

**Practice:** 412 - Grassed Waterway

**Scenario:** #1 - Base Waterway

**Scenario Description:** Typical grassed waterway is 500 ' long, 12' bottom, 8:1 side slopes, 1.5' depth, half excavation. A grassed waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding area is 20% greater than waterway area to account for disturbed areas. Costs include excavation and associated work to construct the overall shape and grade of the waterway.

**Before Situation:** The field has a small gully which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and poor cropping techniques. Grassed waterway is also commonly installed to convey runoff from concentrated flows, terraces, diversions, or water control structures or similar practices to a suitable, stable outlet.

**After Situation:** Installed grassed waterway is 500 ' long, 12' bottom, 8:1 side slopes, 1.5' depth. The practice is installed using a dozer. Use Critical Area Planting (342) for establishment of waterway vegetation. If erosion control blankets or mulching for seedbed establishment/protection are needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed according to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

**Scenario Feature Measure:** Length of Waterway

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 15000

**Total Scenario Cost:** \$3,801.16

**Scenario Cost/Unit:** \$0.25

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**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	\$43.61	4	\$174.45
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**Mobilization**

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$255.27	1	\$255.27
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**Equipment Installation**

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	\$2.50	1350	\$3,371.44
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**Practice:** 412 - Grassed Waterway

**Scenario:** #2 - Base Waterway, Seeding

**Scenario Description:** Typical grassed waterway is 500' long, 12' bottom, 8:1 side slopes, 1.5' depth, half excavation. (Foot print of waterway = 500' x 36' = 18,000 SF). A grassed waterway that is a shaped or graded channel and is established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. Waterway area measured from top of bank to top of bank. Seeding area is 20% greater than waterway area to account for disturbed areas. Costs include excavation, associated work to construct the overall shape and grade of the waterway as well as lime, fertilizer, and seed.

**Before Situation:** The field has a small gully which is cutting deeper into the field as time goes on, so it needs to be stopped or controlled. Excessive sedimentation and soil erosion as a result from ephemeral or classic gully erosion. Gully has formed in field as a result of excessive runoff and poor cropping techniques. Grassed waterway is also commonly installed to convey runoff from concentrated flows, terraces, diversions, or water control structures or similar practices to a suitable, stable outlet.

**After Situation:** Installed grassed waterway is 500' long, 12' bottom, 8:1 side slopes, 1.5' depth. (Foot print of waterway = 500' x 36' = 18,000 SF). The practice is installed using a dozer. If erosion control blankets for seedbed establishment/protection is needed, use conservation practice Mulching (484). Drainage tile, if needed, will be installed according to Subsurface Drain (606). Outlets, if needed will be installed using Structure for Water Control (587). If inlet Structures are needed with the drainage tile, then those will be installed using Underground Outlet (620).

**Scenario Feature Measure:** Area of Waterway in Square Feet

**Scenario Unit:** Square Foot

**Scenario Typical Size:** 18000

**Total Scenario Cost:** \$5,210.97

**Scenario Cost/Unit:** \$0.29

**Cost Details**

Component Name	Id	Description	Unit	Cost	Qty	Total
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**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	\$26.15	11	\$287.67
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	\$43.61	4	\$174.45

**Equipment Installation**

Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	\$8.38	1	\$8.38
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	\$2.50	1340	\$3,346.46
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.86	1	\$6.86
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$10.42	1	\$10.42
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acre	\$12.60	1	\$12.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	\$11.12	1	\$11.12

**Materials**

Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	\$113.27	1	\$113.27
Nitrogen (N), Urea	71	Price per pound of N supplied by Urea. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.60	25	\$15.06
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	\$70.93	1	\$70.93
Phosphorus, P2O5	73	Price per pound of P2O5 supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.78	25	\$19.53

Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.44	25	\$10.89
Straw bales	2186	Straw bales buried at defined intervals to halt rill and gulley formation. Materials and shipping only.	Each	\$4.78	65	\$310.94
Three Species Mix, Cool Season, Introduced Perennial Grass	2315	Cool season, introduced grass mix. Includes material and shipping only.	Acre	\$46.58	1	\$46.58

**Mobilization**

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$255.27	3	\$765.82
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