

Practice: 313 - Waste Storage Facility

Scenario: #1 - Earthen Storage Facility upto 50K ft3 Storage

Scenario Description:

An earthen waste impoundment constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of less than 50,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Earthen storage liners are addressed with another standard. Vehicular and equipment access is addressed in Heavy Use Area Protection (561). Adequately protect liner at agitation and access points.

Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Roofs and Covers (367), and Solid/Liquid Waste Separation Facility (632), Waste Treatment (629) .

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An earthen storage structure constructed from on-site material provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design size : Total volume = 24,864 ft3; 78'X78' (top); 3:1 inside and outside side slopes; top of berm = 10'; cut/fill ratio = 1.25; Total depth = 8.0', including freeboard. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 24,864

Scenario Cost: \$9,037.52

Scenario Cost/Unit: \$0.36

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 599 | \$2,623.62 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 599 | \$2,156.40 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 599 | \$2,216.30 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 20 | \$816.40 |
| Materials | | | | | | |
| Structural steel tubing, 2" diameter | 1120 | Structural steel tubing, 2" diameter, 1/8" wall thickness, materials only | Foot | \$3.65 | 8 | \$29.20 |
| Mobilization | | | | | | |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 4 | \$1,050.56 |

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Scenario: #2 - Earthen Storage Facility over 50K ft3 Storage

Scenario Description:

An earthen waste impoundment constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of more than 50,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation. Earthen storage liners are addressed with another standard. Vehicular and equipment access is addressed in Heavy Use Area Protection (561). Adequately protect liner at agitation and access points.

Potential Associated Practices: Pond Sealing or Lining, Bentonite Sealant (521C), Pond Sealing or Lining, Compacted Clay Treatment (521D), Pond Sealing or Lining, Flexible Membrane (521A), Pond Sealing or Lining, Soil Dispersant (521B), Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Roofs and Covers (367), and Solid/Liquid Waste Separation Facility (632), Waste Treatment (629).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An earthen storage structure constructed from on-site material provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design size : Total volume = 199,878 ft3; 159'x159' (top); 3:1 inside and outside side slopes; top of berm = 10'; cut/fill ratio = 1.25; Total depth = 14.0', including freeboard. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 199,878

Scenario Cost: \$60,038.90

Scenario Cost/Unit: \$0.30

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 4812 | \$21,076.56 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 4812 | \$17,323.20 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 4812 | \$17,804.40 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 40 | \$1,632.80 |
| Materials | | | | | | |
| Structural steel tubing, 2" diameter | 1120 | Structural steel tubing, 2" diameter, 1/8" wall thickness, materials only | Foot | \$3.65 | 14 | \$51.10 |
| Mobilization | | | | | | |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | \$501.45 | 4 | \$2,005.80 |

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Scenario: #3 - Above Ground Steel/Concrete upto 25K ft3 Storage

Scenario Description:

An above ground circular glass lined steel or concrete structure constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of less than 25,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Solid/Liquid Waste Separation Facility (632), Waste Treatment (629), and Pumping Plant (533).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An above ground storage structure provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design size : Total volume 14,340 ft3, including freeboard; based on 31' X 19' glass lined steel tank. "Strike Full" = the total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 14,340

Scenario Cost: \$99,315.92

Scenario Cost/Unit: \$6.93

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 5 | \$962.90 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 84 | \$310.80 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 12 | \$2,754.12 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 84 | \$367.92 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 18 | \$8,995.32 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 30 | \$1,224.60 |
| Materials | | | | | | |
| Waste Storage, Glass lined steel structure (<25,000 ft3) | 1616 | Includes materials, equipment and labor to install 31' (diameter) X19' (height) steel lined structure. Includes materials, equipment and labor. | Cubic Foot | \$5.77 | 14340 | \$82,741.80 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|----|----------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 14 | \$500.22 |
|---------------------------|----|--|------------|---------|----|----------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 5 | \$1,313.20 |

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Scenario: #4 - Above Ground Steel/Concrete 25 to 100K ft3 Storage

Scenario Description:

An above ground circular glass lined steel or concrete structure constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of between 25,000 and 100,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Solid/Liquid Waste Separation Facility (632), Waste Treatment (629), and Pumping Plant (533).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An above ground storage structure provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design size : Total volume 79,522 ft3, including freeboard; based on 73' X 19' glass lined steel tank. "Strike Full" = the total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 79,522

Scenario Cost: \$210,182.00

Scenario Cost/Unit: \$2.64

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 43 | \$21,488.82 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 465 | \$1,720.50 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 465 | \$2,036.70 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 65 | \$14,918.15 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 6 | \$1,155.48 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 40 | \$1,632.80 |
| Materials | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 77 | \$2,751.21 |

Materials

| | | | | | | |
|---|------|--|------------|--------|-------|--------------|
| Waste Storage, glass lined steel structure, 25,000 - 100,000 cubic foot | 1620 | Includes materials, equipment and labor to install a steel glass lined structure (based on typical 73' diameter X 19' height) . Includes materials, equipment and labor. | Cubic Foot | \$2.05 | 79522 | \$163,020.10 |
|---|------|--|------------|--------|-------|--------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 5 | \$1,313.20 |

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Scenario: #5 - Above Ground Steel/Concrete 100 to 200K ft3 Storage

Scenario Description:

An above ground circular glass lined steel or concrete structure constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of between 100,000 and 200,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Solid/Liquid Waste Separation Facility (632), Waste Treatment (629), and Pumping Plant (533).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An above ground storage structure provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design size : Total volume 187,189 ft3, including freeboard; based on 112' X 19' glass lined steel tank. "Strike Full" = the total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 187,189

Scenario Cost: \$391,212.68

Scenario Cost/Unit: \$2.09

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|------------|-----------------|----------|--------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 152 | \$34,885.52 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 65 | \$32,483.10 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 1094 | \$4,791.72 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 7 | \$1,348.06 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 1094 | \$4,047.80 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 60 | \$2,449.20 |
| Materials | | | | | | |
| Waste Storage, glass lined steel structure, 100,000-200,000 cubic foot | 1621 | Includes materials, equipment and labor to install a steel glass lined structure (based on typical 112' diameter X 19' height) . Includes materials, equipment and labor. | Cubic Foot | \$1.62 | 187189 | \$303,246.18 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|-----|------------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 182 | \$6,502.86 |
|---------------------------|----|--|------------|---------|-----|------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 5 | \$1,313.20 |

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Scenario: #6 - Above Ground Steel/Concrete over 200K ft3 Storage

Scenario Description:

An above ground circular glass lined steel or concrete structure constructed to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This scenario has a design storage volume of greater than 200,000 ft3. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Solid/Liquid Waste Separation Facility (632), Waste Treatment (629), and Pumping Plant (533).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

An above ground storage structure provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design size : Total volume 248,326 ft3, including freeboard; based on 129' X 19' glass lined steel tank. "Strike Full" = the total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 248,326

Scenario Cost: \$537,605.54

Scenario Cost/Unit: \$2.16

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|------------|-----------------|----------|--------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 75 | \$37,480.50 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 1452 | \$6,359.76 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 8 | \$1,540.64 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 1452 | \$5,372.40 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 202 | \$46,361.02 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 80 | \$3,265.60 |
| Materials | | | | | | |
| Waste Storage, glass lined steel structure >200,000 cubic foot | 1622 | Includes materials, equipment and labor to install a steel glass lined structure (based on typical 129' diameter X 19' height) . Includes materials, equipment and labor. | Cubic Foot | \$1.72 | 248326 | \$427,120.72 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|-----|------------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 242 | \$8,646.66 |
|---------------------------|----|--|------------|---------|-----|------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 5 | \$1,313.20 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |

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Scenario: #7 - Concrete, Rectangular, With Concrete Top

Scenario Description:

This scenario consists of installing a small concrete tank with a design storage volume of less than 5,000 CF that is totally or partially buried and has solid concrete lid with several openings for direct loading from heavyuse area, gutter cleaner or gravity pipe. Manure is held for 3 to 14 day on smaller operations or transfered to larger storage facility or direct land applied. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), Pumping Plant (533),and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.
 Tank typically 8' deep x 12' wide x 40' long, with a total volume of 3,840 cubic feet including freeboard. Tank includes concrete top. Sizing based on manure, other wastes, rainfall, lot runoff, etc. Tanks associated with open lots sized to handle design storm in tank or in combination with lot as per state regulations. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 3,840

Scenario Cost: \$33,480.81

Scenario Cost/Unit: \$8.72

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 48 | \$23,987.52 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 8 | \$1,540.64 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 8 | \$1,836.08 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 390 | \$1,404.00 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yard | \$2.51 | 390 | \$978.90 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 20 | \$816.40 |
| Materials | | | | | | |
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6"wide. Includes materials, equipment and labor. | Foot | \$6.33 | 104 | \$658.32 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|----|----------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 11 | \$393.03 |
|---------------------------|----|--|------------|---------|----|----------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 4 | \$290.08 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 6 | \$1,575.84 |

Practice: 313 - Waste Storage Facility

Scenario: #8 - Concrete, Rectangular, Without Roof upto 35K ft3 Storage

Scenario Description:

This scenario consists of a rectangular concrete facility with reinforced concrete floor and concrete walls. Walls are NOT designed to support a roof. This scenario is intended to store liquid or dry manure. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

The typical size is 4,368 SqFt (42' x 104'). The facility floor is 5" reinforced concrete with 8' reinforced concrete walls. Wall is NOT designed to support a roof. Walls allow for greater storage volume. Manure and other agricultural by-products are collected and stored near the the source until such time that the manure can be disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 34,944

Scenario Cost: \$117,876.84

Scenario Cost/Unit: \$3.37

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 8 | \$1,540.64 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 171 | \$85,455.54 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 1660 | \$5,976.00 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 50 | \$11,475.50 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 1660 | \$6,142.00 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 40 | \$1,632.80 |
| Materials | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 104 | \$3,715.92 |

Mobilization

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 6 | \$1,575.84 |

Practice: 313 - Waste Storage Facility

Scenario: #9 - Concrete, Rectangular, Without Roof over 35K ft3 Storage

Scenario Description:

This scenario consists of a rectangular concrete facility with reinforced concrete floor and concrete walls. Walls are NOT designed to support a roof. This scenario is intended to store liquid or dry manure. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

The typical size is 8,736 SqFt (84' x 104'). The facility floor is 5" reinforced concrete with 8' reinforced concrete walls. Wall is NOT designed to support a roof. Walls allow for greater storage volume. Manure and other agricultural by-products are collected and stored near the the source until such time that the manure can be disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 69,888

Scenario Cost: \$171,687.36

Scenario Cost/Unit: \$2.46

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|--------------|
| Equipment/Installation | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 3053 | \$10,990.80 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 113 | \$25,934.63 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 220 | \$109,942.80 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 12 | \$2,310.96 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 3053 | \$11,296.10 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 60 | \$2,449.20 |
| Materials | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 191 | \$6,824.43 |

Mobilization

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 6 | \$1,575.84 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |

Practice: 313 - Waste Storage Facility

Scenario: #10 - Concrete, Rectangular, With Roof

Scenario Description:

This scenario consists of a rectangular concrete facility with reinforced concrete floor and concrete walls. This scenario shall be used in conjunction with 367 - Roofs and Covers. Walls are designed to support a roof. This scenario is intended to store liquid or dry manure. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 367-Roofs and Covers, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

The typical size is 4,368 SqFt (42' x 104'). The facility floor is 5" reinforced concrete with 8' reinforced concrete walls. Wall is designed to support a roof. Walls allow for greater storage volume. Manure and other agricultural by-products are collected and stored near the the source until such time that the manure can be disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 34,944

Scenario Cost: \$134,953.12

Scenario Cost/Unit: \$3.86

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|---|------------|-----------------|----------|--------------|
| Equipment/Installation | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 1660 | \$5,976.00 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 50 | \$11,475.50 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 1660 | \$6,142.00 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 207 | \$103,446.18 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 60 | \$2,449.20 |
| Materials | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 104 | \$3,715.92 |
| Mobilization | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 5 | \$1,313.20 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|---------|---|----------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 6 | \$435.12 |
|------------------------------------|------|--|------|---------|---|----------|

Practice: 313 - Waste Storage Facility

Scenario: #11 - Concrete Block, Rectangular, Without Roof

Scenario Description:

This scenario consists of a "3 sided" rectangular concrete facility with reinforced concrete floor. Walls are constructed of large concrete blocks (2'x2'x6'). All vertical and horizontal cold joints are sealed with bentonite type waterstop. Walls are NOT designed to support a roof. This scenario is intended to store dry manure in tight locations. Also intened for small and limited resource producers who don't need a large facility or can afford one. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

The typical facility is 25' wide by 40' long by 6' deep (6000 cf). The facility floor is 5" concrete slab reinforced with #4 rebar at 18" o.c. Wall is NOT designed to support roof. Walls are constructed of 2'x2'x6' concrete block which will allow for greater storage volume. All cold joints in the wall will be sealed with bentonite type waterstop. Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 6,000

Scenario Cost: \$14,269.24

Scenario Cost/Unit: \$2.38

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 132 | \$475.20 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 18 | \$4,131.18 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 132 | \$488.40 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 20 | \$816.40 |
| Materials | | | | | | |
| Block, pre-cast concrete, modular | 1496 | Pre-cast concrete blocks, typically 2ft x 2ft x 6ft , includes installation and delivery. | Cubic Yard | \$104.04 | 42 | \$4,369.68 |
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6"wide. Includes materials, equipment and labor. | Foot | \$6.33 | 400 | \$2,532.00 |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 22 | \$786.06 |
| Mobilization | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 2 | \$525.28 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|---------|---|----------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
|------------------------------------|------|--|------|---------|---|----------|

Practice: 313 - Waste Storage Facility

Scenario: #12 - Conc Tank, buried upto 15K ft3 Storage

Scenario Description:

This scenario consists of installing a concrete tank that has a design storage volume from 5,000 to 14,999 CF that is totally or partially buried and has an open top. The tank can also be under an animal facility with the top cover of either slats or solid concrete lid/floor. Design volume does not include freeboard.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Tank typically 39' diameter x 8' deep, with a total volume of 9,557 CF including freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 9,557

Scenario Cost: \$33,885.20

Scenario Cost/Unit: \$3.55

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 8 | \$1,540.64 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 18 | \$4,131.18 |
| Excavation, common earth, small equipment, 50 ft | 1220 | Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yard | \$2.51 | 670 | \$1,681.70 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 38 | \$18,990.12 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 670 | \$2,412.00 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 40 | \$1,632.80 |
| Materials | | | | | | |
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6" wide. Includes materials, equipment and labor. | Foot | \$6.33 | 122 | \$772.26 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|----|----------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 22 | \$786.06 |
|---------------------------|----|--|------------|---------|----|----------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 6 | \$1,575.84 |

Practice: 313 - Waste Storage Facility

Scenario: #13 - Conc Tank, Buried 15 to 25K ft3 Storage

Scenario Description:

This scenario consists of installing a concrete tank that has a design storage volume from 15,000 to 24,999 CF. The tank is totally or partially buried and has an open top. It can be under an animal facility with the top cover being slats or concrete lid/floor. The design volume does not include freeboard. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), Pumping Plant (533) and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.
 Tank typically 56.5' diameter x 8' deep with a total storage volume of 20,057 CF including freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 20,057

Scenario Cost: \$53,543.65

Scenario Cost/Unit: \$2.67

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 10 | \$1,925.80 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 39 | \$8,950.89 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 55 | \$27,485.70 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 1155 | \$4,273.50 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 1155 | \$4,158.00 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 50 | \$2,041.00 |
| Materials | | | | | | |
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6" wide. Includes materials, equipment and labor. | Foot | \$6.33 | 178 | \$1,126.74 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|----|------------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 46 | \$1,643.58 |
|---------------------------|----|--|------------|---------|----|------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 6 | \$1,575.84 |

Practice: 313 - Waste Storage Facility

Scenario: #14 - Conc Tank, Buried 25 to 50K ft3 Storage

Scenario Description:

This scenario consists of installing a concrete tank that has a design storage volume from 25,000 to 49,999 CF. Tank is totally or partially buried and has an open top. Tank can be under a animal facility with the top cover being slats or concrete lid/floor. The design volume does not include freeboard. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.
 Tank typically 60' diameter x 10' deep with a total storage volume of 28,274 CF including freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 28,274

Scenario Cost: \$71,792.90

Scenario Cost/Unit: \$2.54

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 44 | \$10,098.44 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 12 | \$2,310.96 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 1708 | \$6,319.60 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 1708 | \$6,148.80 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 79 | \$39,479.46 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 60 | \$2,449.20 |
| Materials | | | | | | |
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6" wide. Includes materials, equipment and labor. | Foot | \$6.33 | 188 | \$1,190.04 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|----|------------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 52 | \$1,857.96 |
|---------------------------|----|--|------------|---------|----|------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 6 | \$1,575.84 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |

Practice: 313 - Waste Storage Facility

Scenario: #15 - Conc Tank, Buried 50 to 75K ft3 Storage

Scenario Description:

This scenario consists of installing a concrete tank that has a design storage volume from 50,000 to 74,999 CF. Tank is totally or partially buried and has an open top, however it can be under a animal facility with the top cover with slats or concrete lid/floor. The design volume does not include freeboard. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.
 Tank typically 81' diameter x 12' deep with a total storage volume of 61,836 CF including freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 61,836

Scenario Cost: \$117,154.21

Scenario Cost/Unit: \$1.89

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 14 | \$2,696.12 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 3470 | \$12,839.00 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 3470 | \$12,492.00 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 80 | \$18,360.80 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 122 | \$60,968.28 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 70 | \$2,857.40 |
| Materials | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 95 | \$3,394.35 |

Materials

| | | | | | | |
|------------------------------------|------|---|------|--------|-----|------------|
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6"wide. Includes materials, equipment and labor. | Foot | \$6.33 | 254 | \$1,607.82 |
|------------------------------------|------|---|------|--------|-----|------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 6 | \$1,575.84 |

Practice: 313 - Waste Storage Facility

Scenario: #16 - Conc Tank, Buried 75 to 110K ft3 Storage

Scenario Description:

This scenario consists of installing a concrete tank that has a design storage volume from 75,000 to 109,999 CF. Tank is totally or partially buried and has an open top. Tank can also be under an animal facility with the top cover using slats or concrete lid/floor. The design volume does not include freeboard. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Pipeline (516), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Tank typically 101' diameter x 12' deep with a total storage volume of 96,142 CF including freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 96,142

Scenario Cost: \$156,981.46

Scenario Cost/Unit: \$1.63

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 123 | \$28,229.73 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 153 | \$76,460.22 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 16 | \$3,081.28 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 4993 | \$18,474.10 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 4993 | \$17,974.80 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 80 | \$3,265.60 |
| Materials | | | | | | |

Materials

| | | | | | | |
|------------------------------------|------|--|------------|---------|-----|------------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 148 | \$5,288.04 |
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6"wide. Includes materials, equipment and labor. | Foot | \$6.33 | 317 | \$2,006.61 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 7 | \$1,838.48 |

Practice: 313 - Waste Storage Facility

Scenario: #17 - Conc Tank, Buried over 110K ft3 Storage

Scenario Description:

This scenario consists of installing a concrete tank that has a design storage volume of 110,000 or more CF. Tank is totally or partially buried and has an open top. Tank can also be under a animal facility with the top cover using slats or concrete lid/floor. The design volume does not include freeboard. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Pipeline (516), Subsurface Drain (606), and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Tank typically 120' diameter x 14' deep with a total storage volume of 158,336 CF including freeboard. Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate. Total volume includes freeboard, precipitation, solids build up, etc.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 158,336

Scenario Cost: \$234,569.96

Scenario Cost/Unit: \$1.48

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|--------------|
| Equipment/Installation | | | | | | |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 7612 | \$28,164.40 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 18 | \$3,466.44 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 7612 | \$27,403.20 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 245 | \$122,436.30 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 165 | \$37,869.15 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 90 | \$3,673.80 |
| Materials | | | | | | |
| Waterstop, PVC, ribbed, 3/16" x 6" | 1614 | Waterstop, PVC, ribbed, 3/16" thick by 6" wide. Includes materials, equipment and labor. | Foot | \$6.33 | 366 | \$2,316.78 |

Materials

| | | | | | | |
|---------------------------|----|--|------------|---------|-----|------------|
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 197 | \$7,038.81 |
|---------------------------|----|--|------------|---------|-----|------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 7 | \$1,838.48 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |

Practice: 313 - Waste Storage Facility

Scenario: #18 - Bedded Pack, Concrete Wall, Gravel Floor

Scenario Description:

Install a composted bedded pack facility with concrete walls and gravel floor. This scenario shall be used in conjunction with 367 - Roofs and Covers. Walls are designed to support a roof. Concrete walls will be used on sites shallow to bedrock where conditions will not allow proper embedment of timber posts for a timber walls. Also, concrete walls will be used on facilities with large spans where the overall dead weight cannot be practically supported by timber posts/wall. Facility is constructed to store wastes as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), and Roofs and Covers (367).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

Using a bedded pack provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design: floor area 4,368 ft², (42' X 104'); 8' concrete wall height (only 4' of wall which contains the manure is considered on scenario), 9.5' footing depth with a gravel floor; open on each end of structure. Wall/foundation must be designed to support roof (367-Roofs & Covers).

Scenario Feature Measure: Square Foot Floor Area

Scenario Unit: Square Foot

Scenario Typical Size: 4,368

Scenario Cost: \$69,140.22

Scenario Cost/Unit: \$15.83

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|---|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 116 | \$57,969.84 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yard | \$0.88 | 204 | \$179.52 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 204 | \$754.80 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 370 | \$1,332.00 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic yard | \$2.36 | 370 | \$873.20 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 370 | \$1,620.60 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 30 | \$1,224.60 |
| Materials | | | | | | |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials, equipment and labor | Cubic yard | \$24.63 | 162 | \$3,990.06 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 4 | \$1,050.56 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |

Practice: 313 - Waste Storage Facility

Scenario: #19 - Bedded Pack, Concrete Wall, Concrete Floor

Scenario Description:

Install a composted bedded pack facility with concrete walls and concrete floor. This scenario shall be used in conjunction with 367 - Roofs and Covers. Walls are designed to support a roof. Concrete walls will be used on sites shallow to bedrock where conditions will not allow proper embedment of timber posts for a timber walls. Also, concrete walls will be used on facilities with large spans where the overall dead weight cannot be practically supported by timber posts/wall. Concrete floor is needed on sites that are shallow to bedrock or seasonal high water table to provide a separation barrier to ground water resources. Facility is constructed to store wastes as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), and Roofs and Covers (367).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

Using a bedded pack provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design: floor area 4,368 ft², (42' X 104'); 8' concrete wall height (only 4' of wall which contains the manure is considered on scenario), 9.5' footing depth with a 5" concrete floor; open on each end of structure. Wall/foundation must be designed to support roof (367- Roofs & Covers).

Scenario Feature Measure: Square Foot Floor Area

Scenario Unit: Square Foot

Scenario Typical Size: 4,368

Scenario Cost: \$82,522.36

Scenario Cost/Unit: \$18.89

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|---|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 116 | \$57,969.84 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 67 | \$15,377.17 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yard | \$0.88 | 204 | \$179.52 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 204 | \$754.80 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 370 | \$1,620.60 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 370 | \$1,332.00 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic yard | \$2.36 | 370 | \$873.20 |

Labor

Labor

| | | | | | | |
|-----------------------|-----|--|------|---------|----|------------|
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 30 | \$1,224.60 |
|-----------------------|-----|--|------|---------|----|------------|

Materials

| | | | | | | |
|---|------|---|------------|---------|----|------------|
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials, equipment and labor | Cubic yard | \$24.63 | 81 | \$1,995.03 |
|---|------|---|------------|---------|----|------------|

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 4 | \$1,050.56 |

Practice: 313 - Waste Storage Facility

Scenario: #20 - Bedded Pack, Timber Wall, Gravel Floor

Scenario Description:

Install a composted bedded pack facility with timber posts and plank walls and gravel floor. This scenario shall be used in conjunction with 367 - Roofs and Covers. Walls are designed to support a roof. Facility is constructed to store wastes as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), and Roofs and Covers (367).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

Using a bedded pack provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design: floor area 4,368 ft², (42' X 104'); 8' timber wall height (only 4' of wall which contains the manure is considered on scenario), 10"x10" post embedded 6' in the ground, gravel floor, open at each end of structure. Timber Wall/foundation must be designed to support roof (367- Roofs & Covers).

Scenario Feature Measure: Square Foot Floor Area

Scenario Unit: Square Foot

Scenario Typical Size: 4,368

Scenario Cost: \$24,609.49

Scenario Cost/Unit: \$5.63

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|---|------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 139 | \$500.40 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 162 | \$709.56 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 204 | \$754.80 |
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yard | \$0.88 | 204 | \$179.52 |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$158.17 | 8 | \$1,265.36 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic yard | \$5.75 | 139 | \$799.25 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 10 | \$4,997.40 |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic yard | \$2.36 | 139 | \$328.04 |

Labor

Labor

| | | | | | | |
|-----------------------|-----|--|------|---------|----|------------|
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hour | \$24.48 | 80 | \$1,958.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 30 | \$1,224.60 |

Materials

| | | | | | | |
|--|------|---|------------|---------|------|------------|
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials, equipment and labor | Cubic yard | \$24.63 | 162 | \$3,990.06 |
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners | Board Foot | \$0.85 | 1664 | \$1,414.40 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor. | Board Foot | \$1.70 | 3113 | \$5,292.10 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 4 | \$1,050.56 |

Practice: 313 - Waste Storage Facility

Scenario: #21 - Bedded Pack, Timber Wall, Concrete Floor

Scenario Description:

Install a composted bedded pack facility with timber posts and plank walls and concrete floor. This scenario shall be used in conjunction with 367 - Roofs and Covers. Walls are designed to support a roof. Concrete floor is needed on sites that are shallow to bedrock or seasonal high water table to provide a separation barrier to ground water resources. Facility is constructed to store wastes as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), and Roofs and Covers (367).

Before Situation:

Operator presently has a confined animal feeding operation without a waste management system adequate to handle the waste stream leaving the animal production facilities. Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

Using a bedded pack provides an environmentally safe facility for storing manure and other agricultural waste by-products. This facility provides the landowner a means of storing waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design: floor area 4,368 ft², (42' X 104'); 8' timber wall height (only 4' of wall which contains the manure is considered on scenario), 10"x10" post embedded 6' in the ground, reinforced concrete floor, open at each end of structure. Timber Wall/foundation must be designed to support roof (367- Roofs & Covers).

Scenario Feature Measure: Square Foot Floor Area

Scenario Unit: Square Foot

Scenario Typical Size: 4,368

Scenario Cost: \$37,636.85

Scenario Cost/Unit: \$8.62

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|---|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Excavation, Common Earth, side cast, small equipment | 48 | Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor. | Cubic yard | \$2.36 | 139 | \$328.04 |
| Earthfill, Roller Compacted | 49 | Earthfill, roller or machine compacted, includes equipment and labor | Cubic yard | \$4.38 | 81 | \$354.78 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 10 | \$4,997.40 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic yard | \$5.75 | 139 | \$799.25 |
| Concrete, CIP, formless, non reinforced | 36 | Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$158.17 | 8 | \$1,265.36 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 67 | \$15,377.17 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 139 | \$500.40 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 204 | \$754.80 |

Equipment/Installation

| | | | | | | |
|------------------------------------|------|--|------------|--------|-----|----------|
| Stripping and stockpiling, topsoil | 1199 | Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor. | Cubic Yard | \$0.88 | 204 | \$179.52 |
|------------------------------------|------|--|------------|--------|-----|----------|

Labor

| | | | | | | |
|-----------------------|-----|--|------|---------|----|------------|
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hour | \$24.48 | 80 | \$1,958.40 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 30 | \$1,224.60 |

Materials

| | | | | | | |
|--|------|---|------------|---------|------|------------|
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners | Board Foot | \$0.85 | 1664 | \$1,414.40 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor. | Board Foot | \$1.70 | 3113 | \$5,292.10 |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials, equipment and labor | Cubic yard | \$24.63 | 81 | \$1,995.03 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|------------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 4 | \$1,050.56 |

Practice: 313 - Waste Storage Facility

Scenario: #22 - Concrete Stacking Slab without Curb

Scenario Description:

This scenario consists of a reinforce concrete slab to stack dry or semi-solid manure on. Walls or curbing not included. This scenario is intended to store dry or semi-solid manure. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

The typical stacking facility is 40' wide by 50' long (2000 SF). The facility floor is 5" concrete slab reinforced with #4 rebar at 18" o.c. Slab is constructed on 18" of fill to keep manure above seasonal high water table. Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Scenario Feature Measure: Area of Concrete Slab

Scenario Unit: Square Foot

Scenario Typical Size: 2,000

Scenario Cost: \$12,148.26

Scenario Cost/Unit: \$6.07

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|--|------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 111 | \$410.70 |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 111 | \$399.60 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 31 | \$7,114.81 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 10 | \$408.20 |
| Materials | | | | | | |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials, equipment and labor | Cubic yard | \$24.63 | 74 | \$1,822.62 |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 37 | \$1,322.01 |
| Mobilization | | | | | | |
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 2 | \$525.28 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |

Practice: 313 - Waste Storage Facility

Scenario: #23 - Concrete Stacking Slab with Curb

Scenario Description:

This scenario consists of a reinforce concrete slab to stack dry or semi-solid manure on. 2' wall or curb included. This scenario is intended to store dry or semi-solid manure. Curbing is necessary to help contain manure is sometimes wetter than normal. It also aids in the collection of manure when it is field applied. The purpose of this practice is to properly store manure and other agricultural by-products until they can be hauled away from the site for proper disposal or utilization on land at agronomical rates. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated practices: 342-Critical Area Planting, 362-Diversion, 561-Heavy Use Area Protection, 558-Roof Runoff Structure, 317-Composting Facility, 633-Waste Recycling, 634-Waste Transfer, 635-Vegetated Treatment Area

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

The typical stacking facility is 40' wide by 50' long (2000 SF). The facility floor is 5" concrete slab reinforced with #4 rebar at 18" o.c. 2' high concrete curb or wall along three sides is included. Slab is constructed on 18" of fill to keep manure above seasonal high water table. Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Scenario Feature Measure: Area of Concrete Slab

Scenario Unit: Square Foot

Scenario Typical Size: 2,000

Scenario Cost: \$18,395.01

Scenario Cost/Unit: \$9.20

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|---|------|---|------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Earthfill, Dumped and Spread | 51 | Earthfill, dumped and spread without compaction effort, includes equipment and labor | Cubic yard | \$3.60 | 111 | \$399.60 |
| Excavation, common earth, large equipment, 150 ft | 1223 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor. | Cubic Yard | \$3.70 | 111 | \$410.70 |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 31 | \$7,114.81 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 12.5 | \$6,246.75 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 10 | \$408.20 |
| Materials | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 37 | \$1,322.01 |
| Aggregate, Gravel, Ungraded, Quarry Run | 1099 | Includes materials, equipment and labor | Cubic yard | \$24.63 | 74 | \$1,822.62 |

Mobilization

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|----------|
| Mobilization, medium equipment | 1139 | Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds. | Each | \$262.64 | 2 | \$525.28 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 2 | \$145.04 |

Practice: 313 - Waste Storage Facility

Scenario: #24 - Plastic Tank

Scenario Description:

This scenario consists of installing a buried plastic tank that has a design storage volume of 10,000 gallons (1340 cubic feet). The tank is buried with 2' of cover. The tank can be used to store silage leachate as part of a silage leachate collection system. This practice will address soil and water quality by reducing the pollution potential to soil, surface water and ground water.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Access Road (560), Waste Transfer (634), Heavy Use Area Protection (561), Roof and Covers (367), Solid/Liquid Waste Separation Facility (632), Diversion (362), Subsurface Drain (606), Pumping Plant (533) and Underground Outlet (620).

Before Situation:

Manure and other agricultural by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or other location, or are being transported but not properly utilized or disposed of. This situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwaters, in addition to the use of excessive amounts of fertilizers.

After Situation:

Manure and other agricultural by-products are being controlled, by the collection at the source, and stored temporarily, at an environmentally suitable location, until such time that they are disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Tank typically 141" diameter x 160" deep, with a total volume of 10,000 gallons (1340 CF). Sizing based on manure, other wastes, rainfall, lot runoff, etc. as appropriate.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 1,340

Scenario Cost: \$16,107.74

Scenario Cost/Unit: \$12.02

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|-------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Excavation, common earth, large equipment, 50 ft | 1222 | Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 50 feet. Includes equipment and labor. | Cubic Yard | \$1.56 | 875 | \$1,365.00 |
| Geotextile, woven | 42 | Woven Geotextile Fabric. Includes materials, equipment and labor | Square Yard | \$2.51 | 30 | \$75.30 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic yard | \$5.75 | 773 | \$4,444.75 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 4 | \$163.28 |
| Materials | | | | | | |
| Tank, rinsate or chemical storage, > 1,000 gal | 2397 | Poly tank reservoir for storing rinsate or other liquid agrichemicals. Greater than 1,000 gallon capacity. Materials only. | Gallon | \$0.77 | 10000 | \$7,700.00 |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 52 | \$1,857.96 |
| Mobilization | | | | | | |
| Mobilization, large equipment | 1140 | Equipment >150HP or typical weights greater than 30,000 pounds or loads requiring over width or over length permits. | Each | \$501.45 | 1 | \$501.45 |

Practice: 313 - Waste Storage Facility

Scenario: #25 - Timber Sided with Concrete Floor

Scenario Description:

Install a three sided timber posts and plank walls with concrete floor. No roof! Scenarios is intended for small operations with relatively dry manure such as poultry or horses. Facility is constructed to store wastes as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Nutrient Management (590), Heavy Use Area Protection (561), 342-Critical Area Planting, 362-Diversion, 558-Roof Runoff Structure, and 317-Composting Facility

Before Situation:

Manure and other agricultural waste by-products are not being utilized or controlled in an environmentally safe manner. The wastes are either accumulating at the source, or are being transported but not properly utilized or disposed of. This situation poses an environmentally threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

Manure and other agricultural by-products are collected and stored near the the source until such time that the manure can be disposed of or utilized in a proper manner, typically in accordance with a nutrient management plan.

Typical design: Scenario is based upon "NH WSF Post and Plank Details". Facility is typically constructed above ground. Typical size is 30' long by 20' wide (inside curb to inside curb wall) with 6' high walls. "Strike Full" capacity = 3600 CF. Concrete slab extends beyond the inside dimension of the timber wall by ~2 feet. The concrete slab extends 12' beyond the open end of the facility. Walls are typically constructed of 6" x 10" PT, 10' long, timber post spaced 4 feet o.c. PT 2" planking is installed on the inside of the posts with the bottom 2 feet consisting of a 6" concrete curb. Concrete floor is typically 5" thick with rebar reinforcement. Floor is underlain by 6" of drainfill material.

Scenario Feature Measure: "Strike Full" Volume

Scenario Unit: Cubic Foot

Scenario Typical Size: 3,600

Scenario Cost: \$12,889.68

Scenario Cost/Unit: \$3.58

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|---|------------|-----------------|----------|------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 17 | \$3,901.67 |
| Concrete, CIP, formed reinforced | 38 | Steel reinforced concrete formed and cast-in-placed in formed structures such as walls or suspended slabs by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$499.74 | 3 | \$1,499.22 |
| Earthfill, Manually Compacted | 50 | Earthfill, manually compacted, includes equipment and labor | Cubic yard | \$5.75 | 36 | \$207.00 |
| Hydraulic Excavator, .5 CY | 930 | Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included. | Hour | \$57.52 | 20 | \$1,150.40 |
| Plate compactor | 1915 | Manually guided vibratroy plate compactor. Equipment only. | Hour | \$4.97 | 4 | \$19.88 |
| Labor | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hour | \$24.48 | 30 | \$734.40 |
| Equipment Operators, Light | 232 | Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers | Hour | \$24.30 | 20 | \$486.00 |
| Skilled Labor | 230 | Labor requiring a high level skill set: Includes carpenters, welders, electricians, conservation professionals involved with data collection, monitoring, and or record keeping, etc. | Hour | \$39.49 | 30 | \$1,184.70 |

Materials

| | | | | | | |
|--|------|---|------------|---------|------|------------|
| Dimension Lumber, Treated | 1044 | Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners | Board Foot | \$0.85 | 656 | \$557.60 |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 20 | \$714.60 |
| Lumber, planks, posts and timbers, treated | 1609 | Treated dimension lumber with nominal thickness greater than 2". Includes lumber and fasteners. Does not include labor. | Board Foot | \$1.70 | 1200 | \$2,040.00 |

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|----------|---|----------|
| Mobilization, small equipment | 1138 | Equipment <70 HP but can't be transported by a pick-up truck or with typical weights between 3,500 to 14,000 pounds. | Each | \$176.65 | 1 | \$176.65 |
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 3 | \$217.56 |

Practice: 313 - Waste Storage Facility

Scenario: #26 - Concrete Liner upto 15K Cubic Feet

Scenario Description:

Install a water tight concrete liner inside an earthen WSF to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Solid/Liquid Waste Separation Facility (632), and Pumping Plant (533).

Before Situation:

Manure and other agricultural waste by-products are not being utilized, controlled, or managed in an environmentally safe manner. Insitu soils do not meet NRCS permeability requirements. The situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

A watertight concrete liner is desired to properly store manure and other agricultural waste by-products in an environmentally safe manner. Concrete liner is desired to minimize seepage of ag. cultural waste into the ground water while allowing the operator to mobilize equipment into the waste storage facility so he/she can remove accumulated solids and sand bedding. This facility will also allow the operator to store waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design : Liner will be installed on the inside slope of an earthen waste storage facility, liner will cover the bottom and side slopes of the facility. The liner will be 5" thick with steel rebar reinforcement. 4" of drainfill material will be placed and compacted on the bottom to absorb excess water produced by rain or small seeps. Drainfill for side slopes is not needed. Watertight construction joints will have to be installed at critical locations in the liner. Typical liner size = 15,232 square feet. (WSF - 12' Deep, 60' x 60' at bottom, 2.5 to 1 side slopes)

Scenario Feature Measure: Square Feet of Liner

Scenario Unit: Square Foot

Scenario Typical Size: 15,232

Scenario Cost: \$61,303.67

Scenario Cost/Unit: \$4.02

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|------------|-----------------|----------|-------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 241 | \$55,311.91 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 12 | \$2,310.96 |
| Plate compactor | 1915 | Manually guided vibratroy plate compactor. Equipment only. | Hour | \$4.97 | 4 | \$19.88 |
| Labor | | | | | | |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 10 | \$408.20 |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hour | \$24.48 | 20 | \$489.60 |
| Materials | | | | | | |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 44 | \$1,572.12 |
| Waterstop, Bentonite, half-round, 3/4"x 3/8" | 2362 | Flexible and expandible bentonite strip for concrete construction. Half round profile of 3/4" x 3/8". Includes materials and shipping only. | Foot | \$2.34 | 416 | \$973.44 |

Mobilization

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|---------|---|----------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 3 | \$217.56 |
|------------------------------------|------|--|------|---------|---|----------|

Practice: 313 - Waste Storage Facility

Scenario: #27 - Concrete Liner over 15K Cubic Feet

Scenario Description:

Install a water tight concrete liner inside an earthen WSF to store wastes such as manure, wastewater, and contaminated runoff as part of an agricultural waste management system. This practice will address soil and water quality by reducing the pollution potential for surface water and groundwater quality degradation.

Potential Associated Practices: Fence (382), Critical Area Planting (342), Nutrient Management (590), Waste Transfer (634), Heavy Use Area Protection (561), Solid/Liquid Waste Separation Facility (632), and Pumping Plant (533).

Before Situation:

Manure and other agricultural waste by-products are not being utilized, controlled, or managed in an environmentally safe manner. Insitu soils do not meet NRCS permeability requirements. The situation poses an environmental threat of excessive nutrients, organics, and pathogens being transported into surface and groundwater resources.

After Situation:

A watertight concrete liner is desired to properly store manure and other agricultural waste by-products in an environmentally safe manner. Concrete liner is desired to minimize seepage of ag. cultural waste into the ground water while allowing the operator to mobilize equipment into the waste storage facility so he/she can remove accumulated solids and sand bedding. This facility will also allow the operator to store waste until it can be utilized in a proper manner in accordance with a nutrient management plan.

Typical design : Liner will be installed on the inside slope of an earthen waste storage facility, liner will cover the bottom and side slopes of the facility. The liner will be 5" thick with steel rebar reinforcement. 4" of drainfill material will be placed and compacted on the bottom to absorb excess water produced by rain or small seeps. Drainfill for side slopes is not needed. Watertight construction joints will have to be installed at critical locations in the liner. Typical liner size = 30,194 square feet. (WSF - 12' Deep, 110' x 110' at bottom, 2.5 to 1 side slopes)

Scenario Feature Measure: Square Feet of Liner

Scenario Unit: Square Foot

Scenario Typical Size: 30,194

Scenario Cost: \$122,025.80

Scenario Cost/Unit: \$4.04

Cost Details (by category):

| Component Name | ID | Component Description | Unit | Price (\$/unit) | Quantity | Cost |
|--|------|--|------------|-----------------|----------|--------------|
| Equipment/Installation | | | | | | |
| Concrete, CIP, slab on grade, reinforced | 37 | Steel reinforced concrete formed and cast-in-placed as a slab on grade by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish. | Cubic yard | \$229.51 | 476 | \$109,246.76 |
| Truck, Concrete Pump | 1211 | Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator. | Hour | \$192.58 | 20 | \$3,851.60 |
| Plate compactor | 1915 | Manually guided vibratroy plate compactor. Equipment only. | Hour | \$4.97 | 8 | \$39.76 |
| Labor | | | | | | |
| General Labor | 231 | Labor performed using basic tools such as power tool, shovels, and other tools that do not require extensive training. Ex. pipe layer, herder, concrete placement, materials spreader, flagger, etc. | Hour | \$24.48 | 40 | \$979.20 |
| Supervisor or Manager | 234 | Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc. | Hour | \$40.82 | 20 | \$816.40 |
| Materials | | | | | | |
| Waterstop, Bentonite, half-round, 3/4"x 3/8" | 2362 | Flexible and expandible bentonite strip for concrete construction. Half round profile of 3/4" x 3/8". Includes materials and shipping only. | Foot | \$2.34 | 616 | \$1,441.44 |
| Aggregate, Gravel, Graded | 46 | Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel. | Cubic yard | \$35.73 | 148 | \$5,288.04 |

Mobilization

Mobilization

| | | | | | | |
|------------------------------------|------|--|------|---------|---|----------|
| Mobilization, very small equipment | 1137 | Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously. | Each | \$72.52 | 5 | \$362.60 |
|------------------------------------|------|--|------|---------|---|----------|