

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	5
Scenario Name	6in < UO ≤ 12in w/Drop Inlet
Scenario Description	Install 500 feet of 10" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench is excavated 46" deep and 28" wide by hydraulic track excavator. Costs include 10" HDPE pipe, Precast concrete drop inlet with steel grate, trench excavation, trench backfill, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$3,857.05	\$7.71
Equipment/Installation	\$589.20	\$1.18
Labor	\$134.32	\$0.27
Mobilization	\$396.10	\$0.79
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$4,976.67	\$9.95

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1243	Pipe, HDPE, 10" CPT, Double Wall	Pipe, Corrugated HDPE Double Wall, 10" diameter with soil tight joints - AASHTO M252. Material cost only.	Foot	\$6.49	500	\$3,245.00
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$550.99	1	\$550.99
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.38	142	\$337.96
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.74	142	\$247.08
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	4	\$134.32
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	2	\$396.10

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Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	3
Scenario Name	6in < UO ≤ 12in w Riser
Scenario Description	Install 500 feet of 10" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench Excavation is 46" deep and 20" wide. Costs include 10" HDPE pipe, 12" Perforated PVC Riser Inlet, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,324.86	\$4.65
Equipment/Installation	\$1,300.51	\$2.60
Labor	\$173.26	\$0.35
Mobilization	\$198.05	\$0.40
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$3,996.68	\$7.99

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1273	Pipe, HDPE, 10", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 10" diameter - ASTM F667. Material cost only.	Foot	\$3.77	500	\$1,885.00
Materials	1263	Inlet, riser, 10"	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 10" diameter. Materials only.	Foot	\$189.40	2	\$378.80
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1259	Trencher, wheel type	Wheel type Trencher, typically 350 HP with 6' max depth. Equipment only.	Each	\$259.27	5	\$1,296.35
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	\$21.22	5	\$106.10
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	2	\$67.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	1	\$198.05

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Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	9
Scenario Name	UO > 30" w/drop inlet
Scenario Description	Install 500 feet of 36" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench excavation is 66" deep x 64" wide. Costs include 36" HDPE pipe, Precast concrete drop inlet with steel grate, trench excavation, bedding material, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$22,109.61	\$44.22
Equipment/Installation	\$3,032.98	\$6.07
Labor	\$134.32	\$0.27
Mobilization	\$396.10	\$0.79
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$25,673.01	\$51.35

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1248	Pipe, HDPE, 36", CPT Double Wall	Pipe, Corrugated HDPE Double Wall, 36" diameter with soil tight joints - AASHTO M294. Material cost only.	Foot	\$37.15	500	\$18,575.00
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Materials	46	Aggregate, Gravel, Graded, Washed	Gravel, includes materials, equipment and labor to transport and place	Cubic yard	\$25.73	135	\$3,473.55
Equipment/Installation	1258	Catch Basin, concrete, 3'x3'x6'	Catch Basin, Precast Concrete, 3' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Each	\$795.78	1	\$795.78
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.38	542	\$1,289.96
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.74	542	\$943.08
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	4	\$134.32
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	2	\$396.10

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Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	4
Scenario Name	UO ≤ 6" w/drop inlet
Scenario Description	Install 500 feet of 6" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench is excavated 42" deep and 18" wide by hydraulic track excavator. Costs include 6" SDR-35 pipe, Precast concrete drop inlet with steel grate, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$2,337.05	\$4.67
Equipment/Installation	\$403.80	\$0.81
Labor	\$67.16	\$0.13
Mobilization	\$396.10	\$0.79
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$3,204.11	\$6.41

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$550.99	1	\$550.99
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Materials	993	Pipe, PVC, 6", SDR 35	Materials: - 6" - PVC - SDR 35 - ASTM D3034	Foot	\$3.45	500	\$1,725.00
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.38	97	\$230.86
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.74	97	\$168.78
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	2	\$67.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	2	\$396.10

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Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	8
Scenario Name	24in < UO ≤ 30in w/drop inlet
Scenario Description	Install 500 feet of 30" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench excavation is 66" deep x 56" wide. Costs include 30" HDPE pipe, Precast concrete drop inlet with steel grate, trench excavation, bedding material, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$17,212.71	\$34.43
Equipment/Installation	\$2,761.06	\$5.52
Labor	\$134.32	\$0.27
Mobilization	\$396.10	\$0.79
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$20,504.19	\$41.01

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1247	Pipe, HDPE, 30", CPT, Double Wall	Pipe, Corrugated HDPE Double Wall, 30" diameter with soil tight joints - AASHTO M294. Material cost only.	Foot	\$28.90	500	\$14,450.00
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Materials	46	Aggregate, Gravel, Graded, Washed	Gravel, includes materials, equipment and labor to transport and place	Cubic yard	\$25.73	105	\$2,701.65
Equipment/Installation	1258	Catch Basin, concrete, 3'x3'x6'	Catch Basin, Precast Concrete, 3' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Each	\$795.78	1	\$795.78
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.38	476	\$1,132.88
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.74	476	\$828.24
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	4	\$134.32
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	2	\$396.10

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	7
Scenario Name	18in < UO ≤ 24in w/drop inlet
Scenario Description	Install 500 feet of 24" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench excavation is 60" x 48" wide. Costs include 24" HDPE pipe, Precast concrete drop inlet with steel grate, 24" HDPE pipe, trench excavation, bedding material, trench backfill, rodent guard and laid up stone headwall at outlet. Practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$13,114.10	\$26.23
Equipment/Installation	\$1,528.56	\$3.06
Labor	\$134.32	\$0.27
Mobilization	\$396.10	\$0.79
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$15,173.08	\$30.35

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1246	Pipe, HDPE, 24", CPT, Double Wall	Pipe, Corrugated HDPE Double Wall, 24" diameter with soil tight joints - AASHTO M294. Material cost only.	Foot	\$20.63	500	\$10,315.00
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$550.99	1	\$550.99
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Materials	46	Aggregate, Gravel, Graded, Washed	Gravel, includes materials, equipment and labor to transport and place	Cubic yard	\$25.73	85	\$2,187.05
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.38	370	\$880.60
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.74	370	\$643.80
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	4	\$134.32
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	2	\$396.10

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	6
Scenario Name	12in < UO ≤ 18 in w/drop inlet
Scenario Description	Install 500 feet of 18" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench excavation is 54" deep x 39" wide. Costs include 18" HDPE pipe, Precast concrete drop inlet with steel grate, trench excavation, bedding material, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$8,305.85	\$16.61
Equipment/Installation	\$1,116.56	\$2.23
Labor	\$134.32	\$0.27
Mobilization	\$396.10	\$0.79
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$9,952.83	\$19.91

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1245	Pipe, HDPE, 18", CPT, Double Wall	Pipe, Corrugated HDPE Double Wall, 18" diameter with soil tight joints - AASHTO M294. Material cost only.	Foot	\$12.30	500	\$6,150.00
Materials	1257	Catch Basin, concrete, 2'x2'x6'	Catch Basin, Precast Concrete, 2' square or round, cast grate, 6' deep. Includes materials, equipment and labor.	Cubic Yard	\$550.99	1	\$550.99
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Materials	46	Aggregate, Gravel, Graded, Washed	Gravel, includes materials, equipment and labor to transport and place	Cubic yard	\$25.73	60	\$1,543.80
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.38	270	\$642.60
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.74	270	\$469.80
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	4	\$134.32
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	2	\$396.10

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	1
Scenario Name	≤ 12" no inlet structure
Scenario Description	Install 300 feet of 8" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench Excavation is 44" deep and 24" wide. Costs include 8" HDPE pipe, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with roof runoff management or similar practices.
Before Practice Situation	Roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	"Clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Diversion (342), Roof Runoff Mangement (558) and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	300

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$670.06	\$2.23
Equipment/Installation	\$342.00	\$1.14
Labor	\$67.16	\$0.22
Mobilization	\$396.10	\$1.32
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$1,475.32	\$4.92

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1272	Pipe, HDPE, 8", PCPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, Perforated, 8" diameter - ASTM F667. Material cost only.	Foot	\$2.03	300	\$609.00
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1220	Excavation, common earth, small equipment, 50 ft	Bulk excavation of common earth with dozer <100 HP with average push distance of 50 feet. Includes equipment and labor.	Cubic Yard	\$2.38	82	\$195.16
Equipment/Installation	1227	Excavation, common earth, side cast, large equipment	Bulk excavation and side casting of common earth with hydraulic excavator with less greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	\$1.74	82	\$142.68
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	2	\$67.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	2	\$396.10

Scenario Worksheet

Practice and Scenario Description:

Information Type	Data
Region	Appalachian
State	Kentucky
Discipline Group	Agricultural Engineering
Practice Code/Name	620 - Underground Outlet
Scenario ID	2
Scenario Name	UO ≤ 6" w Riser
Scenario Description	Install 500 feet of 6" approved plastic pipe to convey stormwater from one location to a suitable and stable outlet. Trench is excavated approximately 42" deep and 15" wide by trencher. Costs include 6" HDPE corrugated single wall plastic tubing, 8" Perforated PVC Riser Inlet, trench excavation, trench backfill, rodent guard and laid up stone headwall at outlet. This practice is often installed in conjunction with terraces, diversions, sediment control basins, waterways or similar practices.
Before Practice Situation	Excessive sedimentation and soil erosion as a result of gully, rill or sheet erosion which exceeds "T" from farm fields and other locations. Also, roof runoff or surface runoff that becomes contaminated with agricultural wastes that significantly contributes to the amount of runoff that has to be stored or treated.
After Practice Situation	Field system meets "T" or "clean" storm water runoff is diverted away from an agricultural waste management system to minimize the volume of runoff that is contaminated by agricultural waste. Associated practices are Critical Area Planting (342), Grassed Waterway (412), Terrace (600), Diversion (342), Water and Sediment Control Basin (638), and Subsurface Drainage (606)
Scenario Feature Measure	Length of Conduit
Scenario Unit	Foot
Scenario Typical Size	500

Cost Summary:

Cost Category	Scenario Cost	Scenario Cost/Unit
Materials	\$875.54	\$1.75
Equipment/Installation	\$1,300.51	\$2.60
Labor	\$173.26	\$0.35
Mobilization	\$198.05	\$0.40
Acquisition of Technical Knowledge	\$0.00	\$0.00
Foregone Income	\$0.00	\$0.00
Total	\$2,547.36	\$5.09

Cost Details:

Cost Category	Component ID	Component Name	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Materials	1242	Pipe, HDPE, 6", CPT, Single Wall	Pipe, Corrugated Plastic Tubing, Single Wall, 6" diameter - ASTM F405. Material cost only.	Foot	\$1.09	500	\$545.00
Materials	1262	Inlet, riser, 8"	Riser, polymer, complete vertical perforated UGO inlet with Tee, orifice plate if needed, 8" diameter. Materials only.	Foot	\$134.74	2	\$269.48
Materials	44	Rock Riprap, Placed with geotextile	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$61.06	1	\$61.06
Equipment/Installation	1260	Compaction, earthfill, vibratory plate	Compaction of earthfill with a walk behind vibratory plate compactor in typical 6-8 inch thick lifts, 2 passes. Includes equipment and labor.	Each	\$2.08	2	\$4.16
Equipment/Installation	1259	Trencher, wheel type	Wheel type Trencher, typically 350 HP with 6' max depth. Equipment only.	Each	\$259.27	5	\$1,296.35
Labor	232	Equipment Operators, Light	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hours	\$21.22	5	\$106.10
Labor	234	Supervisor or Manager	Labor involving supervision or management activities. Includes crew supervisors, foremen and farm/ranch managers time required for adopting new technology, etc.	Hours	\$33.58	2	\$67.16
Mobilization	1139	Mobilization, medium equipment	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	\$198.05	1	\$198.05