CONSERVATION PRACTICE PHYSICAL EFFECTS WORKSHEET

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

RESOURCES, CONSIDERATIONS AND CONCERNS	**PHYSICAL EFFECTS**	**RATIONALE**
SOIL - EROSION		
Sheet and Rill	Not Applicable	Not applicable.
Wind	Not Applicable	Not applicable.
Ephemeral Gully	Not Applicable	Not applicable.
Classic Gully	Not Applicable	Not applicable.
Streambank	Not Applicable	Not applicable.
Shoreline	Not Applicable	Not applicable.
Irrigation Induced	Neutral	Some chemicals such as PAM used as flocculants could reduce irrigation induced erosion when the waste stream is surface itrrigated
Mass Movement	Not Applicable	Not applicable.
Road, Roadsides, and Construction Sites	Not Applicable	Not applicable.
SOIL – CONDITION		
Organic Matter Depletion	Slight Improvement	Using amendments and separation could create high organic residues that when land applied could increase soil organic matter in excess of the application of untreated manure
Rangeland Site Stability	Not Applicable	Not applicable.
Compaction	Not Applicable	Not applicable.
Subsidence	Not Applicable	Not applicable.
Contaminants:		
• Salts and other Chemicals	Neutral	Could be slight worsening to slight improvement depending on whether salts are concentrated or removed from the land applied waste stream
• Animal Waste and other Organics - N	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce nitrogen concentrations
• Animal Waste and other Organics - P	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce phoswphorus concentrations
• Animal Waste and other Organics - K	Slight to Moderate Improvement	Using separation options allows the manipulation of the waste stream to reduce phoswphorus concentrations
• Commercial Fertilizer - N	Not Applicable	Not applicable.
• Commercial Fertilizer – P	Not Applicable	Not applicable.
• Commercial Fertilizer – K	Not Applicable	Not applicable.

• Residual Pesticides	Not Applicable	Not applicable.
Damage from Sediment Deposition	Not Applicable	Not applicable.
WATER – QUANTITY		
Rangeland Hydrologic Cycle	Not Applicable	Not applicable.
Excessive Seepage	Not Applicable	Not applicable.
Excessive Runoff, Flooding, or Ponding	Not Applicable	Not applicable.
Excessive Subsurface Water	Not Applicable	Not applicable.
Drifted Snow	Not Applicable	Not applicable.
Inadequate Outlets	Not Applicable	Not applicable.
Inefficient Water use on Irrigated Land	Slight Improvement	Altered waste stream with minumum solids will be compatible with irrigation needs
Inefficient Water use on Non-Irrigated Land	Not Applicable	Not applicable.
Reduced Capacity of Conveyances by Sediment Deposition	Not Applicable	Not applicable.
Reduced Storage of Water Bodies by Sediment Accumulation	Not Applicable	Not applicable.
Aquifer Overdraft	Neutral	Altered waste stream with minumum solids will be compatible with irrigation needs
Insufficient Flows in Water Courses	Neutral	Altered waste stream with minumum solids will be compatible with irrigation needs
WATER – QUALITY		
In Groundwater:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Separation and other treatment options are often used to remove nutrients and organics from the waste stream
• Excessive Salinity	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
In Surface Water:		
• Harmful Levels of Pesticides	Not Applicable	Not applicable.
• Excessive Nutrients and Organics	Slight to Substantial Improvement	Separation and other treatment options are often used to remove nutrients and organics from the waste stream
• Excessive Suspended Sediment and Turbidity	Not Applicable	Not applicable.

• Excessive Salinity	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Heavy Metals	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Temperatures	Not Applicable	Not applicable.
• Harmful Levels of Pathogens	Slight to Moderate Improvement	Separation and other treatment options can be used to alter the waste stream to remove salts, metals, and some pathogens.
• Harmful Levels of Petroleum	Not Applicable	Not applicable.
AIR – QUALITY		
Particulate Matter less than 10 Micrometers in Diameter (PM 10)	Not Applicable	Not applicable.
Particulate Matter less than 2.5 Micrometers in Diameter (PM 2.5)	Slight to Moderate Improvement	liquid-solid separation can have some effect in reducing emissions such as ammonia fraction
Excessive Ozone	Not Applicable	Not applicable.
Excessive Greenhouse Gas:		
• CO_2 (Carbon Dioxide)	Slight Improvement	Separation may have an impact on the release of a number of manure constituents
• N_20 (Nitrous Oxide)	Slight Improvement	Separation may have an impact on the release of a number of manure constituents
• CH_4 (Methane)	Slight to Moderate Improvement	Separation may have an impact on the release of a number of manure constituents
Ammonia (NH_3)	Slight to Substantial Improvement	Separating solids and liquids (particularly feces and urine) can be an effective means of controlling ammonia emissions
Chemical Drift	Not Applicable	Not applicable.
Objectionable Odors	Moderate to Substantial Improvement	Liquid/solids separators are very successful in facilitating the reduction of odor emmissions from manure, particularly when solids are allowed to remain in an aerobic environment
Reduced Visibility	Not Applicable	Not applicable.
Undesirable Air Movement	Not Applicable	Not applicable.
Adverse Air Temperature	Not Applicable	Not applicable.
PLANTS – SUITABLIITY		
Plants not Adapted or Suited	Not Applicable	Not applicable.
PLANTS - CONDITION		
Productivity, Health, and Vigor	Not Applicable	Not applicable.
Threatened or Endangered Plant Species:		
• Plant Species Listed or Proposed	Not Applicable	Not applicable.

for Listing Under the Endangered Species Act		
• Declining Species, Species of Concern	Not Applicable	Not applicable.
Noxious and Invasive Plants	Not Applicable	Not applicable.
Forage Quality and Palatability	Slight to Moderate Improvement	Separation and handling the solids and liquids separately can alter the waste stream to better meet the needs of the plant
Wildfire Hazard	Not Applicable	Not applicable.
ANIMALS - FISH AND WILDLIFE		
Inadequate Food	Not Applicable	Not applicable.
Inadequate Cover/Shelter	Not Applicable	Not applicable.
Inadequate Water	Not Applicable	Not applicable.
Inadequate Space	Not Applicable	Not applicable.
Habitat Fragmentation	Not Applicable	Not applicable.
Imbalance Among and Within Populations	Not Applicable	Not applicable.
Threatened and Endangered Fish and Wildlife Species:		
• Fish and Wildlife Species Listed or Proposed for Listing Under the Endangered Species Act	Not Applicable	Not applicable.
• Declining Species, Species of Concern	Not Applicable	Not applicable.
ANIMALS – DOMESTIC		
Inadequate Quantities and Quality of Feed and Forage	Neutral	Separation could favorably alter the waste stream to better provide the needs of growing feed and forage, but this would be minor impact
Inadequate Shelter	Not Applicable	Not applicable.
Inadequate Stock Water	Slight Improvement	Some alternatives are used to treat the waste stream to the point water can be reused by livestock. Liquid/solid separation is almost always the first step
Stress and Mortality	Slight to Moderate Improvement	Suppressing emissions of ammonia and other manure constituents through liquid solid separation may well improve overall animal health and reduce mortality
HUMAN – ECONOMICS		
Land - Change in Land Use	Not applicable.	Not applicable.
Land – Land in Production	Slight decrease	Slight decrease, structure built on cropland.
Capital – Change in Equipment	Substantial increase.	
Capital - Total Investment Cost	Substantial.	Substantial.
Capital – Annual Cost	Moderate increase.	
Capital – Credit and Farm Program Eligibility	Situational.	

Labor - Labor	Slight to substantial increase	Slight to substantial increase depending on type of seperation facility.
Labor – Change in Management Level	Moderate to substantial increase	Moderate to substantial increase for timing and management of waste.
Risk - Yield	Not applicable.	Not applicable.
Risk - Flexibility	Moderate to Substantial Increase	Moderate to substantial increase because of design criteria.
Risk - Timing	Substantial Increase	Substantial increase, depending on state and/or federal laws.
Risk – Cash Flow	Substantial Increase	Substantial increase due to implementation costs.
Profitability – Change in Profitability	Slight to moderate decrease.	
HUMAN - CULTURAL		
Cultural Resources and/or Historic Properties Present or Suspected to be PRESENT	Slight to Substantial Increase	Effects will vary, if any, dependent upon type of facility selected
HUMAN – ENERGY		
Depletion of Fossil Fuel Resources	Slight to Substantial Decrease	Even though the separation takes energy ultimately energy is saved by separating phases
Underutilization of Non-Fossil Energy Resources	Not Applicable	Not Applicable

Human Considerations Explanation

Considerations	Physical effects indicate:
Land - Change in Land Use	The degree to which implementing the conservation practice is expected to cause a change from one land use to another.
Land - Land in Production	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of land in production.
Capital - Change in Equipment	The degree to which implementing the conservation practice is expected to cause an increase or decrease in the amount of capital equipment required for farm or ranch operations.
Capital - Total Investment Cost	A qualitative measure of the increase in total investment dollars required in order to implement the conservation practice.
Capital - Annual Cost	A qualitative measure of the expected change in annual capital costs required in order to operate and maintain the conservation practice.
Capital - Credit & Farm Program Eligibility	Included to make conservation planners aware of the potential availability of funding for implementing conservation practices.
Labor – Labor	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of overall farm or ranch labor required for operations.
Labor - Change in Management Level	The degree to which implementing the conservation practice is likely to cause an increase or decrease in the total amount of required active management on a farm or ranch.
Risk – Yield	The degree to which risk, as related to crop or livestock yields, is expected to increase or decrease as a result of implementing the conservation practice.
Risk – Flexibility	The degree to which risk, as related to the flexibility of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice. For example, converting from flood irrigation to a sprinkler system gives a farmer an increase in flexibility of irrigation, which results in a decrease in the level of risk associated with inflexibility of operations.
Risk – Timing	The degree to which risk, as related to the timing of farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
Risk - Cash Flow	The degree to which risk, as related to cash flow in farm or ranch operations, is expected to increase or decrease as a result of implementing the conservation practice.
Profitability - Change in Profitability	The degree to which farm or ranch profitability is expected to increase or decrease as a result of implementing the conservation practice.
Cultural Resources and/or Historic Properties Present or Suspected to be Present	The degree to which implementation of the conservation practice is expected to increase or decrease the risk of cultural resource disturbance, degradation, or loss.
Depletion of Fossil Fuel Resources	Inefficient use of fossil-originated energy sources (diesel, gasoline, propane, natural gas, coal), lubricants, and other materials.
Underutilization of Non-Fossil Energy Sources	Available and cost-effective alternative energy sources (solar, wind, biofuel, hydroelectric, geothermal) are not being used or are being used inefficiently.