

Practice: 412 - Grassed Waterway

Scenario: #1 - Base Waterway

Scenario Description:

A grassed waterway 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. A typical practice is 1200' long, 12' bottom, 8:1 side slopes, 1.5' depth, half excavation. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. The waterway construction area includes the excavated width plus the theoretical width for two berms (one on each side) that are calculated based on the excavated area and are 1 foot tall with 5:1 side slopes. The seeding area varies, but is typically less than waterway construction area. 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 is occurring as a result of ephemeral or classic gully erosion. The gully has formed in field as a result of excessive runoff and poor cropping techniques. A 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:

The installed grassed waterway is 1200' 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). Subsurface Drains (606) or Underground Outlets (620) may be needed to avoid saturated conditions.

Scenario Feature Measure: Acres of Waterway Construction Area

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$1,447.40

Scenario Cost/Unit: \$1,447.40

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	\$1.29	800	\$1,032.00
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	\$415.40	1	\$415.40

Practice: 412 - Grassed Waterway

Scenario: #2 - Base Waterway with Gypsum

Scenario Description:

A grassed waterway with gypsum is a shaped or graded channel treated with gypsum to control internal erosion and established with suitable vegetation to carry surface water at a non-erosive velocity to a stable outlet. A typical practice is 1200' long, 12' bottom, 8:1 side slopes, 1.5' depth, with a 3 inch thick soil and gypsum liner. This practice addresses Concentrated Flow Erosion (Classic Gully & Ephemeral Erosion) and Excessive Sediment in surface waters. The waterway construction area includes the excavated width plus the theoretical width for two berms (one on each side) that are calculated based on the excavated area and are 1 foot tall with 5:1 side slopes. The seeding area varies, but is typically less than waterway construction area. Costs include excavation, gypsum, and associated work to construct the overall shape and grade of the waterway.

Before Situation:

The field has dispersive clay soils and 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 is occurring as a result of ephemeral or classic gully erosion. The gully has formed in field as a result of excessive runoff, dispersive clay soils, and poor cropping techniques. A grassed waterway with gypsum 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:

The installed grassed waterway is 1200' long, 12' bottom, 8:1 side slopes, 1.5' depth with a 3 inch thick soil and gypsum liner. 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). Subsurface Drains (606) or Underground Outlets (620) may be needed to avoid saturated conditions.

Scenario Feature Measure: Acres of Waterway Construction Area

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$3,320.06

Scenario Cost/Unit: \$3,320.06

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	\$1.29	800	\$1,032.00
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	\$46.46	8	\$371.68
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$20.15	8	\$161.20
Materials						
Gypsum, Ground Ag Grade, Bulk	1224	Agricultural grade quarry ground gypsum (CaCO4) for dispersive soil treatment. Materials and delivery only.	Ton	\$34.35	32.67	\$1,122.21
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	\$415.40	1	\$415.40
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$217.57	1	\$217.57