

Practice: 614 - Watering Facility

Scenario: #2 - 2-hole freeze-proof watering trough

Scenario Description:

A permanent, 2-hole freeze-proof watering tank constructed of approved materials and installed on a 3.5' x 2.5' x 5" concrete foundation with geotextile and 4" gravel, to provide water for livestock. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

Livestock have access to streams, ponds and/or lakes causing shoreline and/or streambank erosion and delivering non-point source pollutants directly to the receiving water, grazing patterns of the livestock are poorly distributed and livestock must walk excessive distances to access water, degrading water quality and causing soil erosion.

After Situation:

A 2-hole freeze-proof watering tank is installed to provide water for livestock and/or improve animal and waste distribution/nutrient cycling. All needed pipelines are installed using Livestock Pipeline (516). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574) or Water Harvesting Catchment ((636). Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Scenario Feature Measure: Each watering facility

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$1,276.25

Scenario Cost/Unit: \$1,276.25

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	\$109.07	0.1	\$10.91
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.14	1	\$2.14
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$57.21	2	\$114.42
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	\$18.79	8	\$150.32
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$19.43	2	\$38.86
Materials						
Tank, Freeze Proof, 2 hole	280	Tank, Freeze Proof with 2 drinking holes. Includes materials and shipping.	Each	\$692.94	1	\$692.94
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	\$39.29	0.037	\$1.45
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	0.1	\$4.01
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$261.20	1	\$261.20

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Scenario: #3 - 4-hole freeze-proof watering trough

Scenario Description:

A permanent, 4-hole freeze-proof watering tank is constructed of approved materials and installed on a 4 x 6' x 5" concrete foundation with geotextile and 4" gravel, installed to provide water for livestock. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

Livestock have access to streams, ponds and/or lakes causing shoreline and/or streambank erosion and delivering non-point source pollutants directly to the receiving water, grazing patterns of the livestock are poorly distributed and livestock must walk excessive distances to access water, degrading water quality and causing soil erosion.

After Situation:

A 4-hole freeze-proof watering tank is installed to provide water for livestock and/or improve animal distribution/nutrient cycling. All needed pipelines are installed using Livestock Pipeline (516). The water source is from a Water Well (642), Pumping Plant (533), Spring Development (574), Pond (378) or Water Harvesting Catchment ((636), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns are protected by using Heavy Use Area Protection (561) as appropriate.

Scenario Feature Measure: Each watering facility

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$1,588.04

Scenario Cost/Unit: \$1,588.04

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.14	3	\$6.42
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$57.21	2.5	\$143.03
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	\$109.07	0.4	\$43.63
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	\$18.79	8	\$150.32
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$19.43	2.5	\$48.58
Materials						
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	\$39.29	0.037	\$1.45
Tank, Freeze Proof, 4 hole	281	Tank, Freeze Proof with 4 drinking holes. Includes materials and shipping.	Each	\$913.39	1	\$913.39
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	0.5	\$20.03
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$261.20	1	\$261.20

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Scenario: #5 - Tank, 500 to 1000 gallons

Scenario Description:

A 500 gallon (6' Dia.) concrete tank watering trough constructed of approved materials, installed to provide water for livestock, The tank with bottom liner watering trough is installed to provide water for livestock on a 8' x 8' x 5" concrete foundation. Geotextile and gravel are installed under the concrete pad to protect access from livestock hooves that could cause erosion. All watering facilities will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. This watering facility will address the resource concerns of inadequate supply of water for livestock and or wildlife, habitat degradation, water quality, and undesirable plant productivity and health.

Before Situation:

Livestock have access to streams, ponds and/or lakes causing shoreline and/or streambank erosion and delivering non-point source pollutants directly to the receiving water, grazing patterns of the livestock are poorly distributed and livestock must walk excessive distances to access water, degrading water quality and causing soil erosion.

After Situation:

A 6' dia. concrete tank or steel with bottom liner watering trough is installed to provide water for livestock and/or improve animal distribution/nutrient cycling on a 8' x 8' concrete foundation. Geotextile and gravel are installed under the concrete pad to protect access from livestock hooves that could cause erosion. All needed pipelines are installed using Livestock Pipeline (516). Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), Water Harvesting Catchment ((636), or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Scenario Feature Measure: Each watering facility

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$1,743.00

Scenario Cost/Unit: \$1,743.00

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	\$109.07	1	\$109.07
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.14	8	\$17.12
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$57.21	2.5	\$143.03
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$19.43	2.5	\$48.58
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	\$18.79	8	\$150.32
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound	Each	\$24.47	1	\$24.47
Tank, Concrete, 500 gallon	1049	Concrete tank for water storage, with riser and lid. Includes materials and delivery	Each	\$947.71	1	\$947.71
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	\$39.29	0.037	\$1.45
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$40.06	1	\$40.06
Mobilization						

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$261.20	1	\$261.20
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Scenario: #8 - Portable Trough, less than 100 gallons

Scenario Description:

Provide an adequate amount and quality of drinking water for livestock and address the associated resource concerns such as excessive nutrient buildup, grazing management, poor plant diversity and quality and soil/water quality. This scenario is used for a pasture rotation, Prescribed Grazing (528), or enhanced pasture management utilization by installing a small water trough (100 gallon) for water supply. The trough is moved from paddock to paddock as outlined in the plan. Because the system does not flow continuously a float is needed to maintain the water level within the portable trough. A typical system will have six paddocks using a single trough.

Before Situation:

Livestock have access to streams, ponds and/or lakes causing shoreline and/or streambank erosion and delivering non-point source pollutants directly to the receiving water, grazing patterns of the livestock are poorly distributed and livestock must walk excessive distances to access water, degrading water quality and causing soil erosion.

After Situation:

Improved: water/soil quality, grazing management, plant diversity and quality, animal and manure distribution, water quality, and animal health. A portable heavy duty polyethylene trough (plastic or PE has to meet 10 year life per new lifespan) is installed as part of an intensive rotational grazing management system. The trough is connected to a water supply system via quick coupler. The trough is secured to wooden posts next to the hydrant and protected by wooden boards attached to the posts. Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), Water Harvesting Catchment ((636), Prescribed Grazing (528) or Livestock Pipeline (516) as appropriate. Areas around watering facilities where animal concentrations or overflow from the watering facility will cause resource concerns will be protected by using Heavy Use Area Protection (561) as appropriate.

Scenario Feature Measure: Number of Portable Troughs installed

Scenario Unit: Each

Scenario Typical Size: 1

Scenario Cost: \$119.35

Scenario Cost/Unit: \$119.35

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<i>Materials</i>						
Tank, Polyethylene, 100 gallon	290	Portable heavy duty rubber stock tank.	Each	\$95.41	1	\$95.41
Tank, Float Valve Assembly	1077	Float Valve, Stem, Swivel, Float Ball	Each	\$23.94	1	\$23.94

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Scenario: #9 - Water Ramp,Rock on Geotextile

Scenario Description:

A permanent watering facility-water ramp as a means for providing drinking water by storing or providing controlled access for livestock or wildlife constructed of approved materials consisting of rock and or gravel surfacing on geotextile fabric foundation. The watering facility will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. The watering facility includes all materials, equipment, labor and needed vegetation of disturbed areas to install the surfacing material and will address the resource concerns of inadequate water, soil erosion, water quality degradation and undesirable plant productivity and health.

Before Situation:

This practice applies to all land uses where there is a need for a watering facility for livestock or wildlife, where there is a source of water that is adequate in quantity and quality for the purpose, and where soils and topography are suitable for a facility to provide controlled access to drinking water for livestock or wildlife to provide daily water requirements, improve animal distribution to better utilize grazing resources, provide a water source that is an alternative to a sensitive resource.

After Situation:

A permanent watering facility-water ramp as a means for providing drinking water by storing or providing controlled access for livestock or wildlife constructed of approved materials consisting of 640 square feet of rock and or gravel surfacing on 84 square yards of geotextile fabric foundation for livestock or wildlife constructed of approved materials for providing controlled access to drinking water. The watering facility will be constructed from approved durable materials that have a life expectancy that meets or exceeds the planned useful life of the installation. The watering facility will address the resource concerns of inadequate supply of water for livestock or wildlife, habitat degradation, water quality, and undesirable plant productivity and health. The watering facility includes all materials, equipment, and labor to install the surfacing material and any needed vegetation for stabilizing disturbed areas. Any needed water source installation will use Water Well (642), Pumping Plant (533), Spring Development (574), Pond (378), or Livestock Pipeline (516) as appropriate. All fencing will use Fence (382).

Scenario Feature Measure: Area of Ramp

Scenario Unit: Square Foot

Scenario Typical Size: 640

Scenario Cost: \$1,169.34

Scenario Cost/Unit: \$1.83

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	\$1.88	24	\$45.12
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	\$0.87	12	\$10.44
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	\$18.79	5	\$93.95
Materials						
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic yard	\$27.61	12	\$331.32
Geotextile, non-woven, heavy weight	1210	Non-woven greater than 8 ounce/square yard geotextile with staple anchoring. Materials and shipping only.	Square Yard	\$4.01	84	\$336.84
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	\$39.29	0.008	\$0.31
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	\$175.68	2	\$351.36