

**Practice: 378 - Pond**

**Scenario: #1 - Excavated, all spoil**

**Scenario Description:**

A low-hazard water impoundment structure is installed by excavating a pit and spreading the spoil outside the pool area. Structure is installed on agricultural lands to maintain or improve water quality and to provide water for livestock, fish and wildlife, fire control, developing renewable energy systems, and other related uses. The pond is created solely by excavating material and impounds less than 3 feet against the embankment or spoil. The excavated material is spoiled, not placed in a designed embankment. An earthen spillway is constructed as needed. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

Associated Practices: Critical area Seeding (382), Livestock Pipeline (516), Pond Sealing or Lining, Flexible Membrane (521A), Pumping Plant (533), Watering Facility (614), Structure for Water Control (587), Aquatic Organism Passage (396).

**Before Situation:**

Agricultural land has inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition and/or reduced capacity of conveyances by sediment deposition. An area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control, developing renewable energy systems, and other related uses, and to maintain or improve water quality. Failure of the pond will not result in loss of life; damage to homes, commercial or industrial buildings, main highways, or railroads; or in interruption of the use or service of public utilities.

**After Situation:**

A low-hazard water impoundment pond is constructed by excavating 3,100 cubic yards. The spoil is spread outside the pool area using a dozer or similar excavation equipment. Water quality and/or quantity resource concerns are addressed.

**Scenario Feature Measure:** Excavated Volume

**Scenario Unit:** Cubic Yard

**Scenario Typical Size:** 3,100

**Scenario Cost:** \$7,582.95

**Scenario Cost/Unit:** \$2.45

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$141.76	40	\$5,670.40
<b>Labor</b>						
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	\$41.91	5	\$209.55
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$28.85	40	\$1,154.00
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	\$32.18	8	\$257.44
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$291.56	1	\$291.56

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**Scenario: #2 - Excavated, embankment less than 3 ft**

**Scenario Description:**

An earthen embankment, low-hazard water impoundment structure with a principal spillway conduit and earthen auxiliary spillway (if needed) is constructed on agricultural land to improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, crop and orchard irrigation, and other related uses. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

Associated Practices: Critical area Seeding (382), Livestock Pipeline (516), Pond Sealing or Lining, Flexible Membrane (521A), Pumping Plant (533), Watering Facility (614), Structure for Water Control (587), Aquatic Organism Passage (396).

**Before Situation:**

Agricultural land has inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition and/or reduced capacity of conveyances by sediment deposition. An area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control, or irrigation. Failure of the pond will not result in loss of life; damage to homes, commercial or industrial buildings, main highways, or railroads; or in interruption of the use or service of public utilities.

**After Situation:**

A low hazard pond is constructed by excavating the pool area, preparing the foundation as designed, and using 800 cubic yards to create a 500 foot embankment. The maximum embankment height is less than 3 feet at the auxiliary spillway. The emergency spill way is earthen. If auxiliary controls are needed, use appropriate practice standard. Water quality and/or quantity resource concerns are addressed.

**Scenario Feature Measure:** Embankment Volume

**Scenario Unit:** Cubic Yard

**Scenario Typical Size:** 800

**Scenario Cost:** \$3,123.66

**Scenario Cost/Unit:** \$3.90

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Track Loader, 95HP	935	Equipment and power unit costs. Labor not included.	Hour	\$100.97	8	\$807.76
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$141.76	8	\$1,134.08
<b>Labor</b>						
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	\$41.91	2	\$83.82
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	\$32.18	16	\$514.88
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$291.56	2	\$583.12

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**Scenario: #3 - Embankment Pond without Pipe**

**Scenario Description:**

An earthen embankment structure with an earthen auxiliary spillway is constructed on agricultural land to maintain or improve water quality or to provide water for livestock, fish and wildlife, recreation, fire control, developing renewable energy systems, and other related uses. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

Associated Practices: Critical area Seeding (382), Livestock Pipeline (516), Pond Sealing or Lining, Flexible Membrane (521A), Pumping Plant (533), Watering Facility (614), Structure for Water Control (587), Aquatic Organism Passage (396).

**Before Situation:**

Agricultural land has inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition and/or reduced capacity of conveyances by sediment deposition. An area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control, developing renewable energy systems, and other related uses, and to maintain or improve water quality. Failure of the pond will not result in loss of life; damage to homes, commercial or industrial buildings, main highways, or railroads; or in interruption of the use or service of public utilities.

**After Situation:**

An impoundment pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3100 cubic yards to create an embankment. The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The earthen auxiliary spillway will be constructed as designed. No principle spillway pipe will be used. Water quality and/or quantity resource concerns are addressed.

**Scenario Feature Measure: Embankment Volume**

**Scenario Unit: Cubic Yard**

**Scenario Typical Size: 3,100**

**Scenario Cost: \$16,655.16**

**Scenario Cost/Unit: \$5.37**

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Roller, vibratory, towed	1330	Towed vibratory smooth or tamping foot (sheepsfoot) roller compactor typically 25 ton. Equipment cost only. Does not include pulling equipment. Add Tractor or Dozer.	Hour	\$64.93	40	\$2,597.20
Track Loader, 95HP	935	Equipment and power unit costs. Labor not included.	Hour	\$100.97	40	\$4,038.80
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$141.76	40	\$5,670.40
<b>Labor</b>						
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	\$20.77	40	\$830.80
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	\$41.91	8	\$335.28
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$28.85	80	\$2,308.00
<b>Mobilization</b>						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$291.56	3	\$874.68

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**Scenario: #4 - Embankment Pond with Pipe**

**Scenario Description:**

An earthen embankment with principle spillway conduit and earthen auxiliary spillway is constructed on agricultural land to maintain or improve water quality and to provide water for livestock, fish and wildlife, recreation, fire control, developing renewable energy systems, and other related uses. The resource concerns addressed include inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition, and reduced capacity of conveyances by sediment deposition.

Associated Practices: Critical area Seeding (382), Livestock Pipeline (516), Pond Sealing or Lining, Flexible Membrane (521A), Pumping Plant (533), Watering Facility (614), Structure for Water Control (587), Aquatic Organism Passage (396).

**Before Situation:**

Agricultural land has inadequate livestock water, excessive suspended sediment and turbidity in surface water, damage from sediment deposition and/or reduced capacity of conveyances by sediment deposition. An area exists where water could naturally pool or run off to create a pond for livestock, wildlife, fire control, developing renewable energy systems, and other related uses, and to maintain or improve water quality. Failure of the pond will not result in loss of life; damage to homes, commercial or industrial buildings, main highways, or railroads; or in interruption of the use or service of public utilities.

**After Situation:**

The typical low hazard pond is constructed by excavating the pool area, constructing the auxiliary spillway, preparing the foundation as designed, and using 3100 cubic yards to create an embankment. The product of the storage times the effective height of the dam is less than 3,000. The effective height of the dam is 35 feet or less. The principal spillway is installed using an approved conduit material. The earthen auxiliary spillway will be constructed as designed.

**Scenario Feature Measure: Embankment Volume**

**Scenario Unit: Cubic Yard**

**Scenario Typical Size: 3,100**

**Scenario Cost: \$24,824.64**

**Scenario Cost/Unit: \$8.01**

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Track Loader, 95HP	935	Equipment and power unit costs. Labor not included.	Hour	\$100.97	48	\$4,846.56
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$141.76	48	\$6,804.48
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	1.6	\$3.78
Roller, vibratory, towed	1330	Towed vibratory smooth or tamping foot (sheepsfoot) roller compactor typically 25 ton. Equipment cost only. Does not include pulling equipment. Add Tractor or Dozer.	Hour	\$64.93	48	\$3,116.64
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	\$420.16	3	\$1,260.48
<b>Labor</b>						
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	\$41.91	8	\$335.28
Equipment Operators, Heavy	233	Includes: Cranes, Hydraulic Excavators >=50 HP, Dozers, Paving Machines, Rock Trenchers, Trenchers >=12", Dump Trucks, Ag Equipment >=150 HP, Scrapers, Water Wagons.	Hour	\$28.85	96	\$2,769.60
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	\$32.18	48	\$1,544.64

**Materials**

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Trash Guard, metal	1608	Trash Guard, fabricated-steel, includes materials, equipment, and labor to transport and place Conical shaped trash guard for drop inlet spillway. Typically fabricated of CMP and steel. Includes materials, equipment, and labor to fabricate and transport	Pound	\$2.39	118	\$282.02
Pipe, CMP, 30", 16 Gauge	1742	30" Corrugated Metal Pipe, Galvanized, Uncoated, 16 gage. Material cost only.	Foot	\$28.57	8	\$228.56
Pipe, CMP, 18", 16 Gauge	1743	18" Corrugated Metal Pipe, Galvanized, Uncoated, 16 gage. Material cost only.	Foot	\$17.86	98	\$1,750.28
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$31.40	19.6	\$615.44

**Mobilization**

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$291.56	3	\$874.68
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	\$196.10	2	\$392.20