of soluble salts. Growing vegetation can use excess water which reduces seepage. | | |
| • Harmful Levels of Heavy Metals | | Slight to Moderate Improvement | Decreased erosion and runoff reduces heavy metal delivery to surface water. Increased soil organic matter increases capacity of soils to retain heavy metals. Cover crops can uptake heavy metals. | | |
| • 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 | Ground cover helps reduce wind erosion and generation of fugitive dust. | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | | Slight to Moderate Improvement | Ground cover helps reduce wind erosion and generation of fugitive dust. | | |
| Excessive Ozone | | Slight Improvement | Motor vehicle emissions are reduced through reduced tillage operations. 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Cover Crop 340 | | Baseline Setting: Planning area requires vegetative cover for natural resource protection or improvement. | | | |
| | | 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 | | | |
| • CO ₂ (Carbon Dioxide) | Slight to Moderate Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| • N ₂ O (Nitrous Oxide) | Slight Improvement | Nitrogen fixing by selected cover crops | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Slight to Moderate Improvement | Nitrogen is fixed in soils with proper cover crops | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Slight to Substantial Improvement | Residues and cover crops reduce wind erosion and fugitive dust | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Substantial Improvement | Plants selected are adapted and suited. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight to Moderate Improvement | Plants are selected and managed to maintain optimal productivity and health and can contribute to subsequent crop 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 | Moderate to Substantial Improvement | Vegetation is installed and managed to control undesired species. | | | |
| Forage Quality and Palatability | Slight to Moderate Improvement | Adding a cover crop provides a higher quality forage. | | | |
| Wildfire Hazard | Not Applicable | Not applicable. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Moderate Improvement | Increased quality and quantity of vegetation provides more food for wildlife. | | | |
| Inadequate Cover/Shelter | Slight to Moderate Improvement | Increased quality and quantity of vegetation provides more cover for wildlife. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|---|-----|------|--------|
| PRACTICE: Cover Crop 340 | | Baseline Setting: Planning area requires vegetative cover for natural resource protection or improvement. | | | |
| | | 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 | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. | | | |
| Habitat Fragmentation | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. | | | |
| Imbalance Among and Within Populations | Slight to Moderate Improvement | Habitat management is implemented to remove limiting factors. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Slight to Substantial Improvement | Cover crops will add supplemental 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|------------------------------|------|--------|
| PRACTICE: Cover Crop 340 | | Baseline Setting: Planning area requires vegetative cover for natural resource protection or improvement. | | | |
| | | 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 | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Contour Buffer Strips 332 | | Baseline Setting: Planning area has uniform slopes ranging from 4-8 percent, with appropriate slope lengths for contour buffers. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Moderate to Substantial Improvement | | Maintaining vegetation on the contour reduces runoff velocities, thus reducing the detachment and transport capacity of over-land flow. | | |
| Wind | Neutral | | If the practice layout is coincidentally oriented across the direction of the erosive wind, soil particles borne by wind are trapped and soil detachment is reduced. | | |
| Ephemeral Gully | Slight to Moderate Improvement | | Vegetation across the slope reduces runoff velocity and volume and increases infiltration reducing concentrated flow. | | |
| Classic Gully | Slight Improvement | | Reduces runoff causing erosion in the gully. | | |
| Streambank | Slight Improvement | | Reduces runoff causing erosion. | | |
| Shoreline | Not Applicable | | Not applicable. | | |
| Irrigation Induced | Not Applicable | | Not applicable. | | |
| Mass Movement | Not Applicable | | Not applicable. | | |
| Road, Roadsides, and Construction Sites | Not Applicable | | Not applicable. | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Slight to Moderate Improvement | | Not applicable. | | |
| Rangeland Site Stability | Not Applicable | | Not applicable. | | |
| Compaction | Not Applicable | | Not applicable. | | |
| Subsidence | Not Applicable | | Not applicable. | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Neutral | | Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect. | | |
| • Animal Waste and other Organics - N | Neutral | | Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect. | | |
| • Animal Waste and other Organics - P | Neutral | | Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|--|------|--------|
| PRACTICE: Contour Buffer Strips 332 | | Baseline Setting: Planning area has uniform slopes ranging from 4-8 percent, with appropriate slope lengths for contour buffers. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Animal Waste and other Organics - K | | Neutral | Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect. | | |
| • Commercial Fertilizer - N | | Neutral | Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect. | | |
| • Commercial Fertilizer - P | | Neutral | Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect. | | |
| • Commercial Fertilizer - K | | Neutral | Vegetation will increase opportunity for infiltration and evapotranspiration with no net effect. | | |
| • Residual Pesticides | | Slight Worsening | Vegetation will increase opportunity for infiltration. | | |
| Damage from Sediment Deposition | | Moderate to Substantial Improvement | Vegetation reduces soil erosion and subsequent deposition. | | |
| WATER - QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | | Not Applicable | Not applicable. | | |
| Excessive Seepage | | Slight to Moderate Worsening | Reduces runoff and traps drifting snow resulting in increased water infiltration that may move laterally to a seep area, particularly during fallow periods. | | |
| Excessive Runoff, Flooding, or Ponding | | Slight Improvement | Reduces runoff resulting in increased water infiltration which will slightly reduce the potential for flooding or ponding. | | |
| Excessive Subsurface Water | | Slight Worsening | Reduces runoff resulting in increased water infiltration which increases subsurface water. | | |
| Drifted Snow | | Not Applicable | Not applicable. | | |
| Inadequate Outlets | | Not Applicable | Not applicable. | | |
| Inefficient Water use on Irrigated Land | | Not Applicable | Not applicable. | | |
| Inefficient Water use on Non-Irrigated Land | | Slight Improvement | Reduces runoff resulting in increased water infiltration. | | |
| Reduced Capacity of Conveyances by Sediment Deposition | | Moderate to Substantial Improvement | Reduces soil erosion and resulting off-site sediment deposition. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|---|------|--------|
| PRACTICE: Contour Buffer Strips 332 | | Baseline Setting: Planning area has uniform slopes ranging from 4-8 percent, with appropriate slope lengths for contour buffers. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | | Slight to Moderate Improvement | Reduces soil erosion and resulting off-site sediment deposition. | | |
| Aquifer Overdraft | | Not Applicable | Not applicable. | | |
| Insufficient Flows in Water Courses | | Not Applicable | Not applicable. | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | | Neutral | The action increases infiltration which is offset by increased soil organic matter and biological activity . | | |
| • Excessive Nutrients and Organics | | Slight Worsening | The action reduces the velocity of runoff and traps drifting snow resulting in increased water infiltration which could move nutrients and organics to groundwater. | | |
| • Excessive Salinity | | Slight Worsening | The action reduces the velocity of runoff and traps drifting snow resulting in increased water infiltration which could move salts to groundwater. | | |
| • Harmful Levels of Heavy Metals | | Neutral | The action may result in increased water infiltration, but this will have a negligible effect on heavy metals in groundwater. | | |
| • Harmful Levels of Pathogens | | Slight Worsening | Increased water infiltration could move pathogens into the soil. | | |
| • Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | | Slight to Moderate Improvement | The action reduces runoff and erosion and the amount of pesticide applied. | | |
| • Excessive Nutrients and Organics | | Slight to Substantial Improvement | The action decreases soil erosion by water and may increase water infiltration, thereby reducing the transport of nutrients and organics to surface water. | | |
| • Excessive Suspended Sediment and Turbidity | | Slight to Substantial Improvement | Contour Buffer Strips reduce sheet and rill erosion and slow the velocity of runoff, thereby reducing the transport of sediment to surface water | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|---|------|--------|
| PRACTICE: Contour Buffer Strips 332 | | Baseline Setting: Planning area has uniform slopes ranging from 4-8 percent, with appropriate slope lengths for contour buffers. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Excessive Salinity | | Slight Improvement | The action slows runoff, which may increase water infiltration, reducing the potential for transport of salts to surface water. | | |
| • Harmful Levels of Heavy Metals | | Slight to Substantial Improvement | Strips of vegetation decrease sheet and rill erosion and slow runoff velocities, thereby reducing the potential for transport of heavy metals to surface water. | | |
| • Harmful Temperatures | | Not Applicable | Not applicable. | | |
| • Harmful Levels of Pathogens | | Slight Improvement | Contour Buffer Strips decrease sheet and rill erosion and slow runoff velocities, thereby reducing the potential for transport of pathogens to surface water | | |
| • Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | | Slight Improvement | The areas of permanent vegetation reduce the amount of area that is susceptible to wind erosion. | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | | Slight Improvement | The areas of permanent vegetation reduce the amount of area that is susceptible to wind erosion. | | |
| Excessive Ozone | | Neutral | There is a minimal reduction of ozone precursors through reduced surface temperatures offered by shade or ground cover, and minimal biofiltering of ozone concentrations due to interception by vegetation. | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | | Slight Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | |
| • N ₂ O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| • CH ₄ (Methane) | | Not Applicable | Not applicable. | | |
| Ammonia (NH ₃) | | Not Applicable | Not applicable. | | |
| Chemical Drift | | Not Applicable | Provides wind break to reduce chemical drift | | |
| Objectionable Odors | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|------------|--|-----|---|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Contour Buffer Strips 332 | | Baseline Setting: Planning area has uniform slopes ranging from 4-8 percent, with appropriate slope lengths for contour buffers. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| Reduced Visibility | | Slight Improvement | | Provides for biofiltering of windblown dust | |
| Undesirable Air Movement | | Not Applicable | | Not applicable. | |
| Adverse Air Temperature | | Not Applicable | | Not applicable. | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | | Substantial Improvement | | Plants selected are adapted and suited. | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | | Slight to Substantial Improvement | | Plants are selected and managed to maintain optimal productivity and health. | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | | Not Applicable | | Not applicable. | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Not Applicable | | Not applicable. | |
| Noxious and Invasive Plants | | Moderate to Substantial Improvement | | Vegetation is installed and managed to control undesired species. | |
| Forage Quality and Palatability | | Not Applicable | | Not applicable. | |
| Wildfire Hazard | | Not Applicable | | Not applicable. | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | | Slight to Moderate Improvement | | Increased quality and quantity of vegetation provides more food for wildlife. | |
| Inadequate Cover/Shelter | | Slight to Moderate Improvement | | Increased quality and quantity of vegetation provides more cover for wildlife. | |
| Inadequate Water | | Not Applicable | | Not applicable. | |
| Inadequate Space | | Slight to Moderate Improvement | | Increased cover will increase space for wildlife. May be used to connect other cover areas. | |
| Habitat Fragmentation | | Slight to Moderate Improvement | | Increased cover will increase space for wildlife. May be used to connect other cover areas. | |
| Imbalance Among and Within Populations | | Not Applicable | | Not applicable. | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|---|------|--------|
| PRACTICE: Contour Buffer Strips 332 | | Baseline Setting: Planning area has uniform slopes ranging from 4-8 percent, with appropriate slope lengths for contour buffers. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | 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. | Slight decrease | | |
| Land – Land in Production | | Slight decrease, structure built on cropland. | Substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Moderate increase. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Slight to substantial increase | | |
| Labor - Labor | | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | Not applicable. | | |
| Risk - Yield | | Not applicable. | Moderate to Substantial Increase | | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | Substantial Increase | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|------------|--|------------------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Contour Buffer Strips 332 | | Baseline Setting: Planning area has uniform slopes ranging from 4-8 percent, with appropriate slope lengths for contour buffers. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Contour Orchard and Other Fruit Areas 331 | | Baseline Setting: Planning area includes an orchard or fruit area that is not on the contour, or installation of a contour orchard is being considered. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | | Moderate to Substantial Improvement | | Contouring reduces runoff velocities and changes overland flow direction, thus reducing the detachment and transport capacity of over-land flow. | |
| Wind | | Not Applicable | | Not applicable. | |
| Ephemeral Gully | | Slight to Moderate Improvement | | Contouring reduces runoff velocities and changes overland flow direction, thus reducing the detachment and transport capacity of concentrated over-land flow. | |
| Classic Gully | | Slight Improvement | | Reduces runoff causing erosion in the gully. | |
| Streambank | | Slight Improvement | | Reduces runoff causing erosion. | |
| Shoreline | | Not Applicable | | Not applicable. | |
| Irrigation Induced | | Slight to Moderate Improvement | | Contouring reduces slope grade and velocities of irrigation applied water. | |
| Mass Movement | | Not Applicable | | Not applicable. | |
| Road, Roadsides, and Construction Sites | | Not Applicable | | Not applicable. | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | | Slight to Moderate Improvement | | Reduced soil erosion decreases 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 | | Slight Worsening | | Contouring can increase infiltration which may increase residual pesticides in the soil | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|--|------|--------|
| PRACTICE: Contour Orchard and Other Fruit Areas 331 | | Baseline Setting: Planning area includes an orchard or fruit area that is not on the contour, or installation of a contour orchard is being considered. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Damage from Sediment Deposition | | Moderate to Substantial Improvement | Contouring reduces sheet and rill erosion and the resulting sediment deposition at the foot of the slope or off-site. | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | | Not Applicable | Not applicable. | | |
| Excessive Seepage | | Slight to Moderate Worsening | Increases water infiltration that may move laterally to a seep area, particularly during fallow periods. | | |
| Excessive Runoff, Flooding, or Ponding | | Slight Improvement | Increases water infiltration which will slightly reduce the potential for flooding or ponding. | | |
| Excessive Subsurface Water | | Slight Worsening | Increases 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 | | Slight Improvement | Contouring reduces slope grade, velocities of irrigation applied water and increases infiltration. | | |
| Inefficient Water use on Non-Irrigated Land | | Slight to Moderate Improvement | Increases water infiltration resulting in improved water storage in the profile. | | |
| Reduced Capacity of Conveyances by Sediment Deposition | | Moderate to Substantial Improvement | Contouring can reduce soil erosion and the resulting off-site sediment deposition. | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | | Slight to Moderate Improvement | Contouring reduces soil erosion and the resulting off-site sediment deposition. | | |
| Aquifer Overdraft | | Not Applicable | Not applicable. | | |
| Insufficient Flows in Water Courses | | Not Applicable | Not applicable. | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| <ul style="list-style-type: none"> • Harmful Levels of Pesticides • Excessive Nutrients and Organics | | Slight Worsening | The action increases infiltration. | | |
| | | Slight Worsening | The action reduces the velocity of runoff, resulting in increased water infiltration which could move nutrients and organics to groundwater. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-----------------------------------|---|---|------|--------|
| PRACTICE: Contour Orchard and Other Fruit Areas 331 | | Baseline Setting: Planning area includes an orchard or fruit area that is not on the contour, or installation of a contour orchard is being considered. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| • Excessive Salinity | Slight Worsening | | The action reduces the velocity of runoff, resulting in increased water infiltration which could move salts to groundwater. | | |
| • Harmful Levels of Heavy Metals | Neutral | | The action may result in increased water infiltration, but this will have a negligible effect on heavy metals in groundwater. | | |
| • Harmful Levels of Pathogens | Neutral | | Increased water infiltration could move pathogens into the soil. | | |
| • Harmful Levels of Petroleum | Not Applicable | | Not applicable. | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Slight Improvement | | The action reduces runoff and erosion. | | |
| • Excessive Nutrients and Organics | Slight to Substantial Improvement | | The action decreases sheet and rill erosion 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 | | Contouring reduces sheet and rill erosion and slows the velocity of runoff, thereby reducing the transport of sediment to surface water | | |
| • Excessive Salinity | Slight Improvement | | The action slows runoff, which may increase water infiltration, reducing the potential for transport of salts to surface water. | | |
| • Harmful Levels of Heavy Metals | Slight to Moderate Improvement | | Contouring decreases sheet and rill erosion and slows runoff velocities, thereby reducing the potential for transport of heavy metals to surface water. | | |
| • Harmful Temperatures | Not Applicable | | Not applicable. | | |
| • Harmful Levels of Pathogens | Slight Improvement | | Contouring decreases sheet and rill erosion and slows runoff velocities, thereby reducing the potential for transport of pathogens to surface water | | |
| • Harmful Levels of Petroleum | Not Applicable | | Not applicable. | | |
| AIR – QUALITY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Contour Orchard and Other Fruit Areas 331 | | Baseline Setting: Planning area includes an orchard or fruit area that is not on the contour, or installation of a contour orchard is being considered. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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) | Slight Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Slight Improvement | Provides for biofiltering of windblown dust | | | |
| Undesirable Air Movement | Slight to Moderate Improvement | Tall vegetation creates turbulence and slows undesired, leeward winds. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight Improvement | Increased infiltration increases the amount of available water for crop 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 | 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 | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|---|-----|------|--------|
| PRACTICE: Contour Orchard and Other Fruit Areas 331 | | Baseline Setting: Planning area includes an orchard or fruit area that is not on the contour, or installation of a contour orchard is being considered. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Habitat Fragmentation | Not Applicable | Not applicable. | | | |
| Imbalance Among and Within Populations | Not Applicable | Not applicable. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|-------------------|---|------------|------------------|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Contour Orchard and Other Fruit Areas 331 | | Baseline Setting: Planning area includes an orchard or fruit area that is not on the contour, or installation of a contour orchard is being considered. | | | |
| | | Appropriate Land Use(s): Crop | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | | No | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | | No | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | | No | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Contour Farming 330 | | Baseline Setting: Farming operations are not on the contour. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Slight to Substantial Improvement | Contouring reduces runoff velocities and changes overland flow direction, thus reducing the detachment and transport capacity of over-land flow. | | | |
| Wind | Not Applicable | Not applicable. | | | |
| Ephemeral Gully | Slight to Moderate Improvement | Contouring reduces runoff velocities and changes overland flow direction, thus reducing the detachment and transport capacity of concentrated over-land flow. | | | |
| Classic Gully | Slight Improvement | Reduces runoff causing erosion in the gully. | | | |
| Streambank | Slight Improvement | Reduces runoff causing erosion. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Not Applicable | Not applicable. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Slight to Moderate Improvement | Reduced soil erosion decreases 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 | Slight Worsening | Farming on the contour can increase infiltration which may increase residual pesticides in the soil | | | |
| Damage from Sediment Deposition | Moderate to Substantial Improvement | Farming on the contour reduces sheet and rill erosion and the resulting sediment deposition at the foot of the slope or off-site. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|--|--|------|--------|
| PRACTICE: Contour Farming 330 | | Baseline Setting: Farming operations are not on the contour. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | | Not applicable. | | |
| Excessive Seepage | Slight to Moderate Worsening | | Increases water infiltration that may move laterally to a seep area, particularly during fallow periods. | | |
| Excessive Runoff, Flooding, or Ponding | Slight Improvement | | Increases water infiltration which will slightly reduce the potential for flooding or ponding. | | |
| Excessive Subsurface Water | Slight Worsening | | Increases 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 | | Increases water infiltration resulting in improved water storage in the profile. | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Moderate to Substantial Improvement | | Reduces soil erosion and resulting sediment deposition off-site. | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Moderate Improvement | | Reduces soil erosion and the resulting offsite 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 | Slight Worsening | | The action increases infiltration. | | |
| • Excessive Nutrients and Organics | Slight Worsening | | The action reduces the velocity of runoff, resulting in increased water infiltration which could move nutrients and organics to groundwater. | | |
| • Excessive Salinity | Slight Worsening | | The action reduces the velocity of runoff, resulting in increased water infiltration which could move salts to groundwater. | | |
| • Harmful Levels of Heavy Metals | Neutral | | The action may result in increased water infiltration, but this will have a negligible effect on heavy metals in groundwater. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|--|------|--------|
| PRACTICE: Contour Farming 330 | | Baseline Setting: Farming operations are not on the contour. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Harmful Levels of Pathogens | | Neutral | Increased water infiltration could move pathogens into the soil. | | |
| • Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | | Slight Improvement | The action reduces runoff and erosion. | | |
| • Excessive Nutrients and Organics | | Slight to Substantial Improvement | The action reduces sheet and rill erosion and can increase water infiltration, thereby reducing the transport of nutrients and organics to surface water. | | |
| • Excessive Suspended Sediment and Turbidity | | Slight to Substantial Improvement | Contour Farming reduces sheet and rill erosion and slows the velocity of runoff, thereby reducing the transport of sediment to surface water | | |
| • Excessive Salinity | | Slight Improvement | The action slows runoff, which may increase water infiltration, reducing the potential for transport of salts to surface water. | | |
| • Harmful Levels of Heavy Metals | | Slight to Moderate Improvement | Contour Farming decreases sheet and rill erosion and slows runoff velocities, thereby reducing the potential for transport of heavy metals to surface water. | | |
| • Harmful Temperatures | | Not Applicable | Not applicable. | | |
| • Harmful Levels of Pathogens | | Slight Improvement | Contour Farming decreases sheet and rill erosion and slows runoff velocities, thereby reducing the potential for transport of pathogens to surface water | | |
| • Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | | 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) | | Slight Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------|--|--|---|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Contour Farming 330 | | Baseline Setting: Farming operations are not on the contour. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | | Not applicable. | | |
| • CH ₄ (Methane) | Not Applicable | | Not applicable. | | |
| Ammonia (NH ₃) | Slight Improvement | | Proper Carbon/Nitrogen ratios must be maintained | | |
| Chemical Drift | Not Applicable | | Not applicable. | | |
| Objectionable Odors | Not Applicable | | Not applicable. | | |
| Reduced Visibility | Slight Improvement | | Reduce fugitive dust emissions | | |
| Undesirable Air Movement | Not Applicable | | Not applicable. | | |
| Adverse Air Temperature | Not Applicable | | Not applicable. | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | | Not Applicable | | Not applicable. | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | | Slight Improvement | | Increased infiltration increases the amount of available water for crop 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 | | 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 | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|---|--|-----|------|--------|
| PRACTICE: Contour Farming 330 | | Baseline Setting: Farming operations are not on the contour. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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 | | Moderate 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: | | | | | |
| <ul style="list-style-type: none"> • Salts and other Chemicals | | Slight Improvement | | Low disturbance and high residue cropping systems increase organic matter which will buffer salts. | |
| <ul style="list-style-type: none"> • Animal Waste and other Organics - N | | Not Applicable | | Not applicable. | |
| <ul style="list-style-type: none"> • Animal Waste and other Organics - P | | Not Applicable | | Not applicable. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|---|------|--------|
| 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 | | |
| <ul style="list-style-type: none"> • Animal Waste and other Organics - K | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • Commercial Fertilizer - N | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • Commercial Fertilizer – P | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • Commercial Fertilizer – K | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • 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 | 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 | | Moderate 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 | | Moderate 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 | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| 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 | | |
| 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 | | Moderate to Substantial 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| 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 | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | | Slight to Moderate Improvement | Reduced use of machinery reduces CO ₂ emissions and increases soil carbon storage. | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> CH₄ (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 – SUITABILITY | | | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|-----|---|--------|
| 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 | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | 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. | | Slight decrease | |
| Land – Land in Production | | Slight decrease, structure built on cropland. | | Substantial increase. | |
| Capital – Change in Equipment | | 0 | | Substantial. | |
| Capital - Total Investment Cost | | Substantial. | | Moderate increase. | |
| Capital – Annual Cost | | 0 | | Situational. | |
| Capital – Credit and Farm Program Eligibility | | 0 | | Slight to substantial increase | |
| Labor - Labor | | Slight to substantial increase depending on type of storage structure. | | Moderate to substantial increase | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | | Not applicable. | |
| Risk - Yield | | Not applicable. | | Moderate to Substantial Increase | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | | Substantial Increase | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------|---|------------------------------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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 | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|--|-----|------|--------|
| PRACTICE: Conservation Crop Rotation 328 | | Baseline Setting: Conservation Crop Rotation is not being applied to planning area. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Moderate to Substantial Improvement | Maintaining sufficient canopy and residue cover reduces soil detachment by water. | | | |
| Wind | Moderate to Substantial Improvement | Maintaining sufficient canopy and residue cover reduces soil detachment by wind. | | | |
| Ephemeral Gully | Slight to Moderate Improvement | Grass and legumes, and high residue crops will reduce soil detachment by concentrated flow. | | | |
| Classic Gully | Slight Improvement | Rotations with grass and legumes and high residue crops will reduce erosion and runoff. | | | |
| Streambank | Not Applicable | Not applicable. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Slight to Substantial Improvement | Depends on crop rotation, water requirements, cover, and residue production. | | | |
| Mass Movement | Not Applicable | Not applicable.. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Moderate to Substantial Improvement | High residue crops can lead to increased root development and increased soil organic carbon. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Slight to Moderate Improvement | High residue crops and increased rooting depth and development can improve soil structure and penetrate compacted layers. | | | |
| Subsidence | Neutral | If it affects drainage the practice can have an impact on subsidence. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight to Moderate Improvement | Salt tolerant crops with high transpiration rates can increase salt uptake and reduce salt content in the root zone. | | | |
| • Animal Waste and other Organics - N | Moderate to Substantial Improvement | Rotation of crops improves N utilization. Effect is greater if above ground biomass is removed at harvest (e.g., corn silage). | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| PRACTICE: Conservation Crop Rotation 328 | | Baseline Setting: Conservation Crop Rotation is not being applied to planning area. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> Animal Waste and other Organics - P | | Moderate to Substantial Improvement | Rotation of crops improves P utilization. Effect is greater if above ground biomass is removed at harvest (e.g., corn silage). | | |
| <ul style="list-style-type: none"> Animal Waste and other Organics - K | | Moderate to Substantial Improvement | Rotation of crops improves K utilization. Effect is greater if above ground biomass is removed at harvest (e.g., corn silage). | | |
| <ul style="list-style-type: none"> Commercial Fertilizer - N | | Moderate to Substantial Improvement | Rotation of crops improves N utilization. Effect is greater if above ground biomass is removed at harvest (e.g., corn silage). | | |
| <ul style="list-style-type: none"> Commercial Fertilizer - P | | Moderate to Substantial Improvement | Rotation of crops improves P utilization. Effect is greater if above ground biomass is removed at harvest (e.g., corn silage). | | |
| <ul style="list-style-type: none"> Commercial Fertilizer - K | | Moderate to Substantial Improvement | Rotation of crops improves K utilization. Effect is greater if above ground biomass is removed at harvest (e.g., corn silage). | | |
| <ul style="list-style-type: none"> Residual Pesticides | | Slight to Substantial Improvement | Pesticide use may be reduced due to crop sequence grown. | | |
| Damage from Sediment Deposition | | Slight to Substantial Improvement | crops that provide more canopy and residue cover will reduce erosion. | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | | Not Applicable | Not applicable. | | |
| Excessive Seepage | | Slight Improvement | Improved plant uptake reduces excessive seepage. | | |
| Excessive Runoff, Flooding, or Ponding | | Slight to Moderate Improvement | Rotations with grass and legumes and high residue crops will reduce erosion and runoff. | | |
| Excessive Subsurface Water | | Slight Improvement | Rotations with grass and legumes and high residue crops will reduce erosion and runoff. | | |
| Drifted Snow | | Not Applicable | Not applicable. | | |
| Inadequate Outlets | | Not Applicable | Not applicable. | | |
| Inefficient Water use on Irrigated Land | | Slight to Moderate Improvement | Crop rotation balances available water with crop needs. | | |
| Inefficient Water use on Non-Irrigated Land | | Slight to Moderate Improvement | Crop rotation balances available water with crop needs. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-----------------------------------|--|-----|------|--------|
| PRACTICE: Conservation Crop Rotation 328 | | Baseline Setting: Conservation Crop Rotation is not being applied to planning area. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Substantial Improvement | Rotations with grass and legumes and high residue crops will reduce erosion and runoff. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Substantial Improvement | Rotations with grass and legumes and high residue crops will reduce erosion and runoff. | | | |
| Aquifer Overdraft | Slight Improvement | Increased infiltration may improve aquifer recharge depending on crop rotation rooting pattern and biomass production. | | | |
| Insufficient Flows in Water Courses | Not Applicable | Not applicable. | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | Slight to Moderate Improvement | The action reduces the need for pesticide use by breaking pest lifecycles. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Improvement | Nitrogen demanding or deep rooted crops can remove excess nitrogen. Legume in rotation will provide slow release nitrogen and reduce need for additional nitrogen. | | | |
| • Excessive Salinity | Slight to Moderate Improvement | Suitable crops can take up salts, the amount depending on crop rotation and rooting pattern, | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | Suitable crops can take up metals. | | | |
| • Harmful Levels of Pathogens | Slight to Moderate Improvement | Selected crops increase organic matter, promoting microbial activity which competes with pathogens. | | | |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Slight to Moderate Improvement | The action reduces the need for pesticide use by breaking pest lifecycles. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Improvement | Nitrogen demanding or deep rooted crops can remove excess nitrogen. Legume in rotation will provide slow release nitrogen and reduce need for additional nitrogen. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|---|------|--------|
| PRACTICE: Conservation Crop Rotation 328 | | Baseline Setting: Conservation Crop Rotation is not being applied to planning area. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> Excessive Suspended Sediment and Turbidity | | Slight to Moderate Improvement | Depending on crop rotation and biomass produced, crop rotation reduces erosion and runoff which reduces transport of sediment. | | |
| <ul style="list-style-type: none"> Excessive Salinity | | Slight Improvement | The action can reduce erosion and runoff which reduces transport of salts. Some crops may accumulate salts. | | |
| <ul style="list-style-type: none"> Harmful Levels of Heavy Metals | | Slight Improvement | Crop rotation reduces erosion and runoff which reduces transport of heavy metals. Some crops may accumulate heavy metals. | | |
| <ul style="list-style-type: none"> Harmful Temperatures | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> Harmful Levels of Pathogens | | Slight Improvement | Depending on crop rotation, less erosion and runoff reduces delivery of pathogens. | | |
| <ul style="list-style-type: none"> 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 selection of crops in the rotation can reduce the generation of fugitive dust. | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | | Slight to Moderate Improvement | The proper selection of crops in the rotation can reduce the generation of fugitive dust. | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | | Slight Improvement | Vegetation removes CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> CH₄ (Methane) | | Not Applicable | Not applicable. | | |
| Ammonia (NH ₃) | | Slight Improvement | Improves nutrient balance in soils | | |
| Chemical Drift | | Slight to Moderate Improvement | Crop selection may reduce the need for pesticide applications. | | |
| Objectionable Odors | | Not Applicable | Not applicable. | | |
| Reduced Visibility | | Slight Improvement | Reduce fugitive dust emissions | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Conservation Crop Rotation 328 | | Baseline Setting: Conservation Crop Rotation is not being applied to planning area. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | Crop selection will be modified to include species better suited to soils and climate. | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> • Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> • Declining Species, Species of Concern | Not Applicable | Not applicable. | | | |
| Noxious and Invasive Plants | Slight to Substantial Improvement | Depending on crop rotation, crop rotation creates diversity that may reduce weed pressures, break weed life cycles, and provide competition that would slow the spread of noxious plants. | | | |
| Forage Quality and Palatability | Not Applicable | Not applicable. | | | |
| Wildfire Hazard | Not Applicable | Not applicable. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Moderate Improvement | Selected crops and suitable rotations may provide more food for wildlife. | | | |
| Inadequate Cover/Shelter | Slight to Moderate Improvement | Selected crops and suitable rotations may provide more food and cover for wildlife. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. | | | |
| Habitat Fragmentation | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. | | | |
| Imbalance Among and Within Populations | Slight to Moderate Improvement | Diversifying crops throughout the rotation will diversify habitat. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Conservation Crop Rotation 328 | | Baseline Setting: Conservation Crop Rotation is not being applied to planning area. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Slight to Substantial Improvement | Crop rotation may be designed to add forage crops. | | | |
| 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------|---|------------------|-------------|---------------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Conservation Crop Rotation 328 | | Baseline Setting: Conservation Crop Rotation is not being applied to planning area. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|--|-----|------|--------|
| PRACTICE: Conservation Cover 327 | | Baseline Setting: Conservation cover does not exist. | | | |
| | | Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Slight to Substantial Improvement | Increased vegetation and cover will improve infiltration and decrease soil detachment by water. | | | |
| Wind | Slight to Substantial Improvement | An increase in vegetation and cover will protect the soil surface and decrease soil detachment by wind. | | | |
| Ephemeral Gully | Slight to Moderate Improvement | An increase in vegetation and cover will improve infiltration, protect the soil surface and decrease soil detachment by concentrated flow. | | | |
| Classic Gully | Slight Improvement | Increased cover will reduce runoff. | | | |
| Streambank | Slight Improvement | Better vegetation and cover can reduce overland flow. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Slight Improvement | Water use by roots will reduce potential of mass movement; Soil is bound by roots. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Substantial Improvement | Establishing permanent vegetation will increase biomass production, infiltration and root establishment. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Moderate Improvement | Permanent vegetation will increase roots and organic matter and result in less field operations to cause compaction. | | | |
| Subsidence | Neutral | If it affects drainage the practice can have an impact on subsidence. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight to Moderate Improvement | Permanent cover may increase salt uptake. | | | |
| • Animal Waste and other Organics - N | Slight to Moderate Improvement | Permanent cover increases N uptake. | | | |
| • Animal Waste and other Organics - P | Slight to Moderate Improvement | Permanent cover increases P uptake. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|------------|--|--|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Conservation Cover 327 | | Baseline Setting: Conservation cover does not exist. | | | |
| | | Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Animal Waste and other Organics - K | | Slight to Moderate Improvement | Permanent cover increases K uptake. | | |
| • Commercial Fertilizer - N | | Slight to Moderate Improvement | Permanent cover increases N uptake. | | |
| • Commercial Fertilizer - P | | Slight to Moderate Improvement | Permanent cover increases P uptake. | | |
| • Commercial Fertilizer - K | | Slight to Moderate Improvement | Permanent cover increases K uptake. | | |
| • Residual Pesticides | | Slight to Substantial Improvement | Land cover change can lead to less pesticide use and thus will reduce potential pesticide contamination. | | |
| Damage from Sediment Deposition | | Slight to Substantial Improvement | Permanent cover reduces erosion. | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | | Not Applicable | Not Applicable | | |
| Excessive Seepage | | Slight Improvement | Increased water use by permanent vegetation. However, increased infiltration could increase seepage. | | |
| Excessive Runoff, Flooding, or Ponding | | Slight to Moderate Improvement | Increased water use and infiltration will reduce runoff and ponding. | | |
| Excessive Subsurface Water | | Slight Improvement | Increased water use by permanent vegetation. However, increased infiltration could increase seepage. | | |
| Drifted Snow | | Slight Improvement | Permanent vegetation can trap snow. | | |
| Inadequate Outlets | | Not Applicable | Not applicable. | | |
| Inefficient Water use on Irrigated Land | | Not Applicable | Not applicable. | | |
| Inefficient Water use on Non-Irrigated Land | | Slight to Moderate Improvement | Permanent cover increases infiltration and water use. | | |
| Reduced Capacity of Conveyances by Sediment Deposition | | Slight to Substantial Improvement | Permanent vegetation reduces sediment yield. | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | | Slight to Substantial Improvement | Permanent vegetation reduces sediment yield. | | |
| Aquifer Overdraft | | Slight Improvement | Increased infiltration may improve aquifer recharge. | | |
| Insufficient Flows in Water Courses | | Not Applicable | Not applicable. | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|--|------|--------|
| PRACTICE: Conservation Cover 327 | | Baseline Setting: Conservation cover does not exist. | | | |
| | | Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Harmful Levels of Pesticides | | Slight to Substantial Improvement | The action reduces the need for pesticide use and increases soil organic matter. | | |
| • Excessive Nutrients and Organics | | Slight Improvement | Permanent vegetation will uptake excess nutrients. | | |
| • Excessive Salinity | | Slight Improvement | Permanent vegetation can take up salts and water reducing the leaching potential of salts. | | |
| • Harmful Levels of Heavy Metals | | Slight Improvement | Higher organic matter levels increase the buffering capacity of soil. Some species can take up some heavy metals. | | |
| • Harmful Levels of Pathogens | | Slight Improvement | Permanent vegetation increases organic matter promoting microbial activity which competes with pathogens. | | |
| • Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | | Slight to Substantial Improvement | The action reduces the need for pesticide use, decreases runoff and erosion, and increases soil organic matter. | | |
| • Excessive Nutrients and Organics | | Slight to Moderate Improvement | Less erosion and runoff reduces transport of nutrients. Permanent cover can take up excess nutrients and convert them to stable organic forms. | | |
| • Excessive Suspended Sediment and Turbidity | | Slight to Substantial Improvement | Less erosion and runoff reduces sediment. | | |
| • Excessive Salinity | | Slight to Moderate Improvement | Less runoff reduces transport of soluble salts. Permanent vegetation can use excess water which reduces seepage. | | |
| • Harmful Levels of Heavy Metals | | Slight to Moderate Improvement | Decreased erosion and runoff reduces heavy metal delivery to surface water. Permanent vegetation can uptake heavy metals. | | |
| • 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 | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Conservation Cover 327 | | Baseline Setting: Conservation cover does not exist. | | | |
| | | Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | Slight to Moderate Improvement | Permanent vegetation reduces wind erosion and generation of fugitive dust. | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight to Moderate Improvement | Permanent vegetation reduces wind erosion and generation of fugitive dust. | | | |
| 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 CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Slight Improvement | Reduce fugitive dust emissions | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | 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. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| • Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Slight to Moderate Improvement | The cover can allow T&E species to reestablish. | | | |
| • Declining Species, Species of Concern | Slight to Moderate Improvement | The cover can allow T&E species to reestablish. | | | |
| Noxious and Invasive Plants | Moderate to Substantial Improvement | Establishment of permanent vegetation may provide competition that would slow the spread of noxious plants. | | | |
| Forage Quality and Palatability | Not Applicable | Not applicable. | | | |
| Wildfire Hazard | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--|--|-----|------|--------|
| PRACTICE: Conservation Cover 327 | | Baseline Setting: Conservation cover does not exist. | | | |
| | | Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Moderate Improvement | Increased quality and quantity of vegetation provides more food for wildlife. | | | |
| Inadequate Cover/Shelter | Slight to Moderate Improvement | Increased quality and quantity of vegetation provides more cover for wildlife. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Moderate Improvement | Increased cover will increase space for wildlife. May be used to connect other cover areas. | | | |
| Habitat Fragmentation | Slight to Moderate Improvement | Increased cover can connect to other cover areas. | | | |
| Imbalance Among and Within Populations | Slight to Substantial Improvement | Habitat management is implemented to remove limiting factors. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Slight Improvement | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Slight Improvement | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|----------------------------------|------|--------|
| PRACTICE: Conservation Cover 327 | | Baseline Setting: Conservation cover does not exist. | | | |
| | | Appropriate Land Use(s): Crop, Natural Area, Headquarters, Mined, Recreation, Watershed Protection, Wildlife | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | Not applicable. | | |
| Risk - Yield | | Not applicable. | Moderate to Substantial Increase | | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | Substantial Increase | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|--|------|--------|
| PRACTICE: Clearing & Snagging 326 | | Baseline Setting: Planning unit includes channels or drainages that contain snags, drifts, or other obstructions. | | | |
| | | 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 | Removal of undesirable obstructions will prevent bank erosion by eddies. | | |
| 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 | | Slight to Moderate Improvement | Removal of obstructions will reduce flooding. | | |
| Excessive Subsurface Water | | Not Applicable | Not applicable. | | |
| Drifted Snow | | Not Applicable | Not applicable. | | |
| Inadequate Outlets | | Slight to Moderate Improvement | Clearing of obstructions will help restore flow capacity. | | |
| Inefficient Water use on Irrigated Land | | Not Applicable | Not applicable. | | |
| Inefficient Water use on Non-Irrigated Land | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|---|-----|------|--------|
| PRACTICE: Clearing & Snagging 326 | | Baseline Setting: Planning unit includes channels or drainages that contain snags, drifts, or other obstructions. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Moderate Improvement | Removal of obstructions can help reduce the formation of bars; and/or minimize blockages by debris and ice. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Moderate Improvement | Removal of obstructions can help reduce the formation of bars; and/or minimize blockages by debris and ice. | | | |
| 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 Worsening | Removal of snags or large wood reduces deposition of sediments. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Not Applicable | Not applicable. | | | |
| • Harmful Temperatures | Slight Worsening | Removal of shade-producing canopy will lead to an increase in surface water temperature, especially during low flows. | | | |
| • 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|--|------|--------|
| PRACTICE: Clearing & Snagging 326 | | Baseline Setting: Planning unit includes channels or drainages that contain snags, drifts, or other obstructions. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • 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 – SUITABILITY | | | | | |
| 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 to Moderate Worsening | Depending on species, availability of food sources may be lost with removal of instream materials. | | |
| Inadequate Cover/Shelter | | Slight to Moderate Worsening | Depending on species, availability of cover will be lost with removal of instream materials. | | |
| Inadequate Water | | Slight Worsening | Clearing of bank vegetation and instream wood generally increases flow velocities and decreases slow-water habitat complexity. | | |
| Inadequate Space | | Slight to Moderate Worsening | Removing woody debris from stream reduces aquatic habitat. | | |
| Habitat Fragmentation | | Slight to Moderate Worsening | Removal of wood fragments aquatic habitats. | | |
| Imbalance Among and Within Populations | | Not Applicable | Not applicable. | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|---|------|--------|
| PRACTICE: Clearing & Snagging 326 | | Baseline Setting: Planning unit includes channels or drainages that contain snags, drifts, or other obstructions. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | Not Applicable | Not applicable. | | |
| Inadequate Shelter | | 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. | Slight decrease | | |
| Land – Land in Production | | Slight decrease, structure built on cropland. | Substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Moderate increase. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Slight to substantial increase | | |
| Labor - Labor | | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | Not applicable. | | |
| Risk - Yield | | Not applicable. | Moderate to Substantial Increase | | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | Substantial Increase | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN – ENERGY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------|---|------------------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Clearing & Snagging 326 | | Baseline Setting: Planning unit includes channels or drainages that contain snags, drifts, or other obstructions. | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Deep Tillage 324 | | 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 | Removing restrictive layers improves infiltration and reduces runoff. In the short term, soil disturbance exposes the soil to erosive forces by water. | | | |
| Wind | Neutral | If done at critical wind periods, this practice may temporarily increase surface roughness reducing saltation. | | | |
| Ephemeral Gully | Slight Improvement | Removing restrictive layers improves infiltration and reduces runoff. In the short term, soil disturbance exposes the soil to erosive forces by water. | | | |
| Classic Gully | Slight Improvement | Increase infiltration reduces runoff. | | | |
| Streambank | Slight Improvement | Improves infiltration and reduces runoff. | | | |
| Shoreline | Not Applicable | Not applicable. | | | |
| Irrigation Induced | Slight Improvement | Improves infiltration and reduces runoff. | | | |
| 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 | Neutral | Better infiltration and available water increases crop yields. Tillage increases decomposition of organic matter. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Substantial Improvement | Ripping breaks up compaction, improves plant soil moisture, promotes root growth, and soil structure. | | | |
| Subsidence | Neutral | Ripping will break potential hardpan, but drainage has the predominant impact on subsidence. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight to Moderate Improvement | Improved infiltration and porosity leaches salts. | | | |
| • Animal Waste and other Organics - N | Slight to Moderate Improvement | Ripping improves infiltration which increases leaching of mineralized nutrients. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|--------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Deep Tillage 324 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Animal Waste and other Organics - P | Slight to Moderate Improvement | Ripping improves infiltration which increases leaching of mineralized nutrients. | | | |
| • Animal Waste and other Organics - K | Slight to Moderate Improvement | Ripping improves infiltration which increases leaching of mineralized nutrients. | | | |
| • Commercial Fertilizer - N | Slight to Moderate Improvement | Ripping improves infiltration which increases leaching of mineralized nutrients. | | | |
| • Commercial Fertilizer - P | Slight to Moderate Improvement | Ripping improves infiltration which increases leaching of mineralized nutrients. | | | |
| • Commercial Fertilizer - K | Slight to Moderate Improvement | Ripping improves infiltration which increases leaching of mineralized nutrients. | | | |
| • Residual Pesticides | Slight to Moderate Improvement | Ripping mixes the soil and can result in adsorption and deactivation. | | | |
| Damage from Sediment Deposition | Slight to Moderate Improvement | Ripping buries or mixes soil deposits from wind or water erosion. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | Not applicable. | | | |
| Excessive Seepage | Slight to Moderate Worsening | Increased infiltration from tillage increases seepage. | | | |
| Excessive Runoff, Flooding, or Ponding | Slight to Moderate Improvement | Runoff is reduced because of better infiltration. | | | |
| Excessive Subsurface Water | Slight to Moderate Worsening | Increased infiltration results in more subsurface water. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight Improvement | Increases infiltration and reduces runoff. | | | |
| Inefficient Water use on Irrigated Land | Slight to Moderate Improvement | Increases infiltration and reduces runoff. | | | |
| Inefficient Water use on Non-Irrigated Land | Slight to Moderate Improvement | Deep tillage increases infiltration and reduces runoff. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Moderate Improvement | Increases infiltration and reduces erosion and runoff. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Moderate Improvement | Increases infiltration and reduces erosion and runoff. | | | |
| Aquifer Overdraft | Slight Improvement | Increases infiltration and recharge. | | | |
| Insufficient Flows in Water Courses | Slight Worsening | Increases infiltration and reduces runoff. | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Deep Tillage 324 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Harmful Levels of Pesticides | Slight to Moderate Worsening | The action increases infiltration and deep percolation. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Worsening | The action increases infiltration resulting in greater leaching potential. | | | |
| • Excessive Salinity | Slight to Moderate Worsening | Deep tillage increases infiltration resulting in greater leaching potential. | | | |
| • Harmful Levels of Heavy Metals | Slight Worsening | Deep tillage increases infiltration resulting in greater leaching potential. | | | |
| • Harmful Levels of Pathogens | Slight Worsening | Deep tillage increases infiltration resulting in greater leaching potential. | | | |
| • Harmful Levels of Petroleum | Neutral | Deep tillage increases infiltration, which may result in greater leaching potential. | | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Slight to Substantial Improvement | The action reduces runoff and erosion. | | | |
| • Excessive Nutrients and Organics | Slight to Substantial Improvement | Removing restrictive layers increases infiltration and permeability of water and increases crop rooting depth and growth. This reduces the volume and rate of runoff and the potential for erosion. | | | |
| • Excessive Suspended Sediment and Turbidity | Slight to Moderate Improvement | Deep tillage increases infiltration reducing runoff and erosion. | | | |
| • Excessive Salinity | Slight to Moderate Improvement | The action increases infiltration, reducing runoff and erosion. | | | |
| • Harmful Levels of Heavy Metals | Slight to Substantial Improvement | Deep tillage increases infiltration reducing runoff and erosion. | | | |
| • Harmful Temperatures | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Pathogens | Slight to Substantial Improvement | Deep tillage increases infiltration reducing runoff and erosion. | | | |
| • Harmful Levels of Petroleum | Slight to Substantial Improvement | Deep tillage increases infiltration reducing runoff and erosion. | | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | Slight to Moderate Improvement | The action buries erodible soils into subsoil layers. | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight to Moderate Improvement | The action buries erodible soils into subsoil layers. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|-----------------------------------|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Deep Tillage 324 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Ozone | Not Applicable | Not applicable. | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Not Applicable | Not applicable. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Slight Improvement | Buries fertilizers in subsoil layers | | | |
| Chemical Drift | Slight Improvement | The action can incorporate pesticides and reduce the potential for volatilization. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Slight to Moderate Improvement | Buries erodible materials into subsoil layers | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight to Substantial Improvement | Enhanced root growth and the reduction of concentrated contaminants improves 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 Worsening | Deep tillage may enhance the growth of noxious and invasive plants. | | | |
| Forage Quality and Palatability | Slight Improvement | Deep tillage increases rooting depth and vigor. | | | |
| 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: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Deep Tillage 324 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Slight to Moderate Improvement | Forage production may be enhanced by increasing rooting depth and vigor. | | | |
| 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|---|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Deep Tillage 324 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|---|-----|------|--------|
| PRACTICE: Channel Bank Vegetation 322 | | Baseline Setting: Planning unit includes stream banks that are eroding. | | | |
| | | 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 | Not Applicable | Not applicable. | | | |
| Streambank | Moderate to Substantial Improvement | Establishing adapted vegetation will protect channel banks from erosive stream flows. | | | |
| 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 | Stable stream banks result in reduced sediment loading and subsequent 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Channel Bank Vegetation 322 | | Baseline Setting: Planning unit includes stream banks that are eroding. | | | |
| | | 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 | | | |
| Inadequate Outlets | Slight to Moderate Improvement | Stable stream banks reduce the sediment load in stream flows and the potential for sediment deposition in 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 | Moderate to Substantial Improvement | Stable stream banks reduce the sediment load in stream flows. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Substantial Improvement | Stable stream banks reduce the sediment load in stream flows and the amount of sediment delivered to downstream 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 | 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 | Stable stream banks reduce channel bank erosion, thus reducing the amount of suspended sediment in streams. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Not Applicable | Not applicable. | | | |
| • Harmful Temperatures | Slight to Moderate Improvement | Herbaceous plants provide some shade and protect banks, moderating 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|---|------|--------|
| PRACTICE: Channel Bank Vegetation 322 | | Baseline Setting: Planning unit includes stream banks that are eroding. | | | |
| | | 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 | | |
| 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) | | Not Applicable | Not applicable. | | |
| • N ₂ O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| • CH ₄ (Methane) | | Not Applicable | Not applicable. | | |
| Ammonia (NH ₃) | | Not Applicable | Not applicable. | | |
| Chemical Drift | | Not Applicable | Not applicable. | | |
| Objectionable Odors | | Not Applicable | Not applicable. | | |
| Reduced Visibility | | Not Applicable | Not applicable. | | |
| Undesirable Air Movement | | Not Applicable | Not applicable. | | |
| Adverse Air Temperature | | Slight to Moderate Improvement | Tall vegetation provides shade and moderates temperatures. | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | | Moderate to 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 | Noxious and invasive plants are removed from channel banks 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 to Moderate Improvement | Revegetated areas can be planted to species that provide food. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|---|------|--------|
| PRACTICE: Channel Bank Vegetation 322 | | Baseline Setting: Planning unit includes stream banks that are eroding. | | | |
| | | 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 | | |
| Inadequate Cover/Shelter | | Slight to Moderate Improvement | Revegetated areas can be planted to species that provide cover/shelter. | | |
| Inadequate Water | | Not Applicable | Not applicable. | | |
| Inadequate Space | | Moderate to Substantial Improvement | Revegetated channel banks can provide space and restore habitat connectivity. | | |
| Habitat Fragmentation | | Moderate to Substantial Improvement | Revegetated channel banks can provide space and restore habitat connectivity. | | |
| Imbalance Among and Within Populations | | Slight to Moderate Improvement | Habitat management is implemented to remove limiting factors. | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | Slight Improvement | Re-establishment of channel bank vegetation can provide additional forage. | | |
| Inadequate Shelter | | Slight Improvement | Vegetation can provide shade. | | |
| Inadequate Stock Water | | Not Applicable | Not applicable. | | |
| Stress and Mortality | | Not Applicable | Not applicable. | | |
| HUMAN – ECONOMICS | | | | | |
| Land - Change in Land Use | | Not applicable. | Slight decrease | | |
| Land – Land in Production | | Slight decrease, structure built on cropland. | Substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Moderate increase. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Slight to substantial increase | | |
| Labor - Labor | | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|---|----------------------------------|------|--------|
| PRACTICE: Channel Bank Vegetation 322 | | Baseline Setting: Planning unit includes stream banks that are eroding. | | | |
| | | 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 | | |
| Risk - Yield | | Not applicable. | Moderate to Substantial Increase | | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | Substantial Increase | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk - Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability - Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN - ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Irrigation Canal or Lateral 320 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | | RATIONALE | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | | Neutral | | A channel constructed across the slope may intercept runoff water and shorten the slope length. | |
| Wind | | Not Applicable | | Not applicable. | |
| Ephemeral Gully | | Neutral | | A channel constructed across the slope may intercept runoff water. | |
| Classic Gully | | Neutral | | May prevent small amounts of erosion | |
| Streambank | | Not Applicable | | Not applicable. | |
| Shoreline | | Not Applicable | | Not applicable. | |
| Irrigation Induced | | Not Applicable | | Not applicable. | |
| Mass Movement | | Slight Worsening | | May provide a water source for infiltration that will create 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 Improvement | | Canals intercept runoff that might otherwise cause deposition. | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | | Not Applicable | | Not applicable. | |
| Excessive Seepage | | Neutral | | Canal may provide outlet for seepage, however canals may provide a source of seepage. | |
| Excessive Runoff, Flooding, or Ponding | | Slight to Substantial Improvement | | The canal may intercept runoff and act as floodways. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|--------------------------------|--|-----|------|--------|
| PRACTICE: Irrigation Canal or Lateral 320 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Subsurface Water | Slight to Moderate Worsening | May provide a water source for infiltration that will add to subsurface water. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight Improvement | Canals provide outlets for runoff, however canals can outlet to inadequate outlets. | | | |
| Inefficient Water use on Irrigated Land | Substantial Improvement | Canals transport water to areas of irrigation use. | | | |
| Inefficient Water use on Non-Irrigated Land | Not Applicable | Not applicable. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight Worsening | May convey additional sediment laden water to restricted conveyance ways. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight Worsening | May convey additional sediment laden water to restricted conveyance ways. | | | |
| Aquifer Overdraft | Slight to Moderate Improvement | May provide a water source for aquifer recharge. | | | |
| Insufficient Flows in Water Courses | Moderate Worsening | Canals transport water 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 | Slight to Moderate Worsening | Return flows from canals may deliver dissolved and sediment-attached nutrients to surface water. | | | |
| • Excessive Suspended Sediment and Turbidity | Not Applicable | Not applicable. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Slight to Moderate Worsening | Return flows from canals may deliver contaminants to surface water. | | | |
| • Harmful Temperatures | Slight Worsening | Return flows to canals may be warmer than receiving waters. | | | |
| • Harmful Levels of Pathogens | Slight to Moderate Worsening | Return flows from canals may deliver possible contaminants to surface water | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------|--|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Irrigation Canal or Lateral 320 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> Harmful Levels of Petroleum | | Slight to Moderate Worsening | Return flows from canals may deliver possible contaminants to surface water | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> CO₂ (Carbon Dioxide) | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> N₂O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> CH₄ (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 | Increased soil moisture will decrease fugitive dust emissions | | |
| Undesirable Air Movement | | Not Applicable | Not applicable. | | |
| Adverse Air Temperature | | Not Applicable | Not applicable. | | |
| PLANTS – SUITABILITY | | | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> 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 | Vegetated canals may provide food for fish. | | |
| Inadequate Cover/Shelter | | Neutral | Vegetated canals may provide cover for fish. | | |
| Inadequate Water | | Slight Improvement | Water will be temporarily available in the canal. | | |
| Inadequate Space | | Not Applicable | Not applicable. | | |
| Habitat Fragmentation | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------|--|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Irrigation Canal or Lateral 320 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Imbalance Among and Within Populations | | Slight Worsening | May restrict animal movement. | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | | Not Applicable | Not applicable. | | |
| Inadequate Shelter | | 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. | Slight decrease | | |
| Land – Land in Production | | Slight decrease, structure built on cropland. | Substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Moderate increase. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Slight to substantial increase | | |
| Labor - Labor | | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | Not applicable. | | |
| Risk - Yield | | Not applicable. | Moderate to Substantial Increase | | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | Substantial Increase | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN – ENERGY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------|---|-----------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Irrigation Canal or Lateral 320 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Composting Facility 317 | | Baseline Setting: Organic waste material is generated from agricultural production or processing in the headquarters area. | | | |
| | | 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 | | Slight to Moderate Improvement | | The animal waste bulk is reduced during the composting process allowing easier transport and proper utilization. | |
| • Animal Waste and other Organics - P | | Slight to Moderate Improvement | | The animal waste bulk is reduced during the composting process allowing easier transport and proper utilization. | |
| • Animal Waste and other Organics - K | | Slight to Moderate Improvement | | The animal waste bulk is reduced during the composting process allowing easier transport and proper utilization. | |
| • Commercial Fertilizer - N | | Slight to Moderate Improvement | | Not applicable. | |
| • Commercial Fertilizer – P | | Slight to Moderate Improvement | | Not applicable. | |
| • Commercial Fertilizer – K | | Slight to Moderate Improvement | | Not applicable. | |
| • Residual Pesticides | | Neutral | | The composting process does not destroy all 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 | | Not Applicable | | Not applicable. | |
| Excessive Subsurface Water | | Not Applicable | | Not applicable. | |
| Drifted Snow | | Not Applicable | | Not applicable. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--------------------------------|--|--|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Composting Facility 317 | | Baseline Setting: Organic waste material is generated from agricultural production or processing in the headquarters area. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| 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 | Slight to Moderate Improvement | | The action will properly treat manure and mortality that was once mishandled. Degree of impact depends on conditions before installation. | | |
| • Excessive Salinity | Not Applicable | | Not applicable. | | |
| • Harmful Levels of Heavy Metals | Not Applicable | | Not applicable. | | |
| • Harmful Levels of Pathogens | Slight to Moderate Improvement | | Composting kills 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 Moderate Improvement | | Facility will properly treat manure or other agricultural by-products into a stable material. The nutrients are slowly available and less susceptible to losses from runoff or leaching. | | |
| • 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 to Moderate Improvement | | Facility will properly treat manure and mortality reducing 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|--|-----|------|--------|
| PRACTICE: Composting Facility 317 | | Baseline Setting: Organic waste material is generated from agricultural production or processing in the headquarters area. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Excessive Ozone | Not Applicable | Not applicable. | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Not Applicable | Not applicable. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Slight Worsening | Breakdown and decay of organic material is conducive to the formation of CH ₄ | | | |
| Ammonia (NH ₃) | Neutral | Proper Carbon/Nitrogen ratios must be maintained | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Slight to Substantial Improvement | Reduces emissions of odorous compounds | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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 Improvement | Heat in the composting process normally destroys weed seeds. | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|---|----------------------------------|------|--------|
| PRACTICE: Composting Facility 317 | | Baseline Setting: Organic waste material is generated from agricultural production or processing in the headquarters area. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| <ul style="list-style-type: none"> 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. | Slight decrease | | |
| Land – Land in Production | | Slight decrease, structure built on cropland. | Substantial increase. | | |
| Capital – Change in Equipment | | 0 | Substantial. | | |
| Capital - Total Investment Cost | | Substantial. | Moderate increase. | | |
| Capital – Annual Cost | | 0 | Situational. | | |
| Capital – Credit and Farm Program Eligibility | | 0 | Slight to substantial increase | | |
| Labor - Labor | | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | |
| Labor – Change in Management Level | | Moderate to substantial increase for timing and management of waste. | Not applicable. | | |
| Risk - Yield | | Not applicable. | Moderate to Substantial Increase | | |
| Risk - Flexibility | | Moderate to substantial increase because of design criteria. | Substantial Increase | | |
| Risk - Timing | | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | |
| Risk – Cash Flow | | Substantial increase due to implementation costs. | Slight to moderate decrease. | | |
| Profitability – Change in Profitability | | 0 | 0.02 | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | | Construction impacts (mechanical); inundation. | No | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Animal Mortality Facility 316 | | Baseline Setting: There is no on-farm facility for disposal of livestock or poultry carcasses. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Neutral | Mass mortality die-off may result in excavation for burial and short-term soil disturbance. | | | |
| Wind | Neutral | Mass mortality die-off may result in excavation for burial and short-term soil disturbance. | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|--|-----|------|--------|
| PRACTICE: Animal Mortality Facility 316 | | Baseline Setting: There is no on-farm facility for disposal of livestock or poultry carcasses. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 | Slight to Moderate Improvement | Properly handled mortality will prevent groundwater contamination. May be slight worsening in problem where disposal pits are the facility option. | | | |
| • Excessive Salinity | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Heavy Metals | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Pathogens | Slight to Moderate Improvement | Properly handled mortality should prevent groundwater contamination. Where disposal pits are used a slight potential for pathogen movement exists. | | | |
| • 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 | Composting dead animals produces a stable product whose nutrients are slowly available to crops. | | | |
| • 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 to Moderate Improvement | Properly handled mortality will prevent contamination. | | | |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | Slight Improvement | Composting dead animals instead of incinerating them will improve air quality. | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight Improvement | Composting dead animals instead of incinerating them will improve air quality. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|--|------|--------|
| PRACTICE: Animal Mortality Facility 316 | | Baseline Setting: There is no on-farm facility for disposal of livestock or poultry carcasses. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Excessive Ozone | | Not Applicable | Not applicable. | | |
| Excessive Greenhouse Gas: | | | | | |
| <ul style="list-style-type: none"> • CO₂ (Carbon Dioxide) | | Slight Worsening | CO2 emissions are increased when incineration is used. | | |
| <ul style="list-style-type: none"> • N₂O (Nitrous Oxide) | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • CH₄ (Methane) | | Slight to Moderate Improvement | Methane releases are decreased | | |
| Ammonia (NH ₃) | | Not Applicable | Not applicable. | | |
| Chemical Drift | | Not Applicable | Not applicable. | | |
| Objectionable Odors | | Slight to Moderate Improvement | Approved methods of disposal reduce odor emissions from dead animals | | |
| Reduced Visibility | | Not Applicable | Not applicable. | | |
| Undesirable Air Movement | | Not Applicable | Not applicable. | | |
| Adverse Air Temperature | | Not Applicable | Not applicable. | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | | Not Applicable | Not applicable. | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | | Not Applicable | Not applicable. | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> • Plant Species Listed or Proposed for Listing Under the Endangered Species Act | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • 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: | | | | | |
| <ul style="list-style-type: none"> • Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | | Not Applicable | Not applicable. | | |
| <ul style="list-style-type: none"> • Declining Species, Species of Concern | | Not Applicable | Not applicable. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|---|--|-----|------|--------|
| PRACTICE: Animal Mortality Facility 316 | | Baseline Setting: There is no on-farm facility for disposal of livestock or poultry carcasses. | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------|--|---|------|--------|
| PRACTICE: Brush Management 314 | | Baseline Setting: Planning area has brush cover. | | | |
| | | Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | | Slight to Substantial Improvement | Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment. | | |
| Wind | | Slight to Substantial Improvement | Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment. | | |
| Ephemeral Gully | | Slight to Substantial Improvement | Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment. | | |
| Classic Gully | | Slight to Substantial Improvement | Reduction of brush canopy will increase herbaceous ground cover resulting in increased infiltration, reduced overland flow and reduced soil detachment. There may be a temporary increase in exposure of the soil surface following mechanical treatment. | | |
| Streambank | | Slight Improvement | Removal of undesirable brush species improves water availability and encourages streambank stabilization by encouraging growth of native plant communities and when applied with supporting practices. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Brush Management 314 | | Baseline Setting: Planning area has brush cover. | | | |
| | | Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Shoreline | Slight Improvement | Removal of undesirable brush species improves water availability and encourages shoreline stabilization by encouraging growth of native plant communities and when applied with supporting practices. | | | |
| Irrigation Induced | Not Applicable | Not applicable. | | | |
| Mass Movement | Slight to Moderate Worsening | The worsening is due to increased soil moisture and decreased root binding of brush removed on soils prone to slippage depending on soils and slopes. | | | |
| Road, Roadsides, and Construction Sites | Not Applicable | Not applicable. | | | |
| SOIL – CONDITION | | | | | |
| Organic Matter Depletion | Slight to Substantial Improvement | Removing competition promotes a more vigorous plant community with increased productivity. | | | |
| Rangeland Site Stability | Slight to Substantial Improvement | Reduction of brush canopy will increase herbaceous ground cover resulting in improved surface organic matter that will increase soil surface stability. There may be a temporary increase in exposure of the soil surface following mechanical treatment. | | | |
| Compaction | Slight Worsening | Use of heavy equipment to control vegetation may cause compaction. | | | |
| Subsidence | Not Applicable | Not applicable. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight to Moderate Improvement | Selected species released from competition may take up excess salts or other chemicals. | | | |
| • 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-----------------------------------|---|-----|------|--------|
| PRACTICE: Brush Management 314 | | Baseline Setting: Planning area has brush cover. | | | |
| | | Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Commercial Fertilizer – P | Not Applicable | Not applicable. | | | |
| • Commercial Fertilizer – K | Not Applicable | Not applicable. | | | |
| • Residual Pesticides | Slight Worsening | Residues of some pesticides may remain in the soil following their use. | | | |
| Damage from Sediment Deposition | Slight to Moderate Improvement | Improved vegetative cover will reduce runoff and increase infiltration. | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Slight to Substantial Improvement | Improved vegetative cover will reduce runoff and increase infiltration. | | | |
| Excessive Seepage | Slight to Moderate Worsening | There will be increased infiltration and decreased evapotranspiration. | | | |
| Excessive Runoff, Flooding, or Ponding | Slight to Moderate Improvement | Runoff is reduced by increased ground cover. | | | |
| Excessive Subsurface Water | Slight to Moderate Worsening | There will be increased infiltration and decreased evapotranspiration. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight Improvement | There will be improved health and vigor of plant community and infiltration, reducing overland flow. | | | |
| Inefficient Water use on Irrigated Land | Not Applicable | Not applicable. | | | |
| Inefficient Water use on Non-Irrigated Land | Slight to Moderate Improvement | There will be increased moisture availability and plant use efficiency caused by decrease in undesirable species. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Substantial Improvement | There will be decreased sediment loads due to improved plant community and ground cover. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Substantial Improvement | There will be decreased sediment loads due to improved plant community and ground cover. | | | |
| Aquifer Overdraft | Slight Improvement | The decrease is due to increased infiltration. | | | |
| Insufficient Flows in Water Courses | Slight to Substantial Improvement | There will be greater infiltration rates and reduced uptake by undesirable brush species. | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|------------|--|---|------|--------|
| PRACTICE: Brush Management 314 | | Baseline Setting: Planning area has brush cover. | | | |
| | | Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| • Harmful Levels of Pesticides | | Slight Worsening | Pesticides may be used to control brush. | | |
| • Excessive Nutrients and Organics | | Not Applicable | Not applicable. | | |
| • Excessive Salinity | | Slight Worsening | The action may promote infiltration of surface water and any associated contaminant. | | |
| • Harmful Levels of Heavy Metals | | Neutral | The action promotes infiltration of surface water but increases vegetative growth and uptake of metals. | | |
| • Harmful Levels of Pathogens | | Neutral | The action promotes infiltration of surface water but increases vegetative growth and microbial activity, increasing pathogen mortality. | | |
| • Harmful Levels of Petroleum | | Neutral | Some herbicides require a petroleum-based carrier. Use of heavy equipment may lead to fuel or lubricant spills. | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | | Slight Worsening | Pesticides may be used to control brush. | | |
| • Excessive Nutrients and Organics | | Neutral | There may be no effect or a slight improvement due to improved health and vigor of plant community and ground cover reducing overland flow. | | |
| • Excessive Suspended Sediment and Turbidity | | Slight to Substantial Improvement | The decrease is due to improved plant cover and increased infiltration, reducing overland flow and runoff. | | |
| • Excessive Salinity | | Slight Improvement | Improved plant cover will increase infiltration, reducing overland flow and the potential for transport of salts to surface water. | | |
| • Harmful Levels of Heavy Metals | | Slight Improvement | Improved plant community and increased infiltration reduces overland flow. | | |
| • Harmful Temperatures | | Neutral | Increased plant cover and infiltration reduces surface runoff. | | |
| • Harmful Levels of Pathogens | | Not Applicable | Not applicable. | | |
| • Harmful Levels of Petroleum | | Not Applicable | Not applicable. | | |
| AIR – QUALITY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Brush Management 314 | | Baseline Setting: Planning area has brush cover. | | | |
| | | Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 incidence of wildfire. | | | |
| Excessive Greenhouse Gas: | | | | | |
| • CO ₂ (Carbon Dioxide) | Not Applicable | Not applicable. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Slight to Moderate Worsening | Herbicides used to control brush may drift from the site. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Not Applicable | Not applicable. | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Slight to Moderate Worsening | Removal of tall vegetation eliminates shade and increases temperatures. | | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | Undesirable brush species will be removed by physical, chemical, or biological means to make it suitable for the desired plant community. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight to Substantial Improvement | The removal of competition increases desirable plant community health, vigor, and biodiversity. | | | |
| 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 | There will be a removal of competition to increase desirable plant community health, vigor, and biodiversity. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Brush Management 314 | Baseline Setting: Planning area has brush cover. | | | | |
| | Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture | | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Forage Quality and Palatability | Moderate to Substantial Improvement | The removal of competition increases desirable plant community health, vigor, and biodiversity, thereby improving nutritive value and palatability. | | | |
| Wildfire Hazard | Moderate to Substantial Improvement | Management reduces fuel loadings. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Substantial Improvement | There will be an improvement in composition, structure, amount, and availability of plants for food. | | | |
| Inadequate Cover/Shelter | Slight to Substantial Improvement | The degree will depend on the amount of brush removed and the enhancement of stand composition and structure. There may be a slight to significant initial short-term loss of cover. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Substantial Improvement | Removal or control of brush increases usable space. | | | |
| Habitat Fragmentation | Slight to Substantial Improvement | Removal or control of brush increases connectivity to and with adjacent desired plant communities. | | | |
| 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 | Moderate to Substantial Improvement | The reduction of undesirable brush species increases production of forage that meets nutritional and productive needs for livestock. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|---|--|-----|------|--------|
| PRACTICE: Brush Management 314 | | Baseline Setting: Planning area has brush cover. | | | |
| | | Appropriate Land Use(s): Grazed Range, Hay, Native or Naturalized Pasture, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Inadequate Shelter | Slight to Moderate Worsening | Shelter from brush is diminished. | | | |
| Inadequate Stock Water | Not Applicable | Not applicable. | | | |
| Stress and Mortality | Slight to Substantial Improvement | There will be a reduction of harmful plant and animal pest populations, such as flies and ticks, and noxious and invasive brush species. | | | |
| HUMAN – ECONOMICS | | | | | |
| Land - Change in Land Use | Not applicable. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | | |
| Underutilization of Non-Fossil Energy Resources | Not Applicable | No | | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|--------------------------------|---|-----|------|--------|
| PRACTICE: Waste Storage Facility 313 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|-----------------|--------|
| PRACTICE: Waste Storage Facility 313 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • 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. | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|--|-----|------|--------|
| PRACTICE: Waste Storage Facility 313 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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 ₂ O (Nitrous Oxide) | Neutral | Not applicable. | | | |
| • CH ₄ (Methane) | Slight to Moderate Worsening | Breakdown and decay of organic material is conducive to the formation of CH ₄ | | | |
| Ammonia (NH ₃) | Slight to Moderate Improvement | Proper nutrient management reduces NH ₃ 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 – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Waste Storage Facility 313 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Imbalance Among and Within Populations | Not Applicable | Not applicable. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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. | Slight decrease | | | |
| Land – Land in Production | Slight decrease, structure built on cropland. | Substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Moderate increase. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Slight to substantial increase | | | |
| Labor - Labor | Slight to substantial increase depending on type of storage structure. | Moderate to substantial increase | | | |
| Labor – Change in Management Level | Moderate to substantial increase for timing and management of waste. | Not applicable. | | | |
| Risk - Yield | Not applicable. | Moderate to Substantial Increase | | | |
| Risk - Flexibility | Moderate to substantial increase because of design criteria. | Substantial Increase | | | |
| Risk - Timing | Substantial increase, depending on state and/or federal laws. | Substantial Increase | | | |
| Risk – Cash Flow | Substantial increase due to implementation costs. | Slight to moderate decrease. | | | |
| Profitability – Change in Profitability | 0 | 0.02 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Construction impacts (mechanical); inundation. | No | | | |
| HUMAN – ENERGY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|------------|---|-----------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Waste Storage Facility 313 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): Headquarters | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | | PHYSICAL EFFECTS | RATIONALE | | |
| Depletion of Fossil Fuel Resources | | Regular maintenance of this practice requires pumping. If well designed and managed it facilitates energy savings through fertilizer credits. | No | | |
| Underutilization of Non-Fossil Energy Resources | | Not Applicable | No | | |

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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|--|-----|------|--------|
| PRACTICE: Alley Cropping 311 | | Baseline Setting: Cropland with no tree or shrub rows. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Substantial Improvement | Vegetation and surface litter reduce raindrop impact and slow runoff water increasing infiltration. | | | |
| Wind | Substantial Improvement | Tall vegetation creates a wind shadow, reduces erosive wind velocities and provides a stable area which stops saltating particles. | | | |
| Ephemeral Gully | Substantial Improvement | Vegetation reduces erosive energy of concentrated water flows reducing detachment of soil particles. | | | |
| Classic Gully | Slight to Substantial Improvement | Reduce the flows contributing to gully erosion. | | | |
| 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 | Substantial Improvement | Roots and vegetative matter from permanent vegetation increases 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 | Plants may take up some salts, and increased root penetration improves infiltration that may lead to increased leaching. | | | |
| • Animal Waste and other Organics - N | Moderate to Substantial Improvement | Woody plants and annual crops may take up excess N. | | | |
| • Animal Waste and other Organics - P | Moderate to Substantial Improvement | Woody plants and annual crops may take up excess P. | | | |
| • Animal Waste and other Organics - K | Moderate to Substantial Improvement | Woody plants and annual crops may take up excess K. | | | |
| • Commercial Fertilizer - N | Moderate to Substantial Improvement | Woody plants and annual crops may take up excess N. | | | |
| • Commercial Fertilizer – P | Moderate to Substantial Improvement | Woody plants and annual crops may take up excess P. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|-------------------------------------|--|-----|------|--------|
| PRACTICE: Alley Cropping 311 | | Baseline Setting: Cropland with no tree or shrub rows. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Commercial Fertilizer – K | Moderate to Substantial Improvement | Woody plants and annual crops may take up excess K. | | | |
| • Residual Pesticides | Slight to Substantial Improvement | Plants take up pesticide residues and soil organic carbon binds pesticide residues. | | | |
| Damage from Sediment Deposition | Slight to Substantial Improvement | 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 slows surface flow rates in areas subject to flooding or ponding. | | | |
| Excessive Subsurface Water | Slight to Moderate Improvement | Plants uptake excess water. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| 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 Improvement | Adapted and managed vegetative production allows more efficient use of available water. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight Improvement | Vegetation collects sediment preventing it from being deposited elsewhere. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Moderate to Substantial Improvement | Vegetation 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 | Crops including woody crops use available water and reduce runoff. | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | Slight to Moderate Improvement | Trees and shrubs take up pesticide residues. Also, pesticide degradation may be improved by increased soil organic matter and biological activity. | | | |
| • Excessive Nutrients and Organics | Slight Improvement | Plants and soil organisms uptake nutrients. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Alley Cropping 311 | | Baseline Setting: Cropland with no tree or shrub rows. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Excessive Salinity | Slight Improvement | The action may promote increased salinity uptake due to vigorous plant growth.. | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | The action may promote increased uptake due to vigorous plant growth. | | | |
| • Harmful Levels of Pathogens | Neutral | Improved vegetation encourages infiltration of surface water and associated pathogens, but increased plant vigor and microbial activity reduces pathogen numbers. | | | |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Slight to Substantial Improvement | Trees and shrubs take up pesticide residues and may intercept pesticide drift. Also, the practice reduces runoff and erosion. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Improvement | Plants and soil organisms uptake nutrients. | | | |
| • Excessive Suspended Sediment and Turbidity | Slight to Moderate Improvement | Vegetation retards sediment-laden water to allow it to drop sediment load. | | | |
| • Excessive Salinity | Slight Improvement | Vegetation encourages infiltration, which reduces the amount of surface runoff.. | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | Growing plants will take up metals. | | | |
| • Harmful Temperatures | Neutral | Surface run-off is diminished if flow is intercepted by alley cropping. | | | |
| • Harmful Levels of Pathogens | Slight to Moderate Improvement | Ground vegetation captures and delays pathogen movement and thereby increase their mortality. | | | |
| • Harmful Levels of Petroleum | Slight Improvement | Increased microbial activity in the tree/shrub sets breaks down petroleum contaminants. | | | |
| AIR – QUALITY | | | | | |
| Particulate Matter less than 10 Micrometers in Diameter (PM 10) | Slight to Moderate Improvement | Permanent vegetation can serve as a windbreak, reducing erosive wind velocities and providing a stable area which stops saltating particles. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|--|-----|------|--------|
| PRACTICE: Alley Cropping 311 | | Baseline Setting: Cropland with no tree or shrub rows. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5) | Slight to Moderate Improvement | Permanent vegetation can serve as a windbreak, reducing erosive wind velocities and providing 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 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 CO ₂ from the air and stores it in the form of carbon in the plants and soil. | | | |
| • N ₂ O (Nitrous Oxide) | Neutral | Not applicable. | | | |
| • CH ₄ (Methane) | Neutral | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Substantial Improvement | Tall vegetation slows surface air movement and intercepts and captures air borne materials. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Moderate 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 | Moderate to Substantial Improvement | Tall vegetation provides shade and moderates temperatures. | | | |
| PLANTS – SUITABILITY | | | | | |
| 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. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-------------------------------------|---|-----|------|--------|
| PRACTICE: Alley Cropping 311 | | Baseline Setting: Cropland with no tree or shrub rows. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| <ul style="list-style-type: none"> 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 | Plants are managed to maintain optimal conditions. | | | |
| Wildfire Hazard | Not Applicable | Not applicable. | | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Slight to Substantial Improvement | If suitable plant species are chosen and managed to enhance food value for target species. | | | |
| Inadequate Cover/Shelter | Slight to Substantial Improvement | Suitable plant species are selected and managed to enhance cover/shelter for wildlife. | | | |
| Inadequate Water | Not Applicable | Not applicable. | | | |
| Inadequate Space | Slight to Substantial Improvement | Tall vegetation creates vertical habitat structure. | | | |
| Habitat Fragmentation | Slight to Substantial Improvement | Vegetation is installed and managed to connect habitats. | | | |
| Imbalance Among and Within Populations | Slight to Moderate Improvement | Habitat management is implemented to remove limiting factors. | | | |
| Threatened and Endangered Fish and Wildlife Species: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Slight to Substantial Improvement | The quality and quantity of feed and forage plants is enhanced by improving the microclimate. | | | |
| 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 | | | | | |
| Land – Land in Production | | | | | |
| Capital – Change in Equipment | | | | | |
| Capital - Total Investment Cost | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|-------------------------|--|------------------|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Alley Cropping 311 | | Baseline Setting: Cropland with no tree or shrub rows. | | | |
| | | Appropriate Land Use(s): Crop, Hay | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| Capital – Annual Cost | | | | | |
| Capital – Credit and Farm Program Eligibility | | | | | |
| Labor - Labor | | | | | |
| Labor – Change in Management Level | | | | | |
| Risk - Yield | | | | | |
| Risk - Flexibility | | | | | |
| Risk - Timing | | | | | |
| Risk – Cash Flow | | | | | |
| Profitability – Change in Profitability | | | | | |
| 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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|-----------------------------------|---|-----|------|--------|
| PRACTICE: Bedding 310 | | Baseline Setting: Cropland without bedding. | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| SOIL - EROSION | | | | | |
| Sheet and Rill | Slight to Substantial Improvement | The action criteria requires non-erosive water velocities. | | | |
| Wind | Neutral | If beds are oriented across the prevailing wind erosion direction, detachment may be reduced. | | | |
| Ephemeral Gully | Neutral | Design criteria prohibit erosive concentrated flow. | | | |
| Classic Gully | Neutral | Gullies are typically not part of practice setting. | | | |
| 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 | Movement of soils during construction and maintenance causes oxidation of the organic matter. | | | |
| Rangeland Site Stability | Not Applicable | Not applicable. | | | |
| Compaction | Slight Worsening | Equipment movement during construction and maintenance may cause compaction. | | | |
| Subsidence | Not Applicable | Not applicable. | | | |
| Contaminants: | | | | | |
| • Salts and other Chemicals | Slight Improvement | Removal of surface water with soluble contaminants will reduce soil concentrations. | | | |
| • 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 | Infiltration may be decreased, and aerobic pesticide degradation in the root zone may increase. | | | |
| Damage from Sediment Deposition | Not Applicable | Not applicable. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|--|--------------------------------|---|-----|------|--------|
| PRACTICE: Bedding 310 | | Baseline Setting: Cropland without bedding. | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| WATER – QUANTITY | | | | | |
| Rangeland Hydrologic Cycle | Not Applicable | Not applicable. | | | |
| Excessive Seepage | Not Applicable | Not applicable. | | | |
| Excessive Runoff, Flooding, or Ponding | Substantial Improvement | Shaping of bedding areas increase removal of water from field. | | | |
| Excessive Subsurface Water | Not Applicable | Not applicable. | | | |
| Drifted Snow | Not Applicable | Not applicable. | | | |
| Inadequate Outlets | Slight to Moderate Improvement | Improved drainage provide adequate outlets. | | | |
| Inefficient Water use on Irrigated Land | Neutral | The action is not intended for use during irrigation periods. | | | |
| Inefficient Water use on Non-Irrigated Land | Slight Worsening | Water is conveyed offsite during periods of excess moisture. The action may remove water during periods of crop needs. | | | |
| Reduced Capacity of Conveyances by Sediment Deposition | Slight to Moderate Worsening | Drainage of surface water may convey sediments to other conveyance ways. | | | |
| Reduced Storage of Water Bodies by Sediment Accumulation | Slight to Moderate Worsening | Drainage of surface water may convey sediments to other conveyance ways. | | | |
| Aquifer Overdraft | Slight Worsening | Drains intercept water that may recharge aquifers | | | |
| Insufficient Flows in Water Courses | Slight Improvement | Drains will improve movement of surface water but may decrease subsurface flows during critical flow periods. | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | Slight Improvement | The action increases runoff. | | | |
| • Excessive Nutrients and Organics | Slight Improvement | Channels between beds facilitate surface drainage and reduce infiltration. | | | |
| • Excessive Salinity | Slight Improvement | Improved surface drainage promotes surface runoff, reduces infiltration and reduces salts in groundwater. | | | |
| • Harmful Levels of Heavy Metals | Slight Improvement | Improved drainage promotes surface runoff and reduces infiltration, reducing potential for metal movement to groundwater. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|------------------------------|--|-----|------|--------|
| PRACTICE: Bedding 310 | | Baseline Setting: Cropland without bedding. | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| • Harmful Levels of Pathogens | Slight Improvement | Improved drainage promotes surface runoff and reduces infiltration, reducing potential for pathogen movement to groundwater. | | | |
| • Harmful Levels of Petroleum | Not Applicable | Not applicable. | | | |
| In Surface Water: | | | | | |
| • Harmful Levels of Pesticides | Slight to Moderate Worsening | The action increases surface runoff. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Worsening | The improved drainage that results from this practice can increase the delivery of nutrients in solution to surface waters. | | | |
| • Excessive Suspended Sediment and Turbidity | Slight Worsening | Increased surface water movement carries soil particles to waterways. | | | |
| • Excessive Salinity | Slight to Moderate Worsening | The action provides better conveyance to waterways and other surface waters, reducing opportunity for infiltration. | | | |
| • Harmful Levels of Heavy Metals | Slight to Moderate Worsening | Drainage ways provide better conveyance to waterways and other surface waters. | | | |
| • Harmful Temperatures | Not Applicable | Not applicable. | | | |
| • Harmful Levels of Pathogens | Slight to Moderate Worsening | Drainage ways provide better conveyance to waterways and other surface waters. | | | |
| • 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 ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Not Applicable | Not applicable. | | | |
| Reduced Visibility | Slight Improvement | Reduce fugitive dust emissions | | | |
| Undesirable Air Movement | Not Applicable | Not applicable. | | | |
| Adverse Air Temperature | Not Applicable | Not applicable. | | | |
| PLANTS – SUITABILITY | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|--------------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Bedding 310 | | Baseline Setting: Cropland without bedding. | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Plants not Adapted or Suited | Not Applicable | Not applicable. | | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Slight to Moderate Improvement | Improved drainage can enhance plant health and vigor. | | | |
| Threatened or Endangered Plant Species: | | | | | |
| <ul style="list-style-type: none"> Plant Species Listed or Proposed for Listing Under the Endangered Species Act | Not Applicable | Not applicable. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Not Applicable | Not applicable. | | | |
| Noxious and Invasive Plants | Slight Worsening | Undesired plants can colonize bedded areas. | | | |
| 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: | | | | | |
| <ul style="list-style-type: none"> Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| <ul style="list-style-type: none"> Declining Species, Species of Concern | Neutral | Activities are designed, installed, and mitigated to an extent to maintain or enhance species of concern. | | | |
| ANIMALS – DOMESTIC | | | | | |
| Inadequate Quantities and Quality of Feed and Forage | Not Applicable | Not applicable. | | | |
| Inadequate Shelter | 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 | | | | | |
| Land – Land in Production | | | | | |
| Capital – Change in Equipment | | | | | |
| Capital - Total Investment Cost | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|-------------------------|---|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Bedding 310 | | Baseline Setting: Cropland without bedding. | | | |
| | | Appropriate Land Use(s): Crop, Hay, Pasture | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Capital – Annual Cost | | | | | |
| Capital – Credit and Farm Program Eligibility | | | | | |
| Labor - Labor | | | | | |
| Labor – Change in Management Level | | | | | |
| Risk - Yield | | | | | |
| Risk - Flexibility | | | | | |
| Risk - Timing | | | | | |
| Risk – Cash Flow | | | | | |
| Profitability – Change in Profitability | | | | | |
| 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 | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fishpond Management 399 | | 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. | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
|---|--------------------------------|---|-----|------|--------|
| PRACTICE: Fishpond Management 399 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| Aquifer Overdraft | Not Applicable | Not applicable. | | | |
| Insufficient Flows in Water Courses | Slight to Moderate Improvement | Generally ponds improve hydrology and water retention in watersheds | | | |
| WATER – QUALITY | | | | | |
| In Groundwater: | | | | | |
| • Harmful Levels of Pesticides | Not Applicable | Not applicable. | | | |
| • Excessive Nutrients and Organics | Slight to Moderate Worsening | The action discharges wastewater which could result in groundwater contamination. | | | |
| • 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 | Neutral | Water released from impoundments may be warmer or cooler than receiving waters, depending on site conditions. | | | |
| • Harmful Levels of Pathogens | Neutral | Non-commercial fishpond should not likely harbor 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) | Not Applicable | Not applicable. | | | |
| • N ₂ O (Nitrous Oxide) | Not Applicable | Not applicable. | | | |
| • CH ₄ (Methane) | Not Applicable | Not applicable. | | | |
| Ammonia (NH ₃) | Not Applicable | Not applicable. | | | |
| Chemical Drift | Not Applicable | Not applicable. | | | |
| Objectionable Odors | Neutral | Proper management and attention to water quality will decrease odor problems as well as fish die offs. | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|---|-------------------------------------|--|---|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fishpond Management 399 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | | RATIONALE | | |
| Reduced Visibility | Not Applicable | | Not applicable. | | |
| Undesirable Air Movement | Not Applicable | | Not applicable. | | |
| Adverse Air Temperature | Not Applicable | | Not applicable. | | |
| PLANTS – SUITABILITY | | | | | |
| Plants not Adapted or Suited | Moderate to Substantial Improvement | | Unsuitable aquatic plants are controlled. | | |
| PLANTS - CONDITION | | | | | |
| Productivity, Health, and Vigor | Moderate to Substantial Improvement | | Unsuitable aquatic plants are managed to maintain habitat values. | | |
| 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 | | Undesired aquatic vegetation is controlled by management. | | |
| Forage Quality and Palatability | Not Applicable | | Not applicable. | | |
| Wildfire Hazard | Not Applicable | | Not applicable. | | |
| ANIMALS - FISH AND WILDLIFE | | | | | |
| Inadequate Food | Moderate to Substantial Improvement | | Impounded water is managed for aquatic species. | | |
| Inadequate Cover/Shelter | Moderate to Substantial Improvement | | Aquatic plants in impounded water provides cover/shelter for fish. | | |
| Inadequate Water | Slight to Moderate Improvement | | Pond is to be managed for aquatic species | | |
| Inadequate Space | Moderate to Substantial Improvement | | Additional pond habitat/space is created. | | |
| Habitat Fragmentation | Not Applicable | | Not applicable. | | |
| Imbalance Among and Within Populations | Slight to Substantial Improvement | | Management is designed to optimize fishery. | | |
| 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 | | | | | |

CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

| | | | | | |
|--|--|--|-----|------|--------|
| STATE | WASHINGTON | FIELD OFFICE | ALL | DATE | 9/2008 |
| PRACTICE: Fishpond Management 399 | | Baseline Setting: | | | |
| | | Appropriate Land Use(s): All Land Uses | | | |
| RESOURCES, CONSIDERATIONS AND CONCERNS | PHYSICAL EFFECTS | RATIONALE | | | |
| 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. | Moderate to substantial increase. | | | |
| Capital – Change in Equipment | 0 | Substantial. | | | |
| Capital - Total Investment Cost | Substantial. | Slight to moderate. | | | |
| Capital – Annual Cost | 0 | Situational. | | | |
| Capital – Credit and Farm Program Eligibility | 0 | Negligible to slight. | | | |
| Labor - Labor | 0 | Slight to moderate increase. | | | |
| Labor – Change in Management Level | 0 | Not applicable. | | | |
| Risk - Yield | Not applicable. | Not applicable. | | | |
| Risk - Flexibility | Not applicable. | Not applicable. | | | |
| Risk - Timing | Not applicable. | Moderate Decrease | | | |
| Risk – Cash Flow | Situational. Negligible to moderate decrease in risk due to management of biogas. | Moderate Increase | | | |
| Profitability – Change in Profitability | Situational. Negligible to moderate increase in profitability where biogas is put to profitable use. | 0.01 | | | |
| HUMAN - CULTURAL | | | | | |
| Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT | Not applicable. | No | | | |
| HUMAN – ENERGY | | | | | |
| Depletion of Fossil Fuel Resources | Not Applicable | No | | | |
| Underutilization of Non-Fossil Energy Resources | Practice facilitates methane collection for renewable fuel use. | Yes | | | |

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. |