Practice: 314 - Brush Management

Scenario: #14 - Chemical, Aerial Applied

Scenario Description: Apply brush management on 160 acres of rangeland, grazed forest, or pasture thru the use of broadcast aerial application of material with low cost chemical(s) to reduce or remove undesirable deciduous species (brush) in uplands and other areas not in or directly adjacent to streams, ponds, or wetlands.

Before Situation: Plant, animal, or wildlife resource concerns associated with uplands and other areas not in or adjacent to stream, ponds, or wetland on grazed range, grazed forest, or pasture which are adversely affected by brush.

After Situation: A 160 acre unit of pasture, grazed range, or grazed forest where reduction or removal of undesirable deciduous species have been accomplished by broadcast or spot treatment chemical application to address plant, animal, and wildlife resource concerns.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 500

Total Scenario Cost: $14,642.78

Scenario Cost/Unit: $29.29

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.95	1	$40.95
Materials						
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$18.77	500	$9,385.42
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	500	$647.78
Equipment Installation						
Chemical, aerial application, fixed wing	947	Chemical application performed by fixed wing aircraft. Includes equipment, power unit and labor costs.	Acre	$9.09	500	$4,547.05
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.59	1	$21.59

Practice: 314 - Brush Management

Scenario: #8 - Chemical, Foliar Spot Treatment

Scenario Description: Apply foliar chemical brush management techniques (aerial fixed wing or ground rig) on isolated upland areas within a 80 acre planning unit (not directly adjacent to streams, ponds or wetlands) associated with rangeland (may include grazed forest, pasture, or other landuses) to control undesirable deciduous species in order to improve ecological/range site conditions. Treatment is applied to 10 acre isolated areas (not adjacent to a stream, wetland or pond), using broadcast/aerial herbicide(s) application, on the entire 10 acres to reduce or remove trees and/or brush which are not appropriate for the site(s). Foliar application of material using the most effecitve, low cost chemical(s).

Before Situation: Plant, animal, or wildlife resource concerns associated with upland areas (not in or adjacent to streams, ponds, or wetlands) on grazed range (incl. grazed forest, pasture, or other landuses) which are adversely affected by undesirable trees and/or brush which degrade ecological site conditions as identified by state specific ecological/range site description.

After Situation: Isolated upland areas infested with undesirable tree and/or shrub species within a range unit (incl. grazed forest, pasture, or other landuse) where reduction or removal of undesirable deciduous species (not adjacent to or within a stream, ponds, or wetlands) has been accomplished through the use of appropriate foliar chemical application to address plant, animal, and wildlife resource concerns, thus improving ecological/range site conditions.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $425.13

Scenario Cost/Unit: $42.51

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$6.92	2	$13.83
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$18.77	4	$75.08
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	10	$12.96
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	4	$169.20
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	2.5	$82.62
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 314 - Brush Management

Scenario: #290 - Chemical - Ground Applied

Scenario Description: Apply brush management on 160 acres of rangeland, grazed forest, or pasture thru the use of broadcast application of material using low cost chemical(s) to reduce or remove undesirable deciduous species (brush) in uplands and other areas not in or directly adjacent to streams, ponds, or wetlands.

Before Situation: Plant, animal, or wildlife resource concerns associated with uplands and other areas not in or adjacent to stream, ponds, or wetland on grazed range, grazed forest, or pasture which are adversely affected by brush.

After Situation: A 160 acre unit of pasture, grazed range, or grazed forest where reduction or removal of undesirable deciduous species have been accomplished by broadcast or spot treatment chemical application to address plant, animal, and wildlife resource concerns.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $4,586.15

Scenario Cost/Unit: $28.66

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.05	2	$80.11
Materials						
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$18.77	160	$3,003.33
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	160	$207.29
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	160	$992.64
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	2	$44.06
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 314 - Brush Management

Scenario: #12 - Chemical, Individual Plant Treatment

Scenario Description: This Practice is for the implementation of brush management on range, pasture or native pasture using Individual Plant Treatment (IPT). The typical method of control is application of herbicides (basal or foliar location) on selected individual plants.

Before Situation: Brush species exceed desired levels resulting in degraded plant condition, loss of forage production, or degraded wildlife habitat. Densities of brush exceed levels indicated in the ecological site descriptions.

After Situation: Brush has been treated to a level which results in improved plant condition, forage production, or wildlife habitat. The typical method of control is application of herbicides (basal or foliar location) on selected individual plants.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $1,420.76

Scenario Cost/Unit: $35.52

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	10	$320.26
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	$61.32	10	$613.15
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.59	3	$64.76
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	8	$10.36
Herbicide, Triazine	1321	Broad spectrum herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$42.78	8	$342.22
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$70.00	1	$70.00

Practice: 314 - Brush Management

Scenario: #7 - Chemical - Riparian

Scenario Description: Apply chemical brush management techniques on an isolated riparian area within a 80 acre planning unit which is directly adjacent to a stream (may include ponds or wetlands) associated with rangeland (may include grazed forest, pasture, or other landuses) to control undesirable deciduous species in order to improve ecological/range site condition. Treatment is applied to a 2 acres isolated area adjacent to a stream which uses broadcast/aerial specialized herbicide(s) application on the entire 2 acres to reduce or remove trees and/or brush which are not appropriate for the site(s).

Before Situation: Plant, animal, or wildlife resource concerns associated with ripairian areas and other areas in or adjacent to the stream (incl. ponds or wetlands) on grazed range (incl. grazed forest, pasture, or other landuses) which are adversely affected by undesirable trees and/or brush which degrade ecological site condition as identified by state specific ecological/range site description.

After Situation: Isolated riprarian community infested with undesirable tree and/or shrub species within a range unit (incl. grazed forest, pasture, or other landuse) where reduction or removal of undesirable deciduous species adjacent to a stream (incl. ponds or wetlands) has been accomplished through the use of appropriate chemical application to address plant, animal, and wildlife resource concerns, thus improving ecological/range site condition.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 2

Total Scenario Cost: $314.72

Scenario Cost/Unit: $157.36

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	1	$1.30
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	1	$42.30
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	2	$12.41
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 314 - Brush Management

Scenario: #6 - Chemical, Uplands

Scenario Description: This practice is for the implementation of brush management on range, pasture or native pasture to reduce undersirable brush in uplands, and other areas not in, or directly adjacent to, streams, ponds, or wetlands. The typical method of control uses aerial or broadcast application of herbicides to control undesirable plants. Entire unit has infestation levels exceeding state identified levels; entire unit is treated with broadcast application.

Before Situation: Brush species exceed desired levels resulting in degraded plant condition, loss of forage production, or degraded wildlife habitat. Densities of brush exceed levels indicated in the ecological site descriptions.

After Situation: Brush has been treated to a level which results in improved plant condition, forage production, or wildlife habitat. The typical method of control is application of herbicides (basal or foliar location) on select individual plants.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 50

Total Scenario Cost: $1,436.00

Scenario Cost/Unit: $28.72

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$6.92	20	$138.31
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$18.77	15	$281.56
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	15	$634.48
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	50	$310.20
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 314 - Brush Management

Scenario: #3 - Mechanical and Chemical, Low Infestation

Scenario Description: Removal of woody vegetation on gently sloping to moderately deep to deep soils. The practice requires the felling of trees and brush using a meechanical cutter, chopper or other light equipment, and applying herbicide to cut stump resprouting tree/brush species, as necessary, in order to improve ecological site conditions. Brush density has met or exceeded low or light infestation (1-5% canopy depending upon species) levels based on ecological site potential as determined by state specific criteria. Typical unit is 80 acres.

Before Situation: Area consist of low or light infestations of trees and shrub species which degrade desirable plant productivity, health and vigor of pasture or range units, thus promoting invasive non-herbaceous species and degrading wildlife habitat.

After Situation: Woody species are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend; hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $3,965.00

Scenario Cost/Unit: $49.56

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	35	$836.81
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	$19.99	10	$199.94
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	2.5	$3.24
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	2.5	$105.75
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	$84.38	25	$2,109.50
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	10	$451.05
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 314 - Brush Management

Scenario: #294 - Mechanical and Chemical, Medium Infestation

Scenario Description: Removal of woody vegetation on gently sloping to moderately deep to deep soils. The practice requires the felling of trees and brush using a mechanical cutter, chopper or other light equipment, and applying herbicide to cut stump resprouting tree/brush species, as necessary, in order to improve ecological site conditions. Brush density has met or exceeded medium or moderate infestation (averaging 6-15% canopy depending upon species) levels based on ecological site potential as determined by state specific criteria. Typical unit is 80 acres.

Before Situation: Area consist of medium or moderate infestations of trees and shrub species which degrade desirable plant productivity, health and vigor of pasture or range units, thus promoting invasive non-herbaceous species and degrading wildlife habitat.

After Situation: Woody species are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend; hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $7,771.05

Scenario Cost/Unit: $97.14

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	$84.38	64	$5,400.32
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	32	$1,443.35
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	$19.99	16	$319.91
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	8	$10.36
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	8	$338.39

Practice: 314 - Brush Management

Scenario: #5 - Mechanical and Chemical, Heavy Infestation

Scenario Description: Removal of woody vegetation on gently sloping terrain with moderately deep to deep soils. The practice requires the felling and piling of trees and brush using a mechanical cutter, chopper, or other light equipment, and applying herbicide to cut stump resprouting tree/brush species, as necessary, in order to improve ecological site conditions. Brush density has met or exceeded heavy or high infestation (averaging >10% canopy depending upon species) levels based on ecological site potential as determined by state specific criteria. Typical unit is 10 acres.

Before Situation: Area consist of heavy or high infestations of trees and shrub species which degrade desirable plant productivity, health and vigor of pasture or range units, thus promoting invasive non-herbaceous species and degrading wildlife habitat.

After Situation: Woody species are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $3,238.88

Scenario Cost/Unit: $323.89

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	30	$717.26
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	$19.99	5	$99.97
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	2.5	$3.24
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	2.5	$105.75
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	$84.38	20	$1,687.60
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	10	$451.05
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	$174.01	1	$174.01

Practice: 314 - Brush Management

Scenario: #281 - Split-method event series

Scenario Description: The practice entails the control of woody vegetation by treating it up to three times during the multi-year treatment period in order to improve ecological site condition. The brush can be treated with the same method or by a combination of methods. Woody vegetation needs to be treated at least twice in order to fully control it. Generally,herbicide volumes are reduced as the last treatment will kill resprouting stems or those which survived the first treatment or newly sprouted seedlings. Brush density has exceeded desired levels based on ecological site potential.

Before Situation: Area has excessive stands of woody species degrading health and vigor of desireable species promoting noxious and invasive species and degrading wildlife habitat.

After Situation: Woody species are removed to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels, and improved wildlife habitat.

Scenario Feature Measure: acres planned

Scenario Unit: Acre

Scenario Typical Size: 120

Total Scenario Cost: $21,704.21

Scenario Cost/Unit: $180.87

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	120	$2,869.06
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	$40.05	10	$400.53
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	180	$233.20
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	180	$7,613.78
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	180	$1,116.72
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	$52.50	120	$6,299.63
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	90	$2,254.92
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	10	$220.32
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	$174.01	4	$696.05

Practice: 315 - Herbaceous Weed Control

Scenario: #7 - Biological, Insects

Scenario Description: Management of herbaceous plant species through the use of biological control agents (insects) on undesired, noxious, or invasive herbaceous species. Typical area is moderate rolling to gentle sloping, moderately deep to deep soils that have stands of herbaceous weed species that exceed the desirable ecological site condition or that are identified as noxious or invasive. This scenario is an alternative for traditional or organic producers.

Before Situation: Area consist of herbaceous weed species that exceed the desirable ecological site condition degrading forage quality, promoting noxious and invasive species, increasing risk of soil erosion and degrading wildlife habitat.

After Situation: Invasive herbaceous weed species are controlled using biological contols (insects) to achieve a desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $434.63

Scenario Cost/Unit: $5.43

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	4	$79.98
Materials						
Stem Gall Fly (Urophora cardui)	302	Stem Gal Fly. Includes all support necessary to ensure adequate release of insects. Labor not included. Includes materials and shipping only.	Each	$1.14	105	$119.23
Stem Mining Weevil (Ceutorhynchus litura)	303	Stem Mining Weevil. Includes all support necessary to ensure adequate release of insects. Labor not included. Includes materials and shipping only.	Each	$1.82	105	$191.35
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	2	$44.06

Practice: 315 - Herbaceous Weed Control

Scenario: #1 - Chemical, Ground

Scenario Description: Land unit on which weed control would be beneficial in order to set back the plant community succession, improve the ecological condition, and improve forage conditions for domestic livestock or wildlife. The practice entails the eradication of vegetation by use of weed treatment using ground equipment to apply chemicals, in order to eliminate noxious weeds, promote forage productivity, and improve ecological condition.

Before Situation: Area consists of excessive stands of herbaceous weeds in existing or newly seeded or planted stands. Excessive weed growth degrades health and vigor of native herbaceous species, promoting noxious and invasive species or undesirable plant species and degrading wildlife habitat.

After Situation: Herbaceous weeds are treated and controlled to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Desirable plant community is progressing in an upward trend, hydrology and plant health and vigor is returning to near normal levels, and wildlife habitat is improved.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $3,922.13

Scenario Cost/Unit: $24.51

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	160	$2,548.19
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	160	$207.29
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	160	$992.64
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	$174.01	1	$174.01

Practice: 315 - Herbaceous Weed Control

Scenario: #5 - Chemical, Tree Establishment - Banding

Scenario Description: Tree establishment in which weed control would be beneficial in order to set back the plant community succession, improve the ecological condition, and improve the health and vigor of the stand. The practice entails the management of undesirable plants (including invasive and non-invasive species) with a post-emergent selective herbicide for the establishment of a tree planting on four acres. Broadcast or spot treatment application of a narrow band of herbicide (2-4 feet wide) along the tree row, or around individual trees, is an example of banding herbicides to control weeds. In order to receive payment, the landowner, at a minimum, must utilize and maintain Integrated Pest Management (IPM) principles including scouting, biological and/or low risk pesticides.

Before Situation: Area consists of excessive stands of herbaceous weeds degrading the health and vigor of tree rows and timber establishments, promoting undesirable plants, noxious and invasive species, and degrading wildlife habitat.

After Situation: Herbaceous weeds are controlled with in-row herbicide treatment prior to, or after, trees are planted to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Individual tree, and timber stand health and condition, is progressing in an upward trend, hydrology and plant health and vigor are returning to near normal levels, and wildlife habitat is improved.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 4

Total Scenario Cost: $165.63

Scenario Cost/Unit: $41.41

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	4	$24.82
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44
Materials						
Herbicide, pendamethalin	2041	Used in premergence and postemergence applications to control annual grasses and certain broadleaf weeds for different crops including cereals (wheat, barley, rye, triticale), corn, soybeans, rice, potato, legumes, fruits, vegetables, nuts. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$17.34	4	$69.38

Practice: 315 - Herbaceous Weed Control

Scenario: #6 - Chemical, Tree Establishment - Post-emergent Herbicide

Scenario Description: Tree establishment in which weed control would be beneficial in order to set back the plant community succession, improve the ecological condition, and improve the heatlh and vigor of the stand. The practice entails the management of undesirable plants (including invasive and non-invasive species) with a post-emergent selective herbicide for the establishment of a tree planting on four acres. Broadcast or spot treatment application of a narrow band of herbicide (2-4 feet wide) along the tree row or around individual trees is an example of banding herbicides to control weeds. In order to receive payment, the landowner, at a minimum, must utilize and maintain Integrated Pest Management (IPM) principles including scouting, biological and/or low risk pesticides.

Before Situation: Area consists of excessive stands of herbaceous weeds degrading the health and vigor of tree rows and timber establishments promoting undesirable plants, noxious and invasive species, and degrading wildlife habitat.

After Situation: Herbaceous weeds are controlled with post-emergent herbicides to achieve the desired plant community based on species composition, structure, density, and canopy cover or height. Permits individual trees and timber stands to be planted to promote/improve soil health and condition, hydrology, plant health and vigor, and wildlife habitat.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 4

Total Scenario Cost: $204.30

Scenario Cost/Unit: $51.08

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Clopyrilad or Aminopyralid	332	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$3.70	4	$14.81
Herbicide, sulfosulfuron	2043	For the control of annual broad-leaved weeds and grass weeds in cereals. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$23.31	4	$93.23
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	4	$24.82
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 315 - Herbaceous Weed Control

Scenario: #2 - Chemical, Wetland

Scenario Description: Using ground rigs and hand held equipment to treat herbaceous plants in wetland and riparian areas. Typical area is moderately rolling to gently sloping terrain with moderately deep to deep soils that have herbaceous weed species in the early phases of invasions. Typical unit is 10 acres.

Before Situation: Area is in the very early phases of herbaceous weed encroachment that degrade habitat for desired wildlife species. Future degradation of wildlife habitat and ecological site condition promotes noxious, invasive, and undesirable species encroachment.

After Situation: Herbaceous weeds are treated and controlled to achieve the desirable plant community based on species composition, structure, density, and canopy cover or height. Ecological condition continues to progress in an upward trend, hydrology and plant health and vigor are improved or sustained, wildlife habitat is improved.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $275.07

Scenario Cost/Unit: $27.51

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Imazapic	335	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$12.86	10	$128.64
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	10	$12.96
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	10	$62.04
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 315 - Herbaceous Weed Control

Scenario: #3 - Mechanical

Scenario Description: Removal of light infestations of herbaceous weeds on gently sloping terrain with moderately deep to deep soils. The practice entails the removal of herbaceous weeds by the use of a mower, brush hog, disc, or other light equipment, in order to reduce fuel load and improve the ecological site condition. Weeds have exceeded desired levels based on ecological site potential. For organic and non-organic farms.

Before Situation: Area consists of excessive stands of herbaceous weeds degrading the health and vigor of native herbaceous species and wildlife habitat while promoting noxious and invasive species encroachment.

After Situation: Herbaceous weeds are removed to achieve the desired plant community based on species composition, structure, density, and canopy cover or height. Ecological site condition is progressing in an upward trend, hydrology and plant health and vigor are returning to near normal levels, and wildlife habitat is improved.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $309.96

Scenario Cost/Unit: $15.50

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	5	$99.97
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	$52.50	4	$209.99

Practice: 315 - Herbaceous Weed Control

Scenario: #4 - Mechanical, Tree Establishment

Scenario Description: Land unit on which weed control would be beneficial to set back the plant community succession, improve the ecological condition, and improve stand establishment of herbaceous or deciduous plantings. The practice entails the eradication of vegetation by use of weed treatment, through tillage, to eliminate undesirable weeds, promote stand establishment, improve ecological condition and wildlife habitat.

Before Situation: Area consists of excessive stands of herbaceous weeds degrading the health and vigor of tree species in rows or plantings.

After Situation: Undesirable herbaceous weeds are controlled or removed in and around tree planting, through tillage, to achieve a desirable plant community based on species composition, structure, and density. Tree stand condition is progressing in an upward trend, hydrology and plant health and vigor are returning to near normal levels, and wildlife habitat is improved.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $202.07

Scenario Cost/Unit: $202.07

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	1	$11.27
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	1	$16.79
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	$174.01	1	$174.01

Practice: 325- High Tunnel System

Scenario: #2 - Gothic Style High Tunnel

Scenario Description: Used for contiguous US states in areas with high snowfall. A gothic-style (peaked) manufactured frame of tubular steel (30 x 72 ft.) covered with 4-year 6mil plastic. Costs are based on purchase of manufactured kit and landowner installing the structure. Structure must be installed to manufacturer's specifications.

Before Situation: Cropland where extension of the growing season is needed. Additional resource concerns that may need to be addressed include; soil erosion, soil condition, water quality, water quantity, plant condition, and energy use.

After Situation: A seasonal high tunnel has been installed and the growing season has been extended for 1-4 months on average. Plant health and vigor is improved and there is decreased energy use by producing food locally.

Scenario Feature Measure: Area of Tunnel Installed

Scenario Unit: Square Foot

Scenario Typical Size: 2160

Total Scenario Cost: $10,663.17

Scenario Cost/Unit: $4.94

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$18.62	71	$1,322.34
Materials						
Hoop House, gothic style, base package	1278	Includes heavy-duty, gothic framework complete with all predrilled steel, hardware and instructions. Includes 6 mil 4-year polyethylene film to cover tunnel, roll-up sides, lumber, and polylock for sides and ends for a gothic style (peaked top) hoop house. Materials only, does not include labor.	Square Foot	$4.32	2160	$9,340.83

Practice: 325- High Tunnel System

Scenario: #1 - Quonset Style High Tunnel

Scenario Description: Used for contiguous US states in areas with low or no snowfall. A quonset-style (round) manufactured frame of tubular steel (30 x 72 ft.) covered with 4-year 6mil plastic. Costs are based on purchase of manufactured kit and landowner installing the structure. Structure must be installed to manufacturer's specifications.

Before Situation: Cropland where extension of the growing season is needed. Additional resource concerns that may need to be addressed include; soil erosion, soil condition, water quality, water quantity, plant condition, and energy use.

After Situation: A seasonal high tunnel has been installed and the growing season has been extended for 1-4 months on average. Plant health and vigor is improved and there is decreased energy use by producing food locally.

Scenario Feature Measure: Area of Tunnel Installed

Scenario Unit: Square Foot

Scenario Typical Size: 2160

Total Scenario Cost: $8,180.77

Scenario Cost/Unit: $3.79

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$18.62	71	$1,322.34
Materials						
Hoop House, quonset style, base package	1277	Includes the framework complete with all predrilled steel, hardware and instructions. Includes 6 mil 4-year polyethylene film to cover tunnel, and polylock for sides and ends for a quonset style (round top) hoop house. Materials and shipping only, does not include labor.	Square Foot	$3.18	2160	$6,858.43

Practice: 328 - Conservation Crop Rotation

Scenario: #1 - Crop Rotation

Scenario Description: In this region this practice may be part of a conservation management system to: 1) Reduce sheet and rill erosion 2) Reduce soil erosion from wind 3) Maintain or improve soil organic matter 4) Manage the balance of plant nutrients 5) Improve water use efficiency 6) Manage plant pests (weeds, insects, and diseases) 7) Provide food for domestic livestock and 8) Provide food and cover for wildlife. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical 160 acre cropland farm. No foregone income is included as the newly added crop will not reduce net crop return in the rotation. Costs represent typical situations for conventional (non-organic) producers. A minimum of one additional crop will be added to an existing crop rotation.

Before Situation: The rotation consists primarily of a two crop rotation - small grain and row crop or fallow. An additional crop is added to improve soil health and address erosion, soil quality, and pest management resource concerns.

After Situation: A minimum 3 crop rotation is established that requires a minimum of at least one additional high residue and/or perennial crop. The 3 crop minimum rotation reduces erosion, improves soil quality, breaks pest cycles, and provides for additional wildlife needs.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $2,403.18

Scenario Cost/Unit: $15.02

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.05	60	$2,403.18

Practice: 328 - Conservation Crop Rotation

Scenario: #2 - Crop Rotation, High Value Crop (FI)

Scenario Description: In this region this practice may be part of a conservation management system to: 1) Reduce sheet and rill erosion 2) Reduce soil erosion from wind 3) Maintain or improve soil organic matter 4) Manage the balance of plant nutrients 5) Improve water use efficiency 6) Manage plant pests (weeds, insects, and diseases) 7) Provide food for domestic livestock and 8) Provide food and cover for wildlife. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical 160 acre dryland cropland farm where the predominace of crops in the existing rotation are high value crops (e.g. corn or soybeans). Foregone income is included due to lost crop yield and income by adding an additional lesser value crop into the existing rotation. Cost represents typical situations for conventional (non-organic) producers. A minimum of one additional lesser value crop (e.g. wheat, sorghum, sunflowers) will be added to an existing higher value crop rotation (e.g. soybeans and corn).

Before Situation: The dryland crop rotation consists primarily of a two crop rotation of high value row crops (e.g. soybeans and corn). An additional lower value crop (e.g. wheat, sorghum, sunflowers) is added to the rotation to improve soil health, reduce erosion, and break pest/disease cycles.

After Situation: A minimum 3 crop rotation is established that requires at least one additional high residue and/or perennial crops added to an existing crop rotation. The 3 crop minimum rotation reduces erosion, improves soil quality, breaks pest cycles, and provides for additional wildlife needs.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $7,555.04

Scenario Cost/Unit: $47.22

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total

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	$40.05	60	$2,403.18

Foregone Income

FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	-53	($7,931.67)
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	80	$11,972.33
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	80	$22,479.27
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	-53	($14,892.51)
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	-54	($6,475.55)

Practice: 328 - Conservation Crop Rotation

Scenario: #3 - Irrigated to Dryland Rotation-High Value Crops (FI)

Scenario Description: In this region this practice may be part of a conservation management system to primarily convert from an irrigated cropping system to dryland farming. In addition to improving water use efficiency the rotation may 1) Reduce sheet and rill erosion 2) Reduce soil erosion from wind 3) Maintain or improve soil organic matter 4) Manage the balance of plant nutrients 5) Manage plant pests (weeds, insects, and diseases) 6) Provide food for domestic livestock and 7) Provide food and cover for wildlife. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical 120 acre cropland farm. There is foregone income involved with this conversion from irrigated to dryland farming due to lower yields without irrigation. Cost represents typical situations for conventional (non-organic) producers converting from irrigated cropping to dryland farming. Typical crops grown under irrigation will include one small grain (e.g. wheat) and one row crop (e.g. corn) in rotation.

Before Situation: The existing rotation consists of growing one row crop and one small grain in rotation that received a significant (more than half) of the required water through irrigation. The existing water demands are impacting the area's groundwater availability. Erosion, soil condition, and future water availability are the major concerns.

After Situation: The dryland rotation, using the same crops or a rotation that grows crops over different periods, will be part of a management system capable of utilizing available rainfall and soil moisture more efficiently and controlling wind and water erosion. Corn yields will be expected to be reduced from 150 to 80 bu/acre, and wheat yields will be expected to be reduced from 80 to 40 bu/ac.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 120

Total Scenario Cost: $37,426.31

Scenario Cost/Unit: $311.89

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.05	40	$1,602.12
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	-60	($8,979.25)
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	$555.99	60	$33,359.63
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	-60	($7,195.06)
FI, Wheat Irrigated	1964	Irrigated Wheat is Primary Crop	Acre	$310.65	60	$18,638.86

Practice: 328 - Conservation Crop Rotation

Scenario: #4 - Irrigation to dryland rotation, high value crop with small grain added (FI)

Scenario Description: In this region this practice may be part of a conservation management system to primarily convert from an irrigated cropping system to dryland farming. In addition to improving water use efficiency the rotation may 1) Reduce sheet and rill erosion 2) Reduce soil erosion from wind 3) Maintain or improve soil organic matter 4) Manage the balance of plant nutrients 5) Manage plant pests (weeds, insects, and diseases) 6) Provide food for domestic livestock and 7) Provide food and cover for wildlife. This practice payment is provided to acquire the technical knowledge and skills necessary to effectively implement a conservation crop rotation on a typical 120 acre irrigated cropland farm. Foregone income is included with the conversion from irrigated to dryland farming due to lower yields and net return. Cost represents typical situations for conventional (non-organic) producers converting from irrigated cropping to dryland farming. Typical crops grown under irrigation will include a predominance of high value row crop(s) (e.g. corn and/or soybeans). The new rotation will include the introduction of a small grain into rotation to reduce the rotations water use requirements.

Before Situation: The existing rotation consists of growing high value row crops (e.g corn and/or soybeans) that received a significant (more than half) of the required water through irrigation. The water demands are impacting the area's groundwater availability. Erosion, soil condition, and future water availability are the major concerns.

After Situation: The new dryland rotation will include adding a small grain into a high value rotation grown, or using the same crops, will be part of a management system capable of utilizing available rainfall and soil moisture more efficiently and controlling wind and water erosion, maintain or improve soil quality, break pest/disease cycles. Corn yields will be expected to be reduced from 150 to 80 bu/acre, syobeans yields will be expected to be reduced from 100 to 40 bu/acre, and the newly added wheat yields will be expected to be 40 bu/acre.

Scenario Feature Measure: Area Planted

Scenario Unit: Acre

Scenario Typical Size: 120

Total Scenario Cost: $39,134.34

Scenario Cost/Unit: $326.12

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.05	40	$1,602.12
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	-40	($5,986.17)
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	$555.99	60	$33,359.63
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	-40	($11,239.63)
FI, Soybeans Irrigated	1962	Irrigated Soybeans is Primary Crop	Acre	$436.58	60	$26,195.10
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	-40	($4,796.70)

Practice: 329 - Residue and Tillage Management, No-Till

Scenario: #1 - No-Till/Strip-Till

Scenario Description: This practice typically involves conversion from a clean-tilled (conventional tilled) system to no-till or strip-till system on 100 acres of cropland. This involves managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting soil-disturbing activities used to establish and harvest crops. The practice is used to reduce sheet and rill erosion, reduce wind erosion, improve soil quality, reduce CO2 losses from the soil, reduce energy use, increase plant available moisture and provide food and escape cover for wildlife. The no-till/strip-till system includes non-tillage types of weed control and may also include a period of no till fallow. System is applicable in both irrigated and non-irrigated fields organic and non-organic operations.

Before Situation: Row crops or small grains are grown and harvested. Full width tillage is performed prior to planting and weed control during crop production is typically cultivation and chemical application. Fields are disked immediately following harvest, with additional operations in some fields to facilitate drainage, seedbed preparation or additional weed control. Residue amounts after tillage operations average 10% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall. Any crop residue that is present degrades and sediment/nutrient runoff from fields increases during rainfall events. Sheet and rill erosion occurs with visible rills by spring. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. This system will typically have a negative Soil Conditioning Index (SCI) and a high Soil Tillage Intensity Rating (STIR).

After Situation: The Implementation Requirements for 329 Residue Management, No Till is prepared and installed. Managing crop residue on the surface of a field (typical 100 acre) year around according to the 329 practice plan while limiting soil disturbing activities to those which place nutrients, and plant crops that meet the minimum criteria in the 329 practice standard. All crops are seeded/planted with a no-till drill or no-till/strip-till planter, which minimizes soil disturbance while establishing good seed-soil contact. All residues are to be maintained on the soil surface in a uniform distribution over the entire field and not burned or removed. Crop residues provide soil surface cover throughout the year. Runoff and erosion are reduced and no rills are visible on the soil surface. Wind erosion is reduced by standing residues and surface cover. Over time, soil health is improved due to the additional biomass (crop residues), ground cover, and soil infiltration. Crop residues and/or cover crop residues left on the soil surface may maximize weed control by increasing allelopathic and mulching effect, and provides cover for wildlife. The practice would require reducing soil disturbance and erosion and increasing biomass returned to the soil in sufficient amounts to achieve increased SCI and decreased STIR.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 100

Total Scenario Cost: $2,014.63

Scenario Cost/Unit: $20.15

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.38	50	$1,069.07
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acre	$18.91	50	$945.56

Practice: 330 - Contour Farming

Scenario: #1 - Contour Farming

Scenario Description: This scenario meets the specifications of the NRCS Contour Farming Standard. This scenario applies to fields greater than 5 acres. Payment reflects the extra labor and initial supervision costs in laying out and implementing contour farming. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways

Before Situation: The typical field size in this geographical region for this scenario is 30 acres. The field slope averages 6% while the slope length averages 160 feet. All farming operations on this cropland field including disking, bedding, planting, and cultivation are performed generally up and down the the slope. Annual erosion rates for the rotation exceeds tolerance levels. Excessive runoff leads to sedimentation of waterways.

After Situation: This practice is installed on the entire field. A survey is completed by trained and certified Federal, State, local personnel or a consultant to determine and "stake" contour row arrangement. Permanent row markers are established to ensure that this practice is maintained for the life of this practice. All field operations including: disking, bedding, planting, and cultivation are performed on the contour which is near perpendicular to the field slope. The farm manager is initially on site to ensure that equipment operator is properly following contour methods. Soil erosion rates are reduced by nearly half and may be below tolerance depending on the rotation. Likewise, sedimentation has been significantly reduced.

Scenario Feature Measure: acre

Scenario Unit: Acre

Scenario Typical Size: 30

Total Scenario Cost: $261.74

Scenario Cost/Unit: $8.72

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	5	$119.54
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	$40.05	3	$120.16
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	1	$22.03

Practice: 332 - Contour Buffer Strips

Scenario: #1 - Cool Season (FI)

Scenario Description: Narrow strips of permanent, cool season herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to cropland. Practice includes seedbed prep and planting of herbaceous species. The area of the contour grass strip is taken out of production.

Before Situation: Water Erosion Calculator (e.g. RUSLE2) indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potenially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation: Cool season herbaceous species will be established in strips in the field to meet the resource needs and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species shall be selected that do not function as a host for diseases of a field crop and have physical charactaristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Scenario Feature Measure: number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $338.79

Scenario Cost/Unit: $338.79

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	2	$62.53
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2317	Cool season grass and legume mix. Includes material and shipping only.	Acre	$49.65	1	$49.65
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 332 - Contour Buffer Strips

Scenario: #2 - Cool Season with Nutrients (FI)

Scenario Description: Narrow strips of permanent, cool season herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to cropland. Practice includes seedbed prep and planting of herbaceous species with nutrient admendments added for establishment. The area of the contour buffer strip is taken out of production.

Before Situation: Water Erosion Calculator (e.g. RUSLE2) indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potenially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation: Cool season herbaceous species will be established in strips in the field to meet the resource needs and producer objectives. Nutrient admendments are aded as determined by soils anaylsis or local knowledge. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species shall be selected that do not function as a host for diseases of a field crop and have physical charactaristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Scenario Feature Measure: Number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $376.74

Scenario Cost/Unit: $376.74

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2317	Cool season grass and legume mix. Includes material and shipping only.	Acre	$49.65	1	$49.65
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
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	$0.53	40	$21.14
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	$0.56	30	$16.81
Labor						
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	$31.26	2	$62.53
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 332 - Contour Buffer Strips

Scenario: #3 - Organic Herbaceous (FI)

Scenario Description: Narrow strips of permanent, herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to cropland. Practice includes mechanical seedbed prep, organic soil amendments, and planting of organic herbaceous species on organic cropland. The area of the contour buffer strip is taken out of production.

Before Situation: Water Erosion Calculator (e.g. RUSLE2) indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potenially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation: Certified organic herbaceous species will be planted in strips in the field to meet the resource needs and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Organic soil amendments added to ensure proper establishment. Species shall be selected that do not function as a host for diseases of a field crop and have physical charactaristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Scenario Feature Measure: Number of Acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $447.24

Scenario Cost/Unit: $447.24

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	2	$62.53
Materials						
Certified Organic, Three Species Mix, Cool Season, Perennial Grasses and Legumes	2340	Certified organic cool season perennial grass and legume mix. Includes material and shipping only.	Acre	$69.62	1	$69.62
Nitrogen, Organic	266	ORGANIC Nitrogen	Pound	$0.25	40	$10.02
Phosphorus, Organic	267	ORGANIC Phosphorus	Pound	$0.25	30	$7.49
Potassium, Organic	268	ORGANIC Potassium	Pound	$0.25	20	$5.00
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Site Preparation, Mechanical	944	Aerator, rolling drum chopper, etc. Includes equipment, power unit and labor costs.	Acre	$71.30	1	$71.30
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	1	$16.79
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 332 - Contour Buffer Strips

Scenario: #4 - Warm Season (FI)

Scenario Description: Narrow strips of permanent, warm season herbaceous vegetative cover established around the hill slope and alternated down the slope with wider cropped strips in between that are farmed on the contour. This practice applies to cropland. Practice includes seedbed prep and planting of herbaceous species. The area of the contour buffer strip is taken out of production.

Before Situation: Water Erosion Calculator (e.g. RUSLE2) indicates that there is a significant amount of sheet and rill erosion and/or a significant amount of sediment potenially delivered to the downslope edge of the field. A secondary concern is that there may not be enough wildlife/pollinator habitat, food source or refugia in the field or farm.

After Situation: Warm Season herbaceous species will be established in strips in the field to meet the resource needs and producer objectives. Minimum widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species shall be selected that do not function as a host for diseases of a field crop and have physical charactaristics necessary to control water erosion to tolerable levels in the cropped area of the field.

Scenario Feature Measure: Number of Acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $510.12

Scenario Cost/Unit: $510.12

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	2	$62.53
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	1	$220.98
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 338 - Prescribed Burning

Scenario: #1 - Herbaceous Fuel, Small Acreage

Scenario Description: Applying a prescribed burn according to a designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to control undesirable species, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution and maintain ecological processes. This scenario is based on a burn area of <160 acres and applies under the following conditions: where the terrain of the majority of the area to be burned <15% slopes with herbaceous and/or low volatile woody fuel with no high volatile fuels. Burned firebreaks used to achieve total firebreak width are part of these burns. (Constructed firebreak cost is not included in the cost of the burn. Refer to Firebreak (394) standard and cost scenarios).

Before Situation: Desirable plant composition is lacking due to reduced plant vigor, invasive species, or improper livestock distribution.

After Situation: Desirable plant composition is restored, plant vigor improved, and invasive species reduced. Forage production and quality for livestock and /or wildlife is improved.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $1,763.55

Scenario Cost/Unit: $22.04

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	24	$479.86
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	$40.05	7	$280.37
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	8	$264.40
Trailer, water tank	1598	Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment.	Hour	$19.96	8	$159.70
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	8	$176.26
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hour	$2.45	8	$19.60
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	$174.01	1	$174.01
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	2	$142.88
Materials						
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallon	$4.13	5	$20.66

Practice: 338 - Prescribed Burning

Scenario: #2 - Herbaceous Fuel - Standard

Scenario Description: Applying a prescribed burn according to a designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to control undesirable species, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution and maintain ecological processes. This scenario is based on the following conditions: where the terrain of the majority of the area to be burned <15% slopes with herbaceous and/or low volatile herbaceous fuels with limited high volatile fuels. Burned firebreaks used to achieve total firebreak width are part of these burns. (Constructed firebreak cost is not included in cost of burn. Refer to Firebreak (394) standard and cost scenarios).

Before Situation: Desirable plant composition is lacking due to reduced plant vigor, invasive species, or improper livestock distribution.

After Situation: Desirable plant composition is restored, plant vigor improved and invasive species reduced. Forage production and quality for livestock and/or wildlife is improved.

Scenario Feature Measure: Acres planned

Scenario Unit: Acre

Scenario Typical Size: 320

Total Scenario Cost: $2,705.18

Scenario Cost/Unit: $8.45

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	34	$679.80
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	$40.05	14	$560.74
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	16	$528.80
Trailer, water tank	1598	Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment.	Hour	$19.96	8	$159.70
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	16	$352.52
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hour	$2.45	8	$19.60
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	$174.01	1	$174.01
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	2	$142.88
Materials						
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallon	$4.13	10	$41.33

Practice: 338 - Prescribed Burning

Scenario: #4 - Level terrain, volatile fuel (wood) less than 4 feet high <640 acres

Scenario Description: Applying a prescribed burn according to a designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to control undesirable species, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution, and maintain ecological processes. This scenario is based on a burn area of <640 acres and applies under the following conditions: where the terrain of the majority of the area to be burned <15% slopes with herbaceous and low volatile woody fuels, with high volatile woody fuels <4ft tall. Burned firebreaks used to achieve total firebreak width are part of these burns. (Constructed firebreak cost is not included in cost of burn. Refer to Firebreak (394) standard and cost scenarios).

Before Situation: Desirable plant composition is lacking due to reduced plant vigor, invasive species, or improper livestock distribution.

After Situation: Desirable plant composition is restored, plant vigor improved, and invasive species reduced. Forage production and quality for livestock andor wildlife is improved.

Scenario Feature Measure: Acres Planned

Scenario Unit: Acre

Scenario Typical Size: 320

Total Scenario Cost: $3,788.86

Scenario Cost/Unit: $11.84

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	72	$1,439.58
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	$31.26	9	$281.37
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	$40.05	5	$200.26
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	32	$1,057.59
Trailer, water tank	1598	Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment.	Hour	$19.96	8	$159.70
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	8	$176.26
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hour	$2.45	16	$39.21
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	4	$285.77
Materials						
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallon	$4.13	25	$103.31

Practice: 338 - Prescribed Burning

Scenario: #5 - Steep terrain, volatile fuels (wood) >4 feet high

Scenario Description: Applying a prescribed burn according to a designed burn plan and NRCS Prescribed Burning (338) standard and specifications in order to control undesirable species, improve wildlife habitat, improve plant productivity and/or quality, facilitate grazing distribution, and maintain ecological processes. This scenario is based on a burn area of 640 acres and applies under the following conditions: where the terrain of the majority of the area to be burned >15% slopes with herbaceous and low volatile woody fuel, with high volatile woody fuels >4ft tall, but fire is still a ground fire carried by fine fuel. Burned firebreaks used to achieve total firebreak width are part of these burns. (Constructed firebreak cost is not included in cost of burn. Refer to Firebreak (394) standard and cost scenarios).

Before Situation: Desirable plant composition is lacking due to reduced plant vigor, invasive species, or improper livestock distribution.

After Situation: Desirable plant composition is restored, plant vigor improved, and invasive species reduced. Forage production and quality for livestock and/or wildlife is improved.

Scenario Feature Measure: Acres Planned

Scenario Unit: Acre

Scenario Typical Size: 640

Total Scenario Cost: $10,978.52

Scenario Cost/Unit: $17.15

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	164	$3,279.04
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	$31.26	20	$625.27
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	$40.05	20	$801.06
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	2	$91.60
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	96	$3,172.77
Trailer, water tank	1598	Mobile 5,000 gal water tank mounted on a trailer. Equipment only. Does not include towing equipment.	Hour	$19.96	32	$638.82
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	64	$1,410.08
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hour	$2.45	32	$78.41
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	8	$571.54
Materials						
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallon	$4.13	75	$309.94

Practice: 338 - Prescribed Burning

Scenario: #3 - Site Preparation

Scenario Description: Treating areas to encourage natural seeding or to permit reforestation by planting or direct seeding. Burning is utilized to eliminate existing competition and debris, reduce forest fuel, and to prepare the site for planting or seeding. Burning a cutover site helps prepare the site for replanting. Burn should expose a portion of bare soil for planting. Objectives of a site preparation burn may dictate timing and burn intensity.

Before Situation: Area to be burned has had a portion of the overstory removed. Slash, brush, and grasses dominate the site.

After Situation: Area to be planted has been burned to remove grass, reduce competing brush, and remove downed slash leftover from forestry activities. Some bare ground is exposed.

Scenario Feature Measure: Acres Planned

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $3,890.08

Scenario Cost/Unit: $48.63

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	32	$639.81
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	$31.26	8	$250.11
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.96	17	$1,682.27
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	$40.05	5	$200.26
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	4	$132.20
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	8	$176.26
Water tank, portable	1602	Portable water tank transported in a pick up truck. Typically with 200 gallon capacity includes tank with pump, hose and sprayer. Does not include the pickup truck. Equipment only.	Hour	$2.45	4	$9.80
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	$174.01	4	$696.05
Materials						
Fuel, ignition fuel mixture	1596	Mixture of gasoline and diesel for ignition of prescribed burns. Materials only.	Gallon	$4.13	25	$103.31

Practice: 340 - Cover Crop

Scenario: #5 - Cover Crop Adaptive Mgt

Scenario Description: The practice scenario is for the implementation of cover crops in small replicated plots to allow the producer to learn how to manage cover crops on their operation. Scenario includes implementing replicated strip trials on a field plot to evaluate, identify and implement a particular cover crop management strategy (e.g., cover crop vs no cover crop, multiple species vs, single specie, evaluate different termination methods or timings, using a legume vs no legume for nitrogen credits). This will be done following the interim guidance for cover crop adaptive management to be issued to all field offices.

Before Situation: Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind and/or water erosion during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil. The producer is considering the use of cover crops but is unsure how to manage on their unique operation or is seeking a way to better manage cover crops in the operation.

After Situation: Installation of this scenario will result in establishment of a cover crop replicated plots to compare to different management strategies for cover crop management following the guidance in the Agronomy Technical Note 11 - Adaptive Management and the Interim Guidance for Cover Crop Adaptive Management to be issued to all field offices for FY15. Implementation involves establishing the replicated plots to evaluate one or more cover crop management strategies. The plot will consist of at least 4 replicated plots designed, laid out, managed and evaluated with the assistance of a consultant knowledgeable in cover crop management. Results are used to make cover crop management decisions to address erosion and water quality issues. Yields will be measured and statistically summarized following the procedures in Agronomy Technical Note 11 - Adaptive Management. The yields for each plot will be adjusted to the appropriate moisture content. This would be repeated for 3 years.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $2,575.83

Scenario Cost/Unit: $257.58

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	30	$599.82
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	$31.26	30	$937.91
Materials						
Five Species Mix, Cool Season, Annual Grasses and Legumes	2320	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$60.08	10	$600.81
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	10	$159.26
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	10	$62.04
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	10	$215.99

Practice: 340 - Cover Crop

Scenario: #8 - Cover Crop, Multiple Species

Scenario Description: Typically a cover crop mix with three or more species will be planted immediately after harvest of small grain crop or broadcast into a standing row crop at early senescence to allow 6-8 weeks of growth prior to the first killing frost. Late seeded mixes must include a cereal grain that will overwinter. This scenario assumes that seed will be planted with a no-till drill, aerial applied, or broadcast into standing crops. The cover crop should be allowed to generate as much biomass as possible without delaying planting of the following crop. If the cover crop overwinters it will be terminated using an approved chemical or mechanical method following NRCS cover crop termination guidelines.

Before Situation: Fields are either disked immediately following harvest or left idle until the following spring and low residue crops such as soybeans or silage may have less than 30% residue resulting in bare soil being exposed to wind and/or water erosion during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increase. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices and long periods of bare soil.

After Situation: After harvest fields are planted with a cover crop mix consisting of three or more species. The average field size is 40 acres. The cover crop is seeded with a no-till drill or broadcast into standing crops. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. Wind erosion is reduced by standing residues. If the cover crop overwinters, it is terminated using an approved chemical or mechanical method prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effects.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $3,552.88

Scenario Cost/Unit: $88.82

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	40	$248.16
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	40	$863.95
Materials						
Herbicide, 2,4-D	330	Broadleaf herbicide labeled for cropland and pasture. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$6.92	40	$276.62
Two Species Mix, Cool Season Annual (1 grass and 1 legume)	2314	Cool season annual grass and legume mix. Includes material and shipping only.	Acre	$54.10	40	$2,164.15

Practice: 340 - Cover Crop

Scenario: #1 - Cover Crop, Single Species

Scenario Description: Typically a cool season small grain such as rye or wheat (1-2 additional species may be included) will be planted as a cover crop just prior to or following fall harvest of a row crop, such as corn or soybeans, and will be followed by a spring row crop that will utilize the residue as a mulch. This scenario assumes that the cover crop will be seeded with a no-till drill immediately after harvest or aerial applied/broadcast in late summer to early fall. The cover crop should be allowed to generate as much biomass as possible prior to termination and will be terminated using an approved chemical or mechanical method following NRCS cover crop termination guidelines.

Before Situation: Row crops such as corn and soybeans are harvested in mid-late fall. Fields that are disked immediately following harvest or those used to produce a low residue crop such as soybeans or silage may have less than 30% residue resulting in bare soil being exposed to wind and/or water erosion during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices and long periods of bare soil.

After Situation: After harvest of row crop, fields are planted with a small grain cover crop such as rye or wheat. The average field size is 40 acres. The cover crop is seeded with a no-till drill or broadcast into standing crops. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. Wind erosion is reduced by standing residues. The cover crop is terminated using an approved chemical or mechanical method prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity introduced into the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effects.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $3,320.92

Scenario Cost/Unit: $83.02

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	40	$637.05
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	$39.29	40	$1,571.76
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	40	$248.16
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	40	$863.95

Practice: 340 - Cover Crop

Scenario: #4 - Organic Cover Crop

Scenario Description: Typically a small grain or small grain-legume mix (may also use forage sorghum, radishes, turnips, buckwheat, etc.) will be planted as a cover crop following harvest of an organically grown crop, and will be followed by an organically grown crop that will utilize the residue as a mulch. This scenario assumes that seed will be planted with a no-till drill. The cover crop should be allowed to generate as much biomass as possible without delaying planting of the following crop. If the cover crop overwinters it will be terminated using a mechanical kill method (mowing, rolling, undercutting, etc.) prior to planting the subsequent crop. This scenario REQUIRES use of Certified Organic Seed. Nonorganically produced, untreated seeds may be used when an equivalent organically produced variety is not available.

Before Situation: Organically grown crops such as various vegetable and fruit crops (along with organically produced row crops) are grown and harvested in mid-late fall. Fields are disked immediately following harvest. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind and/or water erosion during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill erosion occurs with visible rills by spring. Runoff from the fields flows into streams, water courses or other water bodies, causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue crops, and long periods of bare soil.

After Situation: After harvest of an organic crop, fields are planted with a small grain-legume mix cover crop, typically rye and clover. The average field size is 40 acres. The cover crop is seeded with a no-till drill. No additional fertilizer is applied with the cover crop. The cover crop provides soil cover by late fall, throughout the winter, and into the early spring. Runoff and erosion are reduced and no rills are visible on the soil surface in the spring. Wind erosion is reduced by standing residues. If the cover crop overwinters, it is terminated using a mechanical kill method (mowing, rolling, undercutting, etc.) prior to spring planting as late as feasible to maximize plant biomass production. Over time, soil health is improved due to the additional biomass, ground cover, and plant diversity introduced to the cropping system. Cover crop residues left on the surface may maximize weed control by increasing allelopathic and mulching effects.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $5,023.17

Scenario Cost/Unit: $125.58

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acre	$20.77	40	$830.84
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	40	$863.95
Materials						
Certified Organic, Three plus Species Mix, Cool Season, Annual Grasses and Legumes	2343	Certified organic cool season annual grass and legume mix. Includes material and shipping only.	Acre	$83.21	40	$3,328.39

Practice: 342 - Critical Area Planting

Scenario: #8 - Bareroot Seedlings

Scenario Description: Establishment of permanent woody vegetation by hand planting bareroot tree or shrub seedlings on a site that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs includes purchase of the plant stock, transport, storage, and hand planting with light hand tillage implements.

Before Situation: Areas along stream channel banks or recently restored or rehabilitated wetland areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, wind, etc.) or due to newly constructed conservation practices. The exposed areas will be subject to wind erosion, sheet and rill erosion, or erosion from flowing water or wave action. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters.

After Situation: This typical 0.3 acre critical area is stabilized by light hand tillage and individual planting of bareroot tree or shrubs at a spacing of 10' within row and 10' between rows. The bareroot seedlings chosen for this typical scenario are one half shrub and one half tree species. The size of this typical area to be stabilized would require approximately 150 bareroot seedlings.

Scenario Feature Measure: Area Planted

Scenario Unit: Acre

Scenario Typical Size: 0.3

Total Scenario Cost: $1,985.39

Scenario Cost/Unit: $6,617.97

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	75	$1,499.56
Materials						
Shrub, seedling or transplant, potted, 1 qt.	1524	Potted shrub, 1 quart. Includes materials and shipping only.	Each	$3.24	150	$485.83

Practice: 342 - Critical Area Planting

Scenario: #5 - Introduced Grass, Heavy Grading

Scenario Description: Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of moderate to severe gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

Before Situation: Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and moderate to severe gullies averaging 3 feet in depth and 3 feet in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation: This typical 1.0 acre critical area is stabilized by grading and shaping the moderate to severe gullies with a dozer (8 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 30 lbs of nitrogen, 60 lbs of phosphate, and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Smooth Bromegrass (15 lbs/ac) and Red Clover (8 lbs/ac) with a nurse crop of oats at a seeding rate of 48 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $1,294.08

Scenario Cost/Unit: $1,294.08

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	2	$98.63
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	$0.53	30	$15.85
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	$0.56	60	$33.63
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	60	$25.62
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
Labor						
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	$27.55	8	$220.43
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	$8.49	1	$8.49
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$66.88	8	$535.04
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	2	$22.54
Mobilization						

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 342 - Critical Area Planting

Scenario: #1 - Introduced Grass, Light Tillage

Scenario Description: Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include seedbed preparation with light tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

Before Situation: Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, wind, etc.) or due to newly constructed conservation practices such as waterways, terraces, water and sediment basins or dams. The exposed areas will be subject to wind erosion, sheet and rill erosion, or visible rills may have already occurred. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation: This typical 1.0 acre critical area is stabilized by applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 30 lbs of nitrogen, 60 lbs of phosphate, and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Smooth Bromegrass (15 lbs/ac) and Red Clover (8 lbs/ac) with a nurse crop of oats at a seeding rate of 48 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $279.88

Scenario Cost/Unit: $279.88

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	2	$98.63
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	$0.53	30	$15.85
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	$0.56	60	$33.63
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	60	$25.62
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
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	$8.49	1	$8.49
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	2	$22.54

Practice: 342 - Critical Area Planting

Scenario: #7 - Live Woody Cuttings

Scenario Description: Establishment of permanent woody vegetation by hand planting live stakes on a site that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include harvesting, preparation, transport, storage, and hand planting with light hand tillage implements. There is no cost included for the woody materials which would be harvested from local native stands.

Before Situation: Areas along stream channel banks or recently restored or rehabilitated wetland areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, wind, etc.) or due to newly constructed conservation practices. The exposed areas will be subject to wind erosion, sheet and rill erosion, or erosion from flowing water or wave action. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters.

After Situation: This typical 0.3 acre critical area is stabilized by light hand tillage and individual planting of live woody stakes on a 3' by 3' grid spacing. The woody stakes chosen for this typical scenario are willow, however other woody materials which will regenerate from cuttings may be utilized such as cottonwood or dogwood. The size of this typical area to be stabilized would require approximately 1450 live stakes.

Scenario Feature Measure: Area Planted

Scenario Unit: Acre

Scenario Typical Size: 0.3

Total Scenario Cost: $4,712.89

Scenario Cost/Unit: $15,709.63

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	200	$3,998.82
Materials						
Cuttings, woody, medium size	1308	Woody cuttings, live stakes or whips typically 1/4" to 1" diameter and 24" to 48" long. Includes materials and shipping only.	Each	$0.49	1450	$714.07

Practice: 342 - Critical Area Planting

Scenario: #6 - Native Grass, Heavy Grading

Scenario Description: Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of moderate to severe gullies, seedbed preparation with typical tillage implements, grass/legume seed, companion crop, and fertilizer and lime with application.

Before Situation: Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and moderate to severe gullies averaging 3 feet in depth and 3 feet in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation: This typical 1.0 acre critical area is stabilized by grading and shaping the moderate to severe gullies with a dozer (8 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 60 lbs of phosphate and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Big Bluestem (14 lbs/ac) and Switchgrass (2 lbs/ac) with a nurse crop of oats at a seeding rate of 32 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $1,326.22

Scenario Cost/Unit: $1,326.22

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	2	$98.63
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	$0.56	60	$33.63
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	60	$25.62
Two Species Mix, Warm Season, Native Perennial Grass	2325	Native, warm season perennial grass. Includes material and shipping only.	Acre	$94.57	1	$94.57
Labor						
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	$27.55	8	$220.43
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	$8.49	1	$8.49
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$66.88	8	$535.04
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	2	$22.54
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 342 - Critical Area Planting

Scenario: #2 - Native Grass, Light Tillage

Scenario Description: Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural occurrence or a newly constructed conservation practice. Costs include seedbed preparation with light tillage implements, native grass seed, and fertilizer and lime with application.

Before Situation: Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from recent natural occurrences (fire, flood, etc) or due to newly constructed conservation practices such as waterways, terraces, water and sediment basins or dams. The exposed areas will be subject to wind erosion, sheet and rill erosion, or visible rills may have already occurred. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation: This typical 1.0 acre critical area is stabilized by applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 60 lbs of phosphate and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Big Bluestem (14 lbs/ac) and Switchgrass (2 lbs/ac) with a nurse crop of oats at a seeding rate of 32 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $312.02

Scenario Cost/Unit: $312.02

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	2	$98.63
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	$0.56	60	$33.63
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	60	$25.62
Two Species Mix, Warm Season, Native Perennial Grass	2325	Native, warm season perennial grass. Includes material and shipping only.	Acre	$94.57	1	$94.57
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	$8.49	1	$8.49
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	2	$22.54

Practice: 342 - Critical Area Planting

Scenario: #4 - Native Grass, Moderate Grading

Scenario Description: Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of small gullies, seedbed preparation with typical tillage implements, native grass seed, companion crop, and fertilizer and lime with application.

Before Situation: Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and small gullies averaging 1 foot in depth and 1 foot in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation: This typical 1.0 acre critical area is stabilized by grading and shaping the small gullies with a dozer (4 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 60 lbs of phosphate and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Big Bluestem (14 lbs/ac) and Switchgrass (2 lbs/ac) with a nurse crop of oats at a seeding rate of 32 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $948.48

Scenario Cost/Unit: $948.48

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	2	$98.63
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	$0.56	60	$33.63
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	60	$25.62
Two Species Mix, Warm Season, Native Perennial Grass	2325	Native, warm season perennial grass. Includes material and shipping only.	Acre	$94.57	1	$94.57
Labor						
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	$27.55	4	$110.22
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	$8.49	1	$8.49
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$66.88	4	$267.52
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	2	$22.54
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 342 - Critical Area Planting

Scenario: #9 - Organic, moderate grading

Scenario Description: Establishment of permanent vegetation on a site that is void or nearly void of vegetation due to a natural or human disturbance. Costs include a dozer for grading and shaping of small gullies, seedbed preparation with typical tillage implements, native grass seed, companion crop, and fertilizer and lime with application.

Before Situation: Areas that are void or nearly void of vegetation, resulting in bare soil being exposed to erosive processes. The exposed areas may be caused from natural occurrences (fire, flood, etc) or human disturbance. The exposed areas have visible rills and small gullies averaging 1 foot in depth and 1 foot in width. Runoff from the area flows into streams, water courses or other water bodies causing degradation to the receiving waters. The soil typically has a pH imbalance and low fertility.

After Situation: This typical 1.0 acre critical area is stabilized by grading and shaping the small gullies with a dozer (4 hours) and then applying fertilizer, lime and seed. Soil amendments will be incorporated at an depth of six inches to improve fertility and ensure establishment of permanent vegetative cover. Apply 60 lbs of phosphate and 60 lbs of potash, along with an application of 2 tons of lime. Prepare a firm, weed free seedbed so that proper germination and stand establishment are ensured. Once the seedbed has been prepared, drill the following mixture for a vegetative cover: Big Bluestem (14 lbs/ac) and Switchgrass (2 lbs/ac) with a nurse crop of oats at a seeding rate of 32 lbs per acre.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $923.53

Scenario Cost/Unit: $923.53

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Certified Organic, Three Species Mix, Cool Season, Perennial Grasses and Legumes	2340	Certified organic cool season perennial grass and legume mix. Includes material and shipping only.	Acre	$69.62	1	$69.62
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	2	$98.63
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	$0.56	60	$33.63
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	60	$25.62
Labor						
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	$27.55	4	$110.22
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	$8.49	1	$8.49
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$66.88	4	$267.52
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	2	$22.54
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 342 - Critical Area Planting

Scenario: #3 - Saline Planting

Scenario Description: Establish and maintain permanent herbaceous vegetation on saline/sodic sites. Grass seeding on 1 acre of saline/sodic affected soils. This practice designed for Saline Seep with Recharge or Discharge Area and Saline/Sodic soils. Seed mix of Predominantly Non-Native species is chosen based on site conditions and availability of seed. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping &heavy disk) and seeding with a no-till drill, range drill, or broadcasting.

Before Situation: Cropland is without existing stand of annual grasses OR monoculture OR no grasses present where natural reseeding or vegetation enhancement is unlikely. Existing conditions often require complete suppression or eradication of existing vegetation to ensure success of planting. Resource concerns may include: undesirable plant productivity and health, soil erosion and soil quality. Saline areas left unattended continue to expand.

After Situation: The establishment and maintenance of permanent herbaceous vegetation on saline/sodic sites. Grass seeding on 1 acre of saline/sodic affected soils. This practice designed for Saline Seep with Recharge or Discharge Area and Saline/Sodic soils.

Scenario Feature Measure: area seeded

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $302.52

Scenario Cost/Unit: $302.52

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
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	$0.53	30	$15.85
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	$0.56	60	$33.63
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	60	$25.62
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
Labor						
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	$27.55	4	$110.22
Equipment Installation						
Cultipacking	1100	Includes equipment, power unit and labor costs.	Acre	$8.49	1	$8.49
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	2	$33.59

Practice: 345 - Residue and Tillage Management, Reduced Till

Scenario: #1 - Mulch till-Basic

Scenario Description: Mulch-till is managing the amount, orientation and distribution of crop and other plant residue on the soil surface year round while limiting the soil-disturbing activities used to grow crops in systems where the entire field surface is tilled by the planter/drill or tillage tools prior to planting. This practice includes tillage methods commonly referred to as mulch tillage or chiseling and disking. It applies to stubble mulching on summer-fallowed land, to tillage for annually planted crops and to tillage for planted crops and to tillage for planting perennial crops. All residue shall be uniformly spread or managed over the surface throughout critical wind erosion period. All residue shall be uniformly distributed over the entire field and not burned or removed. These periods of intensive tillage have led to excessive soil loss, often above the Soil Loss Tolerance (T), due to the loss of critical crop residue. The NRCS erosion prediction model(s) will be used to review the farming operation and determine if enough residue is being retained, throughout the rotation, to keep soil loss below T. The producer will then remove operations, or select alternate operations, to reduce erosion below T.

Before Situation: Row crops such as corn, soybeans, or cotton are grown and harvested in mid-late fall. Fields are disked immediately following harvest, with rows in some fields being hipped for drainage. Residue amounts after harvest average 30% or less, resulting in bare soil being exposed to wind erosion and/or intense rainfall during the fall, winter, and early spring. Over the winter residue degrades and sediment/nutrient runoff from fields increases. Sheet and rill and/or wind erosion occurs. Spring tillage and seedbed preparation activities occur as early as possible in the late winter and early spring. Weed control is accomplished primarily through tillage, requiring multiple operations. Runoff from the fields flows into streams, water courses or other water bodies causing degradation to the receiving waters. Soil health (soil organic matter) declines over time as a result of tillage practices, low residue monocultures, and long periods of bare soil.

After Situation: Implementation Requirements are prepared for the field(s) and the criteria for 345 Residue Management, Reduced Till are met.Mulch tillage applies to all cropland and other lands where crops are planed. It applies to stubble mulching on summer fallowed land to tillage for annually planted crops and to tillage for plating perennial crops. It also includes some planting operation such as hoe drill, air seeder and no-till drill that disturbs a large percentage of soil surface during the planting operation. Tillage occurs after crop harvest. In warmer areas, winter weeds or cover crops grow throughout the winter months. The residue that remains on the soil surface provides soil cover during late fall, throughout the winter, and into the early spring. Runoff and water/wind erosion are reduced. Winter weeds or the cover crop is terminated with tillage, a roller-crimper, shredding, or a combination of these methods prior to spring planting as late as feasible. Over time, soil health is improved due to the additional biomass, ground cover, soil infiltration, and plant diversity in the cropping system.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 100

Total Scenario Cost: $4,797.52

Scenario Cost/Unit: $47.98

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.38	50	$1,069.07
Seeding Operation, No Till/Strip Till Planter	1230	No Till/Strip Till row planters for seeding. Includes all costs for equipment, power unit, and labor.	Acre	$18.91	50	$945.56
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.18	100	$1,117.52
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.65	100	$1,665.37

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #3 - 1 row windbreak, trees, hand planted, balled and burlap <18"

Scenario Description: Single 500 foot row of balled and burlap (or container) tree/conifer seedlings for wind protection, wildlife habitat, or snow management. Trees planted by hand 10 feet apart. The trees are less than 18" with approximately 350 per acre. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover.

Scenario Feature Measure: length of windbreak row(s)

Scenario Unit: Foot

Scenario Typical Size: 500

Total Scenario Cost: $251.08

Scenario Cost/Unit: $0.50

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	2.5	$57.88
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	1	$12.04
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Tree, conifer, seedling or transplant, potted, 1 qt.	1534	Potted conifer tree, 1 quart. Includes materials and shipping only.	Each	$3.16	50	$157.95
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #9 - 1 row windbreak, trees, hand planted, balled and burlap <18", supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Single 500 foot row of balled and burlap (or container) tree/conifer seedlings for wind protection, wildlife habitat, or snow management. Trees planted by hand 10 feet apart. The trees are less than 18" with approximately 350 per acre. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: length of windbreak row(s)

Scenario Unit: Foot

Scenario Typical Size: 500

Total Scenario Cost: $726.81

Scenario Cost/Unit: $1.45

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	5.5	$127.35
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	1	$12.04
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	2000	$232.13
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Tree, conifer, seedling or transplant, potted, 1 qt.	1534	Potted conifer tree, 1 quart. Includes materials and shipping only.	Each	$3.16	50	$157.95
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #4 - 1 row windbreak, trees, hand planted, balled and burlap >18"

Scenario Description: Single 500 foot row of balled and burlap (or container) tree/conifer seedlings for wind protection, wildlife habitat, or snow management. Trees planted by hand 10 feet apart. The trees are greater than 18" with approximately 350 per acre. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover.

Scenario Feature Measure: length of windbreak row(s)

Scenario Unit: Foot

Scenario Typical Size: 500

Total Scenario Cost: $344.27

Scenario Cost/Unit: $0.69

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	2.5	$57.88
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	1	$12.04
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Tree, hardwood, seedling or transplant, potted, 1/2 to 1 gal.	1531	Potted hardwood tree, 1/2 to 1 gal. Includes materials and shipping only.	Each	$5.02	50	$251.13
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #10 - 1 row windbreak, trees, hand planted, balled and burlap >18", supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Single 500 foot row of balled and burlap (or container) tree/conifer seedlings for wind protection, wildlife habitat, or snow management. Trees planted by hand 10 feet apart. The trees are greater than 18" with approximately 350 per acre. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: length of windbreak row(s)

Scenario Unit: Foot

Scenario Typical Size: 500

Total Scenario Cost: $820.00

Scenario Cost/Unit: $1.64

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	5.5	$127.35
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	1	$12.04
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	2000	$232.13
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Tree, hardwood, seedling or transplant, potted, 1/2 to 1 gal.	1531	Potted hardwood tree, 1/2 to 1 gal. Includes materials and shipping only.	Each	$5.02	50	$251.13
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #1 - Hand Planted, Bare Root

Scenario Description: Single 600 foot row of bare root shrubs, conifers, hardwoods, or combination for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover.

Scenario Feature Measure: Number of trees

Scenario Unit: Each

Scenario Typical Size: 80

Total Scenario Cost: $159.74

Scenario Cost/Unit: $2.00

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	3	$69.46
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	40	$19.00
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	20	$8.34
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	20	$15.65
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #7 - Hand Planted, Bare Root, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Single 600 foot row of bare root shrubs, conifers, hardwoods, or combination for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Number of trees

Scenario Unit: Each

Scenario Typical Size: 80

Total Scenario Cost: $681.90

Scenario Cost/Unit: $8.52

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	6	$138.92
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	2400	$278.56
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	40	$19.00
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	20	$8.34
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	20	$15.65
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #2 - Hand Planted, Potted

Scenario Description: Single 600 foot row of potted shrubs, conifers, hardwoods, or combination for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover.

Scenario Feature Measure: Number of trees

Scenario Unit: Each

Scenario Typical Size: 80

Total Scenario Cost: $375.86

Scenario Cost/Unit: $4.70

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	3	$69.46
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Shrub, seedling or transplant, potted, 1 qt.	1524	Potted shrub, 1 quart. Includes materials and shipping only.	Each	$3.24	40	$129.56
Tree, conifer, seedling or transplant, potted, 1 qt.	1534	Potted conifer tree, 1 quart. Includes materials and shipping only.	Each	$3.16	20	$63.18
Tree, hardwood, seedling or transplant, potted, 1 qt.	1529	Potted hardwood tree, 1 quart. Includes materials and shipping only.	Each	$3.32	20	$66.38
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #8 - Hand Planted, Potted, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Single 600 foot row of potted shrubs, conifers, hardwoods, or combination for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Number of trees

Scenario Unit: Each

Scenario Typical Size: 80

Total Scenario Cost: $898.02

Scenario Cost/Unit: $11.23

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	6	$138.92
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	2400	$278.56
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, potted, 1 qt.	1524	Potted shrub, 1 quart. Includes materials and shipping only.	Each	$3.24	40	$129.56
Tree, conifer, seedling or transplant, potted, 1 qt.	1534	Potted conifer tree, 1 quart. Includes materials and shipping only.	Each	$3.16	20	$63.18
Tree, hardwood, seedling or transplant, potted, 1 qt.	1529	Potted hardwood tree, 1 quart. Includes materials and shipping only.	Each	$3.32	20	$66.38
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #5 - Trees, machine planted

Scenario Description: Tree planting consisting of 2500 feet of trees for wind protection, energy conservation, wildlife habitat, air quality, snow management or to provide a visual screen. The planting may consist of shrubs, hardwood trees, conifers, or a combination. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/4 shrubs, 1/2 hardwoods, and 1/4 conifers based on feet of trees. Herbivores (deer, rabbits, etc.) are NOT expected to browse tree seedlings, tree protection is not needed. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, pesticides transported to surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Livestock Production Limitation (inadequate shelter); Air Quality Impacts (emission of particulate matter, objectionable odors); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, odor mitigation, visual screen or management of snow deposition

After Situation: Wind velocity suitably reduced to minimize soil erosion, energy loss or to manage snow deposition. Additional wildlife food and cover, mixing of odor plumes and visual screening.

Scenario Feature Measure: length of planted windbreak

Scenario Unit: Foot

Scenario Typical Size: 2500

Total Scenario Cost: $693.78

Scenario Cost/Unit: $0.28

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	3	$76.06
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	$23.15	10	$231.54
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	3	$20.51
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	3	$72.84
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	4	$85.40
Materials						
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	156	$74.08
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	63	$26.27
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	125	$97.81
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	100	$9.27

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #11 - Trees, machine planted, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. The planting consists of 2500 feet of trees for wind protection, energy conservation, wildlife habitat, air quality, snow management or to provide a visual screen. The planting may consist of shrubs, hardwood trees, conifers, or a combination. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/4 shrubs, 1/2 hardwoods, and 1/4 conifers based on feet of trees. Herbivores (deer, rabbits, etc.) are NOT expected to browse tree seedlings, tree protection is not needed. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, pesticides transported to surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Livestock Production Limitation (inadequate shelter); Air Quality Impacts (emission of particulate matter, objectionable odors); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, odor mitigation, visual screen or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, energy loss or to manage snow deposition. Additional wildlife food and cover, mixing of odor plumes and visual screening. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: length of planted windbreak

Scenario Unit: Foot

Scenario Typical Size: 2500

Total Scenario Cost: $2,306.42

Scenario Cost/Unit: $0.92

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	3	$76.06
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	$23.15	22	$509.39
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	3	$20.51
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	3	$72.84
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	5	$106.75
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	10000	$1,160.65
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	156	$74.08
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	63	$26.27
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	125	$97.81
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	100	$9.27

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #6 - Trees, machine planted, wildlife protection

Scenario Description: Tree planting consisting of 2500 feet of trees for wind protection, energy conservation, wildlife habitat, air quality, snow management or to provide a visual screen. The planting may consist of shrubs, hardwood trees, conifers, or a combination. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/4 shrubs, 1/2 hardwoods, and 1/4 conifers based on feet of trees. Herbivore (deer, rabbits, etc.) damage is likely, so each tree must be protected with a rigid tube tree shelter. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, pesticides transported to surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Livestock Production Limitation (inadequate shelter); Air Quality Impacts (emission of particulate matter, objectionable odors); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, odor mitigation, visual screen or management of snow deposition

After Situation: Wind velocity suitably reduced to minimize soil erosion, energy loss or to manage snow deposition. Additional wildlife food and cover, mixing of odor plumes and visual screening.

Scenario Feature Measure: length of planted windbreak

Scenario Unit: Foot

Scenario Typical Size: 2500

Total Scenario Cost: $2,054.30

Scenario Cost/Unit: $0.82

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	3	$76.06
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	$23.15	14	$324.15
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	3	$20.51
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	3	$72.84
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	4	$85.40
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	188	$9.06
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	156	$74.08
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	188	$295.86
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	188	$962.99
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	63	$26.27
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	125	$97.81
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	100	$9.27

Practice: 380 - Windbreak/Shelterbelt Establishment

Scenario: #12 - Trees, machine planted, wildlife protection, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Planting consists of 2500 feet of trees for wind protection, energy conservation, wildlife habitat, air quality, snow management or to provide a visual screen. The planting may consist of shrubs, hardwood trees, conifers, or a combination. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/4 shrubs, 1/2 hardwoods, and 1/4 conifers based on feet of trees. Herbivore (deer, rabbits, etc.) damage is likely, so each tree must be protected with a rigid tube tree shelter. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, pesticides transported to surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Livestock Production Limitation (inadequate shelter); Air Quality Impacts (emission of particulate matter, objectionable odors); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, odor mitigation, visual screen or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, energy loss or to manage snow deposition. Additional wildlife food and cover, mixing of odor plumes and visual screening. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: length of planted windbreak

Scenario Unit: Foot

Scenario Typical Size: 2500

Total Scenario Cost: $3,666.94

Scenario Cost/Unit: $1.47

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	3	$76.06
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	$23.15	26	$602.00
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	3	$20.51
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	3	$72.84
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	5	$106.75
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	188	$9.06
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	10000	$1,160.65
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	156	$74.08
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	188	$295.86
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	188	$962.99

Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	63	$26.27
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	125	$97.81
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	100	$9.27

Practice: 382 - Fence

Scenario: #1 - Barbed Wire, Multi-strand

Scenario Description: Multi-strand, Barbed Wire - Installation of fence will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive area, improved water quality, reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate. The fence is typically 4 strands over 3/4 of a mile (3,960 ft).

Before Situation: On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of a grazing management plan that allows adequate rest and recovery periods, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, etc. Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 3960

Total Scenario Cost: $6,910.94

Scenario Cost/Unit: $1.75

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Foot	$0.17	5280	$874.37
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	160	$1,069.30
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	80	$500.86
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	7	$56.43
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	10	$112.61
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$71.19	12	$854.29
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	21	$502.09
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	$19.99	90	$1,799.47
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	15	$110.88
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	21	$526.15
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	15	$330.49
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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #3 - Barbed Wire, Multi-strand, difficult terrain

Scenario Description: Multi-strand, Barbed Wire - Installation of fence will allow for implementation of a grazing management plan that provides adequate rest and recovery periods, protection of sensitive areas, improved water quality, and reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate. Installed on rugged land or where site conditions require longer time to install the fence than the typical scenario.

Before Situation: On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of a grazing management plan that provides an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, etc... Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 3960

Total Scenario Cost: $8,153.65

Scenario Cost/Unit: $2.06

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Foot	$0.17	5280	$874.37
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	160	$1,069.30
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	80	$500.86
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	7	$56.43
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	10	$112.61
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$71.19	12	$854.29
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	25	$597.72
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	$19.99	135	$2,699.21
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	20	$147.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	25	$626.37
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	20	$440.65
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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #2 - Barbed Wire, Multi-strand with Fence Markers

Scenario Description: Multi-strand, Barbed Wire - Installation of fence will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, and reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate. The fence is typically 4 strands with wildlife markers, over 3/4 of a mile (3,960 ft).

Before Situation: On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, etc. Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations. The after condition includes markers placed on the fence to protect and deter wildlife, primarily protected wildlife include Sage grouse, Lesser Prairie Chicken, etc.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 3960

Total Scenario Cost: $7,426.13

Scenario Cost/Unit: $1.88

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Foot	$0.17	5280	$874.37
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	160	$1,069.30
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	80	$500.86
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	7	$56.43
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	10	$112.61
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding. Priced per foot of fence per each wire. Materials only.	Foot	$0.06	7920	$475.20
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$71.19	12	$854.29
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	21	$502.09
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	$19.99	92	$1,839.46
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	15	$110.88
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	21	$526.15
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	15	$330.49
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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #4 - Barbed Wire, Multi-strand with fence markers, difficult terrain

Scenario Description: Multi-strand, Barbed Wire - Installation of fence will allow for implementation of a grazing management plan that provides adequate rest and recovery periods, protection of sensitive areas, improved water quality, and reduction of noxious and invasive weeds. Constructed using fencing materials rather than a pre-manufactured gate. Installed on rugged land or where site conditions require longer time to install the fence than the typical scenario. Some of the sites that may be considered as difficult terrain are steep slopes, badlands, or rocky soils.

Before Situation: On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of a grazing management plan that provides for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, etc... Four strand wire is commonly installed. Fence will be installed with wildlife friendly considerations. The after condition includes markers placed on the fence to protect and deter wildlife, primarily protected wildlife include Sage grouse, Lesser Prairie Chicken, etc.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 3960

Total Scenario Cost: $8,668.84

Scenario Cost/Unit: $2.19

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Foot	$0.17	5280	$874.37
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	160	$1,069.30
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	80	$500.86
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	7	$56.43
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	10	$112.61
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding. Priced per foot of fence per each wire. Materials only.	Foot	$0.06	7920	$475.20
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$71.19	12	$854.29
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	25	$597.72
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	$19.99	137	$2,739.19
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	20	$147.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	25	$626.37
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	20	$440.65

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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #10 - Confinement

Scenario Description: Installation of a confinement fence is needed to addresses resource concerns associated with livestock feeding operations. The fence will provide protection of sensitive areas, improve water quality, and reduce of noxious and invasive weeds. Resource Concerns: Water Quality, Plant Condition.

Before Situation: Livestock feeding operation requires relocation to address water quality concerns. The site has conditions with the potential to negatively impact water quality in the designated area. These potential adverse effects will be addressed by moving the livestock facility away from the area(s) of concern.

After Situation: Installation of fence reduces water quality and plant condition resource concerns associated with livestock facilities. The fence would typically be 150' wide x 200' long (700 lf) with two gates, installed by a fencing contractor. 8 ft tall woven wire fence with 6" diameter posts spaced at 8 ft increments. Associated practices may include 614-Watering Facility, 516-Pipeline, 533-Pumping Plant, 342-Critical Area Planting.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 700

Total Scenario Cost: $3,776.01

Scenario Cost/Unit: $5.39

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Gate, Game, 8' High X 16'	1086	16' Wide Game Gate (8' Tall). Includes materials and shipping only.	Each	$420.04	2	$840.09
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	88	$588.12
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	8	$50.09
Post, Wood, Untreated, 8-9" X 8'	1078	Wood Post, End 8-9" X 8', Untreated. Includes materials and shipping only.	Each	$44.59	8	$356.71
Wire, Woven, Galvanized, 12.5 Gauge, 32"	3	Galvanized 12.5 gauge, 32" - 330' roll. Includes materials and shipping only.	Each	$175.97	3	$527.91
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	16	$382.54
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	$19.99	20	$399.88
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	10	$73.92
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	10	$250.55
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	6	$132.19
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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #7 - Electric, high tensile with energizer

Scenario Description: Electric - Installation of fence will allow for implementation of a grazing management plan that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Includes 3 strands of high tensile wire with energizer.

Before Situation: On grazinglands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases opportunity for encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, fence charger, etc. Two to three strand wire is commonly installed. Fence will be installed with wildlife friendly considerations.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 2640

Total Scenario Cost: $2,767.41

Scenario Cost/Unit: $1.05

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Electric, Energizer, 6 joule	29	Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only.	Each	$324.22	1	$324.22
Electric, Ground Rod Clamps	21	Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only.	Each	$1.81	2	$3.62
Electric, Ground Rods	20	Electric, Ground Rod for electric fence. Includes materials and shipping only.	Each	$10.51	1	$10.51
Fence, Wire Assembly, High Tensile, Electric, 3 Strand	34	Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves. Includes materials and shipping only.	Foot	$0.12	2640	$327.21
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	35	$233.91
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	4	$32.24
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	8	$90.09
Wire, High Tensile, 12.5 Gauge, 4,000' roll	2	High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only.	Each	$114.08	2	$228.16
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	6	$143.45
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	$19.99	40	$799.76
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	4	$29.57
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	6	$150.33
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	10	$220.32

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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #8 - Electric, high tensile with energizer and fence markers

Scenario Description: Electric - Installation of fence will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Includes 3 strands of high-tensile wire with energizer.

Before Situation: On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases opportunity for encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of grazing management that allows for an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Fence includes posts, wire, fasteners, gates, fence charger, etc. Two to three strand wire is commonly installed. Fence will be installed with wildlife friendly considerations. The after condition includes markers placed on the fence to protect and deter wildlife, protected wildlife species include Sage grouse, Lesser Prairie Chicken, etc.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 2640

Total Scenario Cost: $3,124.20

Scenario Cost/Unit: $1.18

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Electric, Energizer, 6 joule	29	Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only.	Each	$324.22	1	$324.22
Electric, Ground Rod Clamps	21	Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only.	Each	$1.81	2	$3.62
Electric, Ground Rods	20	Electric, Ground Rod for electric fence. Includes materials and shipping only.	Each	$10.51	1	$10.51
Fence, Wire Assembly, High Tensile, Electric, 3 Strand	34	Brace pins, springs, strainers, battens, clips, crimp sleeves, staples, insulators, wrap around sleeves. Includes materials and shipping only.	Foot	$0.12	2640	$327.21
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	35	$233.91
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	4	$32.24
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	8	$90.09
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding. Priced per foot of fence per each wire. Materials only.	Foot	$0.06	5280	$316.80
Wire, High Tensile, 12.5 Gauge, 4,000' roll	2	High Tensile 12.5 gauge, 4,000' roll. Includes materials and shipping only.	Each	$114.08	2	$228.16
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	6	$143.45
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	$19.99	42	$839.75
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	4	$29.57

Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	6	$150.33
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	10	$220.32

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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #11 - Portable Fence

Scenario Description: One or two strands of polywire and step-in fiberglass fence posts. Typically used as cross-fencing on the interior of larger paddocks built with permanent perimeter fencing. Installation of portable, temporary, fencing will allow for the implementation of a grazing management system that provides adequate rest and recovery periods, improved water quality, reduction of noxious and invasive weeds, and better management of soil health. Portable fencing allows for more flexibility than standard fencing; this allows the manager to apply adaptive management (managing the grazing based on current conditions rather than a predetermined grazing system).

Before Situation: Grazing lands health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, cattle access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases opportunity for encroachment of noxious and invasive weeds.

After Situation: Installation of portable fencing will allow for implementation of a grazing management plan that provides for an adequate rest and recovery periods, improved water quality, reduction of noxious and invasive weeds, and better management of soil health. Portable fencing includes step-in fiberglass posts, polywire, an energizer, and grounding rods. One strand of polywire is common, but sometimes two strands are appropriate, depending on class of livestock and other considerations.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 5280

Total Scenario Cost: $1,513.89

Scenario Cost/Unit: $0.29

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Electric, Energizer, 6 joule	29	Electric, Energizer, 6 joule for electric fence. Includes materials and shipping only.	Each	$324.22	1	$324.22
Electric, Ground Rod Clamps	21	Electric, Ground Rod Clamps for electric fence. Includes materials and shipping only.	Each	$1.81	4	$7.24
Electric, Ground Rods	20	Electric, Ground Rod for electric fence. Includes materials and shipping only.	Each	$10.51	2	$21.02
Post, Step-In, Plastic	2574	UV-stabilized plastic treadins with up to 9 lugs for positioning Polywire and Poly Tape up to 1 1/2" wide, 42" high (including stake) to control domestic and wild animals.	Each	$4.26	132	$561.72
Wire, Polywire	8	Wire, Polywire for electric fence - 1,300 roll. Includes materials and shipping only.	Each	$47.61	4	$190.44
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	$19.99	10	$199.94
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	5	$165.25
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	2	$44.06

Practice: 382 - Fence

Scenario: #9 - Protective Fence

Scenario Description: A barrier (fence) implemented on an NRCS constructed waste storage system site per an approved engineering design. Permanently installed fence built to (1) keep humans away from waste ponds &lagoons, (2) to protect sensitive areas (riparian areas, wetlands, springs, etc.) from heavy livestock pressure, (3) to protect newly installed conservation practices where vulnerable to livestock damage. Heavy grade fence materials and close post spacing required.

Before Situation: Where a NRCS designed and constructed waste storage pond is planned whereby significant risk to human safety is determined to be evident. Livestock has access to sensitive areas, or area with newly installed conservation practices that may cause detrimental effects to animal/human health and wildlife habitat. Resource concerns affected are plant health and vigor, wildlife habitat, compaction of soils, runoff of sediment or water quality degradation due to increased turbidity.

After Situation: Humans and livestock are excluded from the waste storage pond for safety purposes by installing a fence around a waste holding pond. Improved livestock control and access to water, or other sensitive areas, will promote safety for livestock/humans, improve health and vigor of sensitive species, limit soil erosion, and improve soil condition.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 1320

Total Scenario Cost: $2,541.16

Scenario Cost/Unit: $1.93

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Foot	$0.17	1760	$291.46
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	55	$367.57
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	30	$187.82
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	6	$48.36
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	8	$90.09
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$71.19	4	$284.76
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	7	$167.36
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	$19.99	30	$599.82
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	6	$44.35
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	7	$175.38
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	5	$110.16
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	$174.01	1	$174.01

Practice: 382 - Fence

Scenario: #5 - Woven Wire

Scenario Description: Woven - Installation of fence will allow for implementation of a grazing management plan that promotes adequate rest and recovery periods, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Woven wire is typically used in applications with sheep, goats, hogs, wildlife exclusion, shelterbelt/tree protection, etc. Constructed using fencing materials rather than a pre-manufactured gate. Includes 32" woven wire with 2 strands of barbed wire.

Before Situation: On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, livestock access to water bodies is uncontrolled. Reduced vegetation, as a result of over grazing/improper distribution, increases the opportunity for the encroachment of noxious and invasive weeds. cover increases opportunity for encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of a rotational grazing plan that promotes adequate rest and recovery periods, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Woven wire fence includes posts, wire, fasteners, gates, etc. Woven wire is typically used in applications with sheep, goats, hogs, wildlife exclusion, shelterbelt/tree protection, etc. Fence will be installed with wildlife friendly considerations.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 3960

Total Scenario Cost: $8,638.88

Scenario Cost/Unit: $2.18

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Foot	$0.17	2640	$437.18
Fence, Wire Assembly, Woven Wire	35	Brace pins, twist sticks, staples. Includes materials and shipping only.	Foot	$0.12	3960	$480.63
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	160	$1,069.30
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	80	$500.86
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	7	$56.43
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	10	$112.61
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$71.19	6	$427.15
Wire, Woven, Galvanized, 12.5 Gauge, 32"	3	Galvanized 12.5 gauge, 32" - 330' roll. Includes materials and shipping only.	Each	$175.97	12	$2,111.64
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	$174.01	1	$174.01
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	21	$502.09
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	$19.99	90	$1,799.47
Equipment Installation						
Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not	Hour	$7.39	15	$110.88

		include power unit. Labor not included.				
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	21	$526.15
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	15	$330.49

Practice: 382 - Fence

Scenario: #6 - Woven Wire, with fence markers

Scenario Description: Woven - Installation of fence will allow for implementation of a grazing management plan that promotes an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Woven wire is typically used in applications with sheep, goats, hogs, wildlife exclusion, shelterbelt/tree protection, etc. Constructed using fencing materials rather than a pre-manufactured gate. Includes 32" woven wire with 2 strands of barbed wire.

Before Situation: On grazing lands, health and vigor are negatively impacted by poor grazing distribution, timing of grazing, and inadequate rest and recovery periods. Water quality is impacted by increased erosion and runoff, livestock access to water bodies is uncontrolled. Reduced vegetative cover, as a result of over grazing/improper distribution, increases opportunity for encroachment of noxious and invasive weeds.

After Situation: Installation of interior fencing will allow for implementation of a rotational grazing plan that promotes an adequate rest and recovery period, protection of sensitive areas, improved water quality, reduction of noxious and invasive weeds. Woven wire fence includes posts, wire, fasteners, gates, etc. Woven wire is typically used in applications with sheep, goats, hogs, wildlife exclusion, shelterbelt/tree protection, etc. Fence will be installed with wildlife friendly considerations. The after condition includes markers placed on the fence to protect and deter wildlife, primarily protected wildlife include Sage grouse, Lesser Prairie Chicken, etc.

Scenario Feature Measure: Length of Fence

Scenario Unit: Foot

Scenario Typical Size: 3960

Total Scenario Cost: $9,154.07

Scenario Cost/Unit: $2.31

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Fence, Wire Assembly, Barbed Wire	30	Brace pins, battens, clips, staples. Includes materials and shipping only.	Foot	$0.17	2640	$437.18
Fence, Wire Assembly, Woven Wire	35	Brace pins, twist sticks, staples. Includes materials and shipping only.	Foot	$0.12	3960	$480.63
Post, Steel T, 1.33 lbs, 6'	15	Steel Post, Studded 6' - 1.33 lb. Includes materials and shipping only.	Each	$6.68	160	$1,069.30
Post, Wood, CCA treated, 3-4" x 7'	9	Wood Post, Line 3-4" X 7', CCA Treated. Includes materials and shipping only.	Each	$6.26	80	$500.86
Post, Wood, CCA treated, 4" x 8'	10	Wood Post, Line 4" X 8', CCA Treated. Includes materials and shipping only.	Each	$8.06	7	$56.43
Post, Wood, CCA treated, 5" x 8'	11	Wood Post, End 5" X 8', CCA Treated. Includes materials and shipping only.	Each	$11.26	10	$112.61
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding. Priced per foot of fence per each wire. Materials only.	Foot	$0.06	7920	$475.20
Wire, Barbed, Galvanized, 12.5 Gauge, 1,320' roll	1	Galvanized 12.5 gauge, 1,320' roll. Includes materials and shipping only.	Each	$71.19	6	$427.15
Wire, Woven, Galvanized, 12.5 Gauge, 32"	3	Galvanized 12.5 gauge, 32" - 330' roll. Includes materials and shipping only.	Each	$175.97	12	$2,111.64
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	$174.01	1	$174.01
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	21	$502.09
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	$19.99	92	$1,839.46

Equipment Installation

Auger, Post driver attachment	934	Auger or post driver attachment to a tractor or skidsteer. Does not include power unit. Labor not included.	Hour	$7.39	15	$110.88
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	21	$526.15
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	15	$330.49

Practice: 386 - Field Border

Scenario: #6 - Herbaceous, Organic (FI)

Scenario Description: A strip of permanent vegetation established at the edge or around the perimeter of a field. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown. Practice includes mechanical seedbed prep and planting of organic herbaceous species (where available). The area of the field border is taken out of production.

Before Situation: Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation: This practice, when applied around a field, will support and connect other buffer practices while creating a buffer between organic systems and conventional cropping systems. Organic herbaceous species will be established around the field edges to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall be adapted to site, not function as a host for diseases of a field crop and have physical charactaristics necessary to control wind and water erosion to tolerable levels on the field border area.

Scenario Feature Measure: Number of Acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $656.60

Scenario Cost/Unit: $656.60

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	2	$62.53
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Site Preparation, Mechanical	944	Aerator, rolling drum chopper, etc. Includes equipment, power unit and labor costs.	Acre	$71.30	1	$71.30
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	1	$16.79
Foregone Income						
FI, Organic, Corn Dryland	2232	Organic Dryland Corn is Primary Crop	Acre	$138.18	0.33	$45.60
FI, Organic, Soybeans Dryland	2234	Organic Dryland Soybeans is Primary Crop	Acre	$336.32	0.33	$110.98
FI, Organic, Wheat Dryland	2236	Organic Dryland Wheat is Primary Crop	Acre	$132.06	0.34	$44.90
Materials						
Untreated Conventional Seed, Three plus Species Mix, Warm Season Perennial Grass	2344	Untreated conventional wWarm season perennial grass mix. May contain seed that are not available as certified organic. Includes material and shipping only.	Acre	$282.89	1	$282.89

Practice: 386 - Field Border

Scenario: #3 - Herbaceous, Pollinator, (FI)

Scenario Description: A strip of permanent herbaceous vegetation established at the edge or around the perimeter of a field. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown. Practice includes chemical seedbed prep and planting of pollinator friendly herbaceous species. The area of the field border is taken out of production. Seed mix of SPECIES IS CHOSEN TO SPECIFICALLY BENEFIT WILDLIFE (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) or POLLINATORS (eg. inclusion of 5-10 forb species) based on range conditions. FOR POLLINATOR HABITAT: Consideration is given to selecting plants that bloom sequentially throughout the growing season where feasible. For honeybee foraging habitat, species are selected which will be in bloom during the season of year when hives are in the area.

Before Situation: Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation: This practice, when applied around a field, will support and connect other buffer practices within and between fields. Pollinator herbaceous plantings will provide species which flower throughout the growing season. This provides a source of nectar for adult pollinators and a diversity of herbaceous material for immature pollinator life stages and for nesting. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall meet the pollinator habitat requirements of the state and be adapted to site; not function as a host for diseases of a field crop and; have physical charactaristics necessary to control wind and water erosion to tolerable levels on the field border area.

Scenario Feature Measure: Number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $418.47

Scenario Cost/Unit: $418.47

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	2	$62.53
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
Native or Non-Native Grass and Forb Mix, for Wildlife (including pollinators) or Ecosystem Restoration	2502	Native or Non-Native Grass and Forb Mix, including specialized species. Includes material and shipping only.	Acre	$129.33	1	$129.33
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 386 - Field Border

Scenario: #4 - Herbaceous, Pollinator, Natives only (FI)

Scenario Description: A strip of permanent herbaceous vegetation established at the edge or around the perimeter of a field. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown. Practice includes chemical seedbed prep and planting of pollinator friendly herbaceous species. The area of the field border is taken out of production. Seed mix of PREDOMINANTLY NATIVE SPECIES IS CHOSEN TO SPECIFICALLY BENEFIT WILDLIFE (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) or POLLINATORS (eg. inclusion of 5-10 forb species). FOR POLLINATOR HABITAT: Consideration is given to selecting plants that bloom sequentially throughout the growing season where feasible. For honeybee foraging habitat, species are selected which will be in bloom during the season of year when hives are in the area.

Before Situation: Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation: This practice, when applied around a field, will support and connect other buffer practices within and between fields. Pollinator herbaceous plantings will provide species which flower throughout the growing season. This provides a source of nectar for adult pollinators and a diversity of herbaceous material for immature pollinator life stages and for nesting. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Species selected shall meet the pollinator habitat requirements of the state and be adapted to site; not function as a host for diseases of a field crop and; have physical charactaristics necessary to control wind and water erosion to tolerable levels on the field border area.

Scenario Feature Measure: Number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $550.43

Scenario Cost/Unit: $550.43

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	2	$62.53
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
Native Grass and Forb Mix, for Wildlife (including pollinators) or Ecosystem Restoration	2335	Native grass and forb/legume mix, including specialized species. Includes material and shipping only.	Acre	$261.29	1	$261.29
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 386 - Field Border

Scenario: #1 - Herbaceous, Standard, (FI)

Scenario Description: A strip of permanent herbaceous vegetation (native, warm-season) established at the edge or around the perimeter of a field. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown. Practice includes chemical seedbed prep and planting of grass. The area of the field border is taken out of production.

Before Situation: Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation: This practice, when applied around a field, will support and connect other buffer practices within and between fields. Herbaceous species (native, warm-season) will be established around the field edges to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Herbaceous species shall be selected that: do not function as a host for diseases of a field crop, and have physical charactaristics necessary to control wind and water erosion to tolerable levels on the field border area.

Scenario Feature Measure: number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $510.12

Scenario Cost/Unit: $510.12

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	2	$62.53
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	1	$220.98
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 386 - Field Border

Scenario: #2 - Herbaceous, Standard with Nutrients, (FI)

Scenario Description: A strip of permanent herbaceous vegetation (warm and/or cool-season) established at the edge or around the perimeter of a field. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown. Practice includes chemical seedbed prep, addition of soil amendments, and planting grass. The area of the field border is taken out of production.

Before Situation: Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation: This practice, when applied around a field, will support and connect other buffer practices within and between fields. Herbaceous species (warm and/or cool-season) will be established around the field edges to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Herbaceous species shall be: selected that are adapted to site, will not function as a host for diseases of a field crop, and have physical charactaristics necessary to control wind and water erosion to tolerable levels on the field border area.

Scenario Feature Measure: Number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $544.13

Scenario Cost/Unit: $544.13

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
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	$0.53	30	$15.85
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	$0.56	20	$11.21
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	1	$220.98
Labor						
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	$31.26	2	$62.53
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1	$6.95
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 386 - Field Border

Scenario: #5 - Herbaceous with Shrubs (FI)

Scenario Description: A strip of permanent vegetation and shrubs established at the edge or around the perimeter of a field. This practice may also apply to recreation land or other land uses where agronomic crops including forages are grown. Practice includes chemical and/or mechanical seedbed prep and planting of herbaceous and woody species. The area of the field border is taken out of production.

Before Situation: Before practice conditions may vary widely. Fields may have erosion issues from wind or water, a field border may be needed to manage pest populations, protect soil and water quality, provide wildlife food and cover, provide pollinator habitat, or a field border may be used to increase carbon storage and improve air quality. Water quality, soil erosion and/or wildlife food and cover may all be primary resource concerns.

After Situation: This practice, when applied around a field, will support and connect other buffer practices within and between fields. Herbaceous plantings will be established to meet Field Border specifications and in addition shrubs will be established around the field edges to the extent needed to meet the resource needs and producer objectives. Minimum field border widths shall be based on NRCS local design criteria specific to the purpose for installing the practice. Herbaceous and shrub species selected shall be adapted to site, not function as a host for diseases of a field crop, and have physical charactaristics necessary to control wind and water erosion to tolerable levels on the field border area.

Scenario Feature Measure: Number of Acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $716.60

Scenario Cost/Unit: $716.60

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	4	$79.98
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	$31.26	2	$62.53
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
Shrub, seedling or transplant, bare root, 18"-36"	1507	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	$0.58	135	$78.34
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	1	$220.98
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	4	$48.17
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.33	$49.39
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.33	$92.73
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.34	$40.77

Practice: 390 - Riparian Herbaceous Cover

Scenario: #1 - Native Species

Scenario Description: Native Species: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (550), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection (580), Vegetated Treatment Area (635), Wetland Enhancement (659), or Wetland Restoration (657). The typical setting for this scenario is usually a narrow strip between the aquatic and terrestrial habitats subject to intermittant flooding and saturated soils where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of native grasses, legumes, and/or forbs tolerant to the site conditions will be planted by broadcast and/or no-till or range drill seeding methods as necessary to accomplish the intended purpose(s). Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community, the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible.

Before Situation: The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource concern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting. Soil quality may be reduced due to compaction and may require light tillage to prepare a proper seedbed.

After Situation: The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to ensure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream.

Scenario Feature Measure: Acres of Riparian Herbaceous Cover

Scenario Unit: Acre

Scenario Typical Size: 5

Total Scenario Cost: $678.40

Scenario Cost/Unit: $135.68

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	2	$46.31
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	5	$104.65
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	5	$54.60
Materials						
Two Species Mix, Warm Season, Native Perennial Grass	2325	Native, warm season perennial grass. Includes material and shipping only.	Acre	$94.57	5	$472.84

Practice: 390 - Riparian Herbaceous Cover

Scenario: #2 - Native Species with foregone income

Scenario Description: Native Species: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (550), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection (580), Vegetated Treatment Area (635), Wetland Enhancement (659), or Wetland Restoration (657). The typical setting for this scenario is a narrow strip between the aquatic and terrestrial habitats, subject to intermittant flooding and saturated soils, where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of native grasses, legumes, and/or forbs tolerant to the site conditions will be planted, by broadcast and/or no-till or range drill seeding methods as necessary, to accomplish the intended purpose(s). Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community, the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

Before Situation: The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource concern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting. Soil quality may be reduced due to compaction and may require light tillage to prepare a proper seedbed.

After Situation: The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to ensure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

Scenario Feature Measure: Acres of Riparian Herbaceous Cover

Scenario Unit: Acre

Scenario Typical Size: 5

Total Scenario Cost: $767.23

Scenario Cost/Unit: $153.45

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	2	$46.31
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	5	$104.65
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	5	$54.60
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$17.77	5	$88.83
Materials						
Two Species Mix, Warm Season, Native Perennial Grass	2325	Native, warm season perennial grass. Includes material and shipping only.	Acre	$94.57	5	$472.84

Practice: 390 - Riparian Herbaceous Cover

Scenario: #3 - Native Species, Pollinator Planting

Scenario Description: Native Species: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (550), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection (580), Vegetated Treatment Area (635), Wetland Enhancement (659), or Wetland Restoration (657). The typical setting for this scenario is usually a narrow strip between the aquatic and terrestrial habitats subject to intermittant flooding and saturated soils where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of native grasses, legumes, and/or forbs tolerant to the site conditions will be planted by broadcast and/or no-till or range drill seeding methods as necessary to accomplish the intended purpose(s). Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community, the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible.

Before Situation: The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource concern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting. Soil quality may be reduced due to compaction and may require light tillage to prepare a proper seedbed.

After Situation: The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to ensure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream.

Scenario Feature Measure: Acres of Riparian Herbaceous Cover

Scenario Unit: Acre

Scenario Typical Size: 5

Total Scenario Cost: $2,612.56

Scenario Cost/Unit: $522.51

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	2	$46.31
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	5	$104.65
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	5	$54.60
Materials						
Six Species Mix, Native Forb	2334	Native forb mix. Includes material and shipping only.	Acre	$986.62	2	$1,973.25
Three Species Mix, Cool Season, Native Perennial Grass	2316	Cool season, native grass mix. Includes material and shipping only.	Acre	$144.58	3	$433.75

Practice: 390 - Riparian Herbaceous Cover

Scenario: #4 - Native Species, Pollinator Planting, Forgone Income

Scenario Description: Native Species: This scenario addresses inadequate herbaceous plant community function or diversity within the specific transitional zone between terrestrial and aquatic habitats in rangeland, pasture, cropland, and forest where natural seeding methods and/or management is unlikely to improve the plant community within a reasonable time period. This scenario applies to work not covered under NRCS Conservation Practice Range Planting (550), Forage and Biomass Planting (512), Critical Area Planting (342), Filter Strip (393), Restoration and Management of Rare and Declining Habitats (643), Streambank and Shoreline Protection (580), Vegetated Treatment Area (635), Wetland Enhancement (659), or Wetland Restoration (657). The typical setting for this scenario is usually a narrow strip between the aquatic and terrestrial habitats subject to intermittant flooding and saturated soils where the exising plant community has been disturbed, destroyed, or the species diversity is unable to provide proper function and/or adequate habitat. Where the establishment of a diverse riparian herbaceous plant community is desired, an adapted mix of native grasses, legumes, and/or forbs tolerant to the site conditions will be planted by broadcast and/or no-till or range drill seeding methods as necessary to accomplish the intended purpose(s). Where chemical control of undesirable vegetation, including invasives, is required to reduce competition for the desired plant community, the Herbaceous Weed Control (315) practice should be used. Seedbed preparation may require LIGHT TILLAGE (disking). WHEN POLLINATOR HABITAT IS A CONSIDERATION: Include 5-10 adapted forb species that bloom sequentially throughout the growing season where feasible. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

Before Situation: The riparian zone, the specific area between terrestrial and aquatic habitats, is currently an undesirable or inadequate stand of perennial or annual vegetation and natural reseeding or vegetation management is unlikely to improve the plant community within a reasonable amount of time to adequately address streambank and/or shoreline stability, dissipate stream energy and trap sediment, improve and/or maintain water quality, and/or provide adequate habitat corridors, food and/or cover for fish, wildlife, pollinators, and/or livestock resource concern(s). Existing conditions often require suppression or eradication of current vegetation by conventional mechanical or chemical (Herbaceous Weed Control (315)) methods to ensure establishment success of the new planting. Soil quality may be reduced due to compaction and may require light tillage to prepare a proper seedbed.

After Situation: The riparian zone, the transitional zone between the terrestrial and aquatic habitats, is established to an adapted, diverse vegetative plant community and is under close management to ensure long term survival and ecological succession. The quality and quantity of the riparian zone components are managed to support the species that depend on it for habitat as well as the functions it performs for stabilizing the streambank and/or shoreline, dissipating stream energy and trapping sediment, and improving and/or maintaining water quality. These functions include: stream temperature moderation through shading, recruitment of non-woody organic matter, habitat for terrestrial insects and other riparian dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream. All grazing will be deferred during plant establishment which will consist of a minimum of one year, and in many cases longer. Typically there is no haying, and the only clipping during establishment will be for removal of weeds.

Scenario Feature Measure: Acres of Riparian Herbaceous Cover

Scenario Unit: Acre

Scenario Typical Size: 5

Total Scenario Cost: $2,701.39

Scenario Cost/Unit: $540.28

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	2	$46.31
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	5	$104.65
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	5	$54.60
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$17.77	5	$88.83
Materials						
Six Species Mix, Native Forb	2334	Native forb mix. Includes material and shipping only.	Acre	$986.62	2	$1,973.25
Three Species Mix, Cool Season, Native Perennial Grass	2316	Cool season, native grass mix. Includes material and shipping only.	Acre	$144.58	3	$433.75

Practice: 391 - Riparian Forest Buffer

Scenario: #2 - Bare-root, machine planted (FI)

Scenario Description: Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and provide other associated benefits. The buffer will be located adjacent to, and up-gradient from, a watercourse or water body, extending a minimum of 35 feet wide. The planting will consist of machine planted bare-root shrubs, evergreen, and deciduous trees in rows. Area will be planted using 3 rows and will use each of the woody plant types. Spacing between plants in each row: shrubs will be 6' , evergreen tree spacing will be 12', and deciduous tree spacing will be 15'. Tree rows will be 15' apart. A total tree row length of 3000'. Tree shelters will be placed on the hardwoods and evergreens. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated water temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation: Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation: A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Scenario Feature Measure: Area of planting

Scenario Unit: Acre

Scenario Typical Size: 3

Total Scenario Cost: $4,174.09

Scenario Cost/Unit: $1,391.36

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	10	$239.09
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	$19.99	30	$599.82
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	4	$132.20
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	10	$68.36
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	10	$250.55
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	$174.01	1	$174.01
Materials						
Shrub, seedling or transplant, bare root, 18"-36"	1507	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	$0.58	500	$290.14
Stakes, wood, 1" x 1" x 36"	1577	1" x 1" x 36" wood stakes to fasten items in place. Includes materials only.	Each	$0.60	450	$268.46
Tree shelter, mesh tree tube, 48"	1556	48" tall vexar or other open weave tubular tree shelter to protect from animal damage. Materials only.	Each	$1.09	250	$272.57
Tree shelter, solid tube type, 4" x 36"	1565	4" x 36" tree tube for protection from animal damage. Materials only.	Each	$3.22	200	$643.20
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	250	$104.24

Practice: 391 - Riparian Forest Buffer

Scenario: #1 - Direct Seeding (FI)

Scenario Description: Establish a buffer of trees and/or shrubs to restore riparian plant communities and associated benefits. The buffer will be located adjacent to, and up-gradient from, a watercourse or water body, extending a minimum of 35 feet wide and 3000 feet long. The planting will consist of trees or shrubs planted through direct seeding. Planting rate will be approximately 3000 seeds per acre. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated water temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation: Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for terrestrial wildlife.

After Situation: A buffer of trees and shrubs will be established through broadcasting seeds, nuts, and mast (fruit of woody species), and mechanically raking to provide seed to soil contact along the riparian corridor. This will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns. Seedbed preparation prior to seeding will be conducted using 490 - Tree/Shrub Site Preparation.

Scenario Feature Measure: Area of planting

Scenario Unit: Acre

Scenario Typical Size: 2.5

Total Scenario Cost: $2,202.54

Scenario Cost/Unit: $881.02

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	3	$71.73
Equipment Installation						
Mechanical nut planter	1601	Mechanical nut planter for direct seeding of trees and shrubs. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$2.14	2	$4.27
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	2	$50.11
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	$174.01	1	$174.01
Materials						
Trees and shrubs, seed	1871	Tree or shrub seed, e.g., acorns, to establish trees. Includes materials and shipping only.	Pound	$4.67	235	$1,098.15
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.9	$134.69
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	$555.99	0.8	$444.80
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.8	$224.79

Practice: 391 - Riparian Forest Buffer

Scenario: #3 - Small container, machine planted (FI)

Scenario Description: Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and other associated benefits. The buffer will be located adjacent to, and up-gradient from, a watercourse or water body, extending a minimum of 35 feet wide. The planting will consist of machine planted containerized shrubs, evergreen, and deciduous trees in rows. Area will be planted using 3 rows. Spacing between plants in-rows: shrub spacing will be 6' , evergreen tree spacing will be 12', and deciduous tree spacing will be 15'. Tree rows will be 15' apart. Tree row is a total length of 3000'. Tree shelters will be placed on hardwoods and evergreens. Resource concerns to be addressed are Soil Erosion - excessive bank erosion; Water Quality - excess sediment and organics in surface waters and elevated water temperature; Degraded Plant Condition - inadequate structure and composition; and Inadequate Habitat for Fish and Wildlife - habitat degradation.

Before Situation: Typical sites include former riparian forests and habitat used for forage, cropland, speculation property, or other nonforest condition which contains undesirable amounts or types of vegetation. Active bank erosion is depositing sediment, nutrients and organics in the riparian area. Water temperature is high due to lack of shade. Habitat is not desirable for wildlife.

After Situation: A buffer of trees and shrubs will be established along the riparian corridor which will provide stability, filtration, shade, and desirable habitat to address the above mentioned resource concerns.

Scenario Feature Measure: Area of planting

Scenario Unit: Acre

Scenario Typical Size: 3

Total Scenario Cost: $6,908.39

Scenario Cost/Unit: $2,302.80

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	20	$478.18
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	$19.99	60	$1,199.65
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	8	$264.40
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	20	$136.72
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	20	$501.09
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	$174.01	1	$174.01
Materials						
Stakes, wood, 1" x 1" x 48"	1578	1" x 1" x 48" wood stakes to fasten items in place. Includes materials only.	Each	$2.04	450	$916.46
Tree shelter, solid tube type, 4" x 48"	1566	4" x 48" tree tube for protection from animal damage. Materials only.	Each	$4.14	250	$1,035.00
Tree shelter, solid tube type, 4" x 36"	1565	4" x 36" tree tube for protection from animal damage. Materials only.	Each	$3.22	200	$643.20
Tree, conifer, seedling, containerized, 15 cu. in.	1520	Containerized conifer stock, 15 cubic inches (e.g. 2.0" x 6"). Includes materials and shipping only.	Each	$0.60	950	$573.05

Foregone Income

FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	1	$149.65
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	$555.99	1	$555.99
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	1	$280.99

Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	$0.72	200	$144.81

Foregone Income

FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	1	$149.65
FI, Corn Irrigated	1960	Irrigated Corn is Primary Crop	Acre	$555.99	1	$555.99
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	1	$280.99

Practice: 393 - Filter Strip

Scenario: #2 - Introduced (FI)

Scenario Description: A strip or area of herbaceous vegetation situated between cropland, grazing land, or disturbed land and sensitive areas. Practice includes chemical seedbed prep, soil admendments (nutrients), and planting of approved species. The area of the filter strip is taken out of production.

Before Situation: Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat, and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

After Situation: The planned filter strip will be established and mainatined per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of mostly introduced herbaceous species. The filter strip will have adequate width to filter the planned pollutants. The practice includes chemical seedbed preparation, soil admendments (nutrients), and seeding. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

Scenario Feature Measure: Number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $283.65

Scenario Cost/Unit: $283.65

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
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	$0.53	30	$15.85
One Species, Cool Season, Introduced Perennial Grass	2313	Introduced, cool season perennial grass. Includes material and shipping only.	Acre	$32.72	1	$32.72
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	$0.56	20	$11.21
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.4	$59.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.3	$84.30
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.3	$35.98

Practice: 393 - Filter Strip

Scenario: #4 - Introduced with Shaping (FI)

Scenario Description: A strip or area of introduced herbaceous vegetation situated between cropland, grazing land, or disturbed land, and sensitive areas. Practice includes chemical seedbed prep, land shaping with producer owned equipment, soil amendments (nutrients), and planting of approved species. The area of the filter strip is taken out of production.

Before Situation: Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat, and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

After Situation: The planned filter strip will be established and mainatined per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of mostly introduced herbaceous species. The filter strip will have adequate width to filter the planned pollutants. The practice includes chemical seedbed preparation (including any shaping needed to ensure even entry of water into the strip), soil admendments (nutrients), and seeding. Species selected shall be able to withstand partial burial by sediment and be tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

Scenario Feature Measure: Number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $636.80

Scenario Cost/Unit: $636.80

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
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	$0.53	30	$15.85
One Species, Cool Season, Introduced Perennial Grass	2313	Introduced, cool season perennial grass. Includes material and shipping only.	Acre	$32.72	1	$32.72
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	$0.56	20	$11.21
Labor						
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	$27.55	1	$27.55
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$66.88	1	$66.88
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.4	$59.86

FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.3	$84.30
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.3	$35.98

Practice: 393 - Filter Strip

Scenario: #1 - Native (FI)

Scenario Description: A strip or area of native herbaceous vegetation situated between cropland, grazing land, or disturbed land and sensitive areas. Practice includes chemical seedbed prep and planting of native species. The area of the filter strip is taken out of production.

Before Situation: Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat, and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

After Situation: The planned filter strip will be established and mainatined per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of native species. The filter strip will have adequate width to filter the planned pollutants. The practice includes chemical seedbed preparation, soil admendments (nutrients), and seeding. Species selected shall be able to withstand partial burial by sediment and tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

Scenario Feature Measure: number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $294.79

Scenario Cost/Unit: $294.79

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	$70.93	1	$70.93
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.4	$59.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.3	$84.30
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.3	$35.98

Practice: 393 - Filter Strip

Scenario: #3 - Native with Shaping (FI)

Scenario Description: A strip or area of native herbaceous vegetation situated between cropland, grazing land, or disturbed land and sensitive areas. Practice includes chemical seedbed prep, land shaping/smoothing with producer equipment, and planting of native species. The area of the filter strip is taken out of production.

Before Situation: Annual cropland, grazing land, or disturbed land (including forestland) allows for runoff of suspended solids, dissolved and/or associated contaminants into environmentally-sensitive areas such as wetlands, riparian zones, critical habitat, and neighboring non-ag properties. Water Quality resource concerns are associated with this practice.

After Situation: The planned filter strip will be established and mainatined per the practice plan that will meet the criteria for the planned purpose(s). The vegetation will consist of native species. The filter strip will have adequate width to filter the planned pollutants. The practice includes chemical seedbed preparation (including any shaping/smoothing needed to ensure even entry of water into the strip), and seeding. Species selected shall be able to withstand partial burial by sediment and be tolerant of herbicides used on contribution area while protecting environmentally-sensitive areas. The area of the filter strip is taken out of production.

Scenario Feature Measure: Number of acres

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $640.39

Scenario Cost/Unit: $640.39

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	1	$19.99
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1	$15.93
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	$70.93	1	$70.93
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1	$6.20
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$66.88	1	$66.88
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1	$21.60
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.4	$59.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.3	$84.30
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.3	$35.98

Practice: 394 - Firebreak

Scenario: #5 - Constructed - hand cleared

Scenario Description: Installing a bare-ground firebreak with a width of 8' or more on gently to strongly sloping slopes with hand tools and labor in timbered areas. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, Habitat degradation, Soil erosion, and Excessive sediment in surface waters.

Before Situation: Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn. Hand cleared firebreaks are needed due to vegetation, topography, high wildfire risk or to their use as down-wind breaks for prescribed burns. Conditions such as topography, the presence of brush and trees, etc. make the use of typical equipment impractical. As slopes increase, the potential for excessive erosion increases from soil disturbances. Therefore the installation of water control devices such as water bars will be important in protecting the resource base.

After Situation: The property is adequately protected from wildfire or can be safely prescribe burned and the potential for excessive erosion from the firebreak is minimized.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $691.08

Scenario Cost/Unit: $0.69

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	16	$319.91
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	8	$264.40
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.42	8	$35.33
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 394 - Firebreak

Scenario: #4 - Constructed - Medium equipment, Dozer

Scenario Description: Use of equipment such as small dozers to blade bare-soil firebreaks. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, Habitat degradation, Soil erosion, and Excessive sediment in surface waters.

Before Situation: Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn. Conditions such as topography, the presence of brush and trees, etc. make the use of typical farm equipment impractical. As slopes increase, the potential for excessive erosion increases from soil disturbances. Therefore the installation of water control devices such as water bars will be important in protecting the resource base.

After Situation: The property is adequately protected from wildfire or can be safely prescribe burned and the potential for excessive erosion from the firebreak is minimized.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $664.01

Scenario Cost/Unit: $0.66

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$27.55	5	$137.77
Equipment Installation						
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$66.88	4	$267.52
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 394 - Firebreak

Scenario: #3 - Constructed, Tillage

Scenario Description: Use of medium equipment such as small dozers to blade, disk, plow, etc. to create a 30' wide bare-soil firebreaks on slopes less than 15% around a 40 acre field. Resource concerns include Wildfire hazards from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, and Habitat degradation.

Before Situation: Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn. Conditions such as topography, the presence of brush and trees, etc. make the use of typical farm equipment impractical.

After Situation: The property is adequately protected from wildfire or can be safely prescribe burned and the potential for excessive erosion from the firebreak is negligible.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 5280

Total Scenario Cost: $593.20

Scenario Cost/Unit: $0.11

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	14.6	$245.17
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	$174.01	2	$348.02

Practice: 394 - Firebreak

Scenario: #6 - Constructed, tree clearing

Scenario Description: Installation of a short vegetative firebreak a minimum width of 50' on the upwind side of unit and 100' on the downwind side of unit around an entire 160 acre field/farm using mechanical trees shears, chainsaws, and bush hog mowers. Vegetation is reduced in height but not down to bare mineral soil. Generally water control devices such as water bars are not needed due either to the lack of steep terrain or the temporary nature of the firebreak. Typical slopes are between 5 and 45%. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, and Habitat degradation.

Before Situation: Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

After Situation: The property is adequately protected from wildfire or can be safely prescribe burned.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 10560

Total Scenario Cost: $7,820.24

Scenario Cost/Unit: $0.74

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	70	$1,673.62
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	$19.99	24	$479.86
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.42	20	$88.34
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	$84.38	40	$3,375.20
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	$52.50	10	$524.97
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	20	$902.09
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	3	$776.17

Practice: 394 - Firebreak

Scenario: #2 - Mowing

Scenario Description: Installation of a short vegetative firebreak a minimum width of 30' around a 40 acre field/farm using a bush-hog mower. Generally water control devices such as water bars are not needed due either to the lack of steep terrain or the temporary nature of the firebreak. Resource concerns include Wildfire hazard from excessive biomass accumulation, Undesirable plant productivity and health, Inadequate plant structure and composition, and Habitat degradation.

Before Situation: Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

After Situation: The property is adequately protected from wildfire or can be safely prescribe burned.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 5280

Total Scenario Cost: $217.47

Scenario Cost/Unit: $0.04

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	3	$59.98
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	$52.50	3	$157.49

Practice: 394 - Firebreak

Scenario: #1 - Vegetated, permanent, grass

Scenario Description: Establishing 2 acres (30 foot wide strip approximately 1/2 mile in length) of permanent vegetation that will serve as a green firebreak. Scenario includes clearing the site, preparing the seedbed, seeding (typically cool season grasses and/or legumes), and applying needed soil amendments. Clearing will be achieved with the use of a bush hog or similar equipment. Seedbed preparation and vegetation establishment will be accomplished with farm equipment. Soil amendments will be applied according to local FOTG guidance. This scenario does not include follow-up maintenance operations such as weed control. mowing, etc. Resource concerns include Wildfire hazard from excessive biomass accumulation, Soil erosion, and Excessive sediment in surface waters.

Before Situation: Tract, field, or farm lacks adequate firebreaks to either reduce the spread of wildfires or contain a prescribed burn.

After Situation: The property is adequately protected from wildfire or can be safely prescribe burned. Wildlife habitat will also be enhanced and the potential for erosion from the firebreak is minimized.

Scenario Feature Measure: Length of firebreak

Scenario Unit: Foot

Scenario Typical Size: 2640

Total Scenario Cost: $279.08

Scenario Cost/Unit: $0.11

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
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	$0.53	72	$38.05
One Species, Cool Season, Introduced Perennial Grass	2313	Introduced, cool season perennial grass. Includes material and shipping only.	Acre	$32.72	1.8	$58.90
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	$0.56	108	$60.53
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	$19.99	2	$39.99
Equipment Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	1.8	$12.51
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	1.8	$38.88
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	1.8	$30.23

Practice: 395 - Stream Habitat Improvement and Management

Scenario: #5 - Fish Barrier

Scenario Description: This scenario describes the implementation of a stream habitat improvement and management project where practices are focused on the stream channel. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in protecting native aquatic fauna in the reach from competition or harrassament from non-native fish. This action may also increase food availability for fish and other stream species located above the constructed barrier. Payment for implementation is to defray the costs of stream habitat assessment above the barrier, and project implementation. Records demonstrating implementation of this scenario will address resource concerns for aquatic and riparian species of concern will be required.

Before Situation: In this stream corridor, native aquatic species are at risk as determined by the state fish and wildlife agency. NRCS Stream Visual Assessment Protocol for the reach being protected by a barrier meets quality criteria and provides habitat for native species of concern, as determined by a Stream Visual Assessment Protocol score of greater than 5 .

After Situation: Native fish inhabiting areas upstream of the newly constructed concrete barrier will not be adversely affected by interactions with non-native species/competitors.

Scenario Feature Measure: Each

Scenario Unit: Cubic Yard

Scenario Typical Size: 5

Total Scenario Cost: $37,601.84

Scenario Cost/Unit: $7,520.37

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
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	$460.00	60	$27,600.00
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$162.96	10	$1,629.57
Truck, Concrete Pump	1211	Concrete pump, normally truck mounted. Use this item in association with other concrete components when job requires placement by other than normal chutes. Include drive and setup time in quantity; therefore, do not include mobilization. Includes equipment and operator.	Hour	$147.72	36	$5,318.08
Labor						
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	$31.04	10	$310.36
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	$21.97	10	$219.72
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	$32.62	10	$326.18
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	8	$804.93
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	$484.00	2	$968.00
Materials						

Plywood, 3/4 inch, untreated	1833	Untreated 4' x 8' sheets of 3/4 inch exterior grade plywood. Includes materials only.	Each	$26.87	15	$402.99
Steel, rebar	1832	Steel rebar, grade 60. Materials only.	Pound	$0.55	40	$22.00

Practice: 395 - Stream Habitat Improvement and Management

Scenario: #3 - Instream rock placement

Scenario Description: This scenario describes the implementation of a stream habitat improvement and management project that places individual boulders or boulder clusters, or rock structures in or adjacent to the stream channel as habitat components. A project design for boulder placement will be based on assessment of the target stream reach characteristics and those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large rocks/boulders placed in the stream channel will mimic geologic material sizes typically present in the watershed or observed in intact, reference stream reaches in the MLRA where the project is located. Boulders should be placed in streams to create pool habitat and hydraulic complexity according to NRCS engineering specifications and with close review &approval of a fish habitat biologis onsite during implementation of the project design. Spawning gravel placement should be placed to restore spawning area substrates potentially disturbed by rock placement. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, spawning habitat, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of stream habitat assessment, and project implementation. Records demonstrating implementation of this scenario will address resource concerns for stream species of concern will be required.

Before Situation: In this stream reach, habitat for fish, aquatic insects and other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 overall. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may be also compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components, such as large wood, leaf matter, and shade.

After Situation: Stream habitat within the project reach is improving as a result of placing boulders or constructing rock structures in the channel and/or along the stream bank. Hydraulic complexity of the habitat in the reach is increased, and hiding cover, food availability and refuge habitat for stream species is improving. Streambank vegetation is increasing and contributing to stability of the streambanks.

Scenario Feature Measure: Bankfull width x reach length

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $14,145.98

Scenario Cost/Unit: $14,145.98

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yard	$29.43	120	$3,532.03
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$22.32	20	$446.40
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yard	$27.72	30	$831.62
Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Inlcudes materials and delivery (up to 100 miles) only.	Ton	$34.32	60	$2,059.07
Cuttings, woody, large size	1309	Woody pole cuttings or posts 2" to 6" in diameter and 6' long. Includes materials and shipping only.	Each	$18.38	100	$1,838.38
Labor						
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	$31.04	24	$744.87
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	$21.97	16	$351.55
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$162.96	16	$2,607.31
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$95.84	8	$766.75

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	$484.00	2	$968.00

Practice: 395 - Stream Habitat Improvement and Management

Scenario: #2 - Instream wood placement

Scenario Description: This scenario involves placement of large wood (logs, root wads, log structures) into a stream channel in order to improve aquatic habitat that currently does not meet quality criteria for stream species habitat. A stream assessment (i.e. Stream Visual Assessment Protocol) should be conducted in order to document habitat components lacking for aquatic species (i.e. large wood, pools). A project design for wood placement will be based on assessment of the target stream reach characteristics and those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large wood and root wads placed into the stream will mimic genus, age, and size of mature trees found in intact, reference riparian areas in the MLRA where the project is located. Large wood/trees with rootwads intact should be placed in streams to create pool habitat according to NRCS engineering specifications and with close review &approval of a fish habitat biologist. Boulders placed to provide ballast shall only be used if the geomorphic setting and project design demand this component. The planned activity will meet the current 395 standard, and facilitating practice standards utilized, including timing of work windows required for protected aquatic and riparian species, and protecting/restoring vegetation and substrates of/to areas impacted by heavy equipment. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of project implementation. Monitoring records demonstrating implementation of this scenario will address resource concerns for stream species of concern are required.

Before Situation: In this stream reach, habitat for fish, aquatic insects and/or other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 overall. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may also be compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components, such as large wood.

After Situation: Stream habitat within the project reach is improving as a result of placing logs, root wads, and/or wood structures in the channel and/or along the stream bank. Pool habitat in the reach is improved, and hiding cover, food availability and refuge habitat for all stream species is improving.

Scenario Feature Measure: Bankfull width x reach length

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $15,223.87

Scenario Cost/Unit: $15,223.87

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yard	$29.43	30	$883.01
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$22.32	15	$334.80
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yard	$27.72	20	$554.41
Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Inlcudes materials and delivery (up to 100 miles) only.	Ton	$34.32	40	$1,372.71
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$53.63	1	$53.63
Cuttings, woody, large size	1309	Woody pole cuttings or posts 2" to 6" in diameter and 6' long. Includes materials and shipping only.	Each	$18.38	300	$5,515.14
Log, un-anchored	2035	Price of log picked up at the Mill. Includes material only.	Ton	$40.58	30	$1,217.49
Root Wad	2045	Tree stump buried into the streambank with the roots left exposed. Includes material only.	Ton	$8.91	20	$178.25
Steel, rebar	1832	Steel rebar, grade 60. Materials only.	Pound	$0.55	50	$27.50
Labor						
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	$31.04	24	$744.87
Equipment Installation						
Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of	Hour	$162.96	16	$2,607.31

		1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.				
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$95.84	8	$766.75

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	$484.00	2	$968.00

Practice: 395 - Stream Habitat Improvement and Management

Scenario: #4 - Rock and wood structures

Scenario Description: This scenario describes the implementation of a stream habitat improvement and management project where practices are focused on instream habitat improvement with a combination of rock AND wood structures. This senario involves placement of large wood and rock structures into a stream channel in order to improve aquatic habitat that currently does not meet quality criteria for stream species habitat. A stream assessment (i.e. Stream Visual Assessment Protocol) should be conducted in order to document habitat components (such as large wood, pools) are not currently present in the stream or are limited for aquatic species. A project design for placement of habitat structures (boulders, boulder clusters, wood, wood structures) will be based on assessment of (a) the target stream reach characteristics and (b) those of a suitable reference reach. These characteristics include channel geometry, channel slope, stream bottom substrate size and composition, and the geomorphic setting influencing the channel form, pattern and profile. Large rocks/boulders placed in the stream channel will mimic geologic material sizes typically present in the watershed or observed in intact, reference stream reaches in the MLRA where the project is located. Rock boulder sizes should also reflect the geomorphic setting of the stream reach. Large wood placed into the stream under this scenario should be similar in species, age, and size (diameter) as trees found in the surrounding riparian area, to the extent possible. Wood, boulders and/or boulder clusters will be placed in the stream to create pool habitat and hydraulic complexity according to NRCS engineering specifications and with close review &approval of a fish habitat biologist onsite during the planning and implementation of the project. This scenario involves restoring one acre of stream. The planned activity will meet the current 395 standard, and facilitating practice standards utilized. Implementation will result in the improvement of instream habitat complexity, hiding and resting cover, and/or increased food availability for fish and other stream species. Payment for implementation is to defray the costs of project implementation. Records demonstrating implementation of this scenario will address resource concerns for stream species of concern will be required.

Before Situation: In this stream reach, habitat for fish, aquatic insects and/or other stream species is sub-optimal as determined by the NRCS Stream Visual Assessment Protocol score of less than 5. The site does not have adequate food, cover, and perhaps habitat connectivity for desired species. Riparian vegetation quality and/or quantity may also be compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream habitat components, such as large wood and off-channel refuge habitat.

After Situation: Stream habitat within the project reach is improving as a result of placing logs, rocks, or constructing wood and rock structures in the channel and/or along the stream bank. Pool habitat in the reach is improved, and hiding cover, food availability and refuge habitat for all stream species is improving.

Scenario Feature Measure: stream length X bankfull width

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $28,808.21

Scenario Cost/Unit: $28,808.21

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic Yard	$29.43	60	$1,766.02
Aggregate, river rock	1834	Well graded, rounded mineral substrates derived from local riverine settings. Includes materials and local delivery	Ton	$22.32	7	$156.24
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic Yard	$27.72	17	$471.25
Boulder	1761	Rock boulders (approximately 5 ft dia. 6.67 Tons) Inlcudes materials and delivery (up to 100 miles) only.	Ton	$34.32	40	$1,372.71
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$53.63	1	$53.63
Cuttings, woody, large size	1309	Woody pole cuttings or posts 2" to 6" in diameter and 6' long. Includes materials and shipping only.	Each	$18.38	300	$5,515.14
Log, un-anchored	2035	Price of log picked up at the Mill. Includes material only.	Ton	$40.58	30	$1,217.49
Root Wad	2045	Tree stump buried into the streambank with the roots left exposed. Includes material only.	Ton	$8.91	10	$89.13
Steel, rebar	1832	Steel rebar, grade 60. Materials only.	Pound	$0.55	8	$4.40
Labor						
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	$31.04	24	$744.87
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,	Hour	$21.97	24	$527.33

		herder, concrete placement, materials spreader, flagger, etc.				
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	$32.62	60	$1,957.07
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	32	$3,219.74
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	$40.95	180	$7,371.14

Equipment Installation

Hydraulic Excavator, 2 CY	932	Track mounted hydraulic excavator with bucket capacity range of 1.5 to 2.5 CY. Equipment and power unit costs. Labor not included.	Hour	$162.96	16	$2,607.31
Truck, dump, 12 CY	1215	Dump truck for moving bulk material. Typically capacity is 16 ton or 12 cubic yards. Includes equipment only.	Hour	$95.84	8	$766.75

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	$484.00	2	$968.00

Practice: 395 - Stream Habitat Improvement and Management

Scenario: #1 - Riparian Zone Improvement-Forested

Scenario Description: This scenario describes fish and wildlife habitat improvement and/or management actions focused on the community structure and function of forested riparian zone plant communities. The planned activity meets the 395 standard, and facilitating practice standards, especially Codes 390 and 391, utilized in combination to satisfy all requirements specific to habitats needed for the stream and riparian species for which the practice is being implemented. Implementation will improve instream and riparian habitat complexity, water quality, hiding and resting cover, and/or increased food availability for desired riparian and stream species. Because species and habitats differ dramatically within and across regions and/or MLRAs, up to 12 riparian plant community-specific scenarios may be required across the US.

Before Situation: Riparian quality and quantity are at risk as determined by the NRCS Stream Visual Assessment Protocol score of less than 5 for those elements. The site does not have adequate food, cover, and/or connectivity for riparian wildlife, and contributes insufficient amounts of organic matter andor large woody material for stream species food and cover. The site's riparian vegetation is compromised by human activities and/or access of vehicles, people, and/or livestock is not controlled adequately to protect riparian functions and stream habitat quality. Nutrients are transported to surface waters through runoff or soil erosion or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be reduced due to compaction. Riparian vegetation quality and/or quantity is compromised to the extent that the riparian area and floodplain are not functioning to provide necessary stream and riparian habitat components.

After Situation: Revegetation/reforestation of the riparian zone is completed and the vegetation community is under close management to insure long-term survival and ecological succession of the plant community. The quality and quantity of the riparian zone components of the site are managed to support a diverse vegetation community suitable for the site, the species that depend on it for habitat, and the functions it performs or will eventually perform as the vegetation matures. These functions include: stream temperature moderation thru shading, recruitment of instream large wood and/or non-woody organic matter, riparian habitat for terrestrial insects and other riparian-dependent species, streambank integrity, and filtration of contaminants from surface run-off into the stream.

Scenario Feature Measure: acres

Scenario Unit: Acre

Scenario Typical Size: 2

Total Scenario Cost: $18,752.97

Scenario Cost/Unit: $9,376.48

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.04	24	$744.87
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	$21.97	40	$878.88
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	$32.62	160	$5,218.86
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	40	$4,024.67
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	$40.95	40	$1,638.03
Materials						
Compost	265	A mixture of decaying organic matter, as from leaves and manure, used to improve soil structure and provide nutrients.	Ton	$53.63	1	$53.63
Cuttings, woody, large size	1309	Woody pole cuttings or posts 2" to 6" in diameter and 6' long. Includes materials and shipping only.	Each	$18.38	200	$3,676.76
Tree shelter, wire mesh	1557	5 feet tall, Woven Wire mesh, 6"x 6" opening or smaller, 10 gauge wire (minimum) , cage placed around seedling for animal protection. Materials only.	Each	$2.32	200	$463.54
Tree, willow	1426	Willow tree for planting, 18" to 36" seedling. Includes materials and shipping only.	Each	$0.67	200	$133.80

Equipment Installation

Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$55.54	16	$888.69
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$65.53	8	$524.24

Mobilization

Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.50	2	$507.00

Practice: 422 - Hedgerow Planting

Scenario: #1 - Bareroot, machine plant (FI)

Scenario Description: This scenario is for machine planting of bareroot woody species. Typically installed in or at the edge of cropland or pasture this scenario is used to address Wind Erosion and Inadequate Habitat for Fish and Wildlife resource concerns. Specifically, the establishment of dense vegetation in a linear design can be used to reduce erosion caused by wind and provide for several habitat elements depending on the needs identified in the habitat assessment. Tree rows are spaced 15 feet apart. Depending on design and plant species selection, this scenario can provide: habitat conectivity, food, and cover for wildlife . The 422 standard for wildlife criteria calls for a minimum of two species of native plants.Typical installation involves tillage to prepare the site for planting using Site Preparation (490). Trees and/or shrubs adapted for local climatic and soil conditions are typically planted at 8 foot intervals (this will vary with species selection and density goals). Plant species adapted to the local climatic and soil conditions that address the resource concern will be stated in the specification for the site. There is tremendous overlap between this practice and conservation practice 380 Windbreak/Shelterbelt establishment. The main difference is that conservation practice 380 is exclusively woody plants where practice 422 provides for the use of herbaceous materials. If a fence is needed to facilitate establishment use practice 382, Fence. Seedbed preparation will be completed thru 490, Tree/Shrub Site Preparation.

Before Situation: Erosion by wind exceeds soil loss tolerance. Habitat patches lack connectivity and cover is inadequate to allow wildlife to exploit cropland food resources.

After Situation: Erosion by wind is reduced to tolerable limits. Inadequate habitat for fish and wildlife is addressed for needs identified in the resource assessment. Habitat patches are connected by dense hedgerow vegetation. Food resources in crop fields are made availble by their proximity to hedgerow cover. Planting may include fruit and mast (fruit produced by trees such as nuts) bearing species, improving food supply, depending on needs being addressed.

Scenario Feature Measure: Length of Hedgerow

Scenario Unit: Foot

Scenario Typical Size: 800

Total Scenario Cost: $610.33

Scenario Cost/Unit: $0.76

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	6	$143.45
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	$19.99	6	$119.96
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	$174.01	1	$174.01
Materials						
Tree, conifer, seedling, bare root, 1-0	1512	Bare root conifer trees, 1-0 (1 year old). Includes materials and shipping only.	Each	$0.25	200	$49.87
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	6	$41.02
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.2	$29.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.1	$28.10
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.2	$23.98

Practice: 422 - Hedgerow Planting

Scenario: #2 - Container, Machine Plant (FI)

Scenario Description: This scenario is for machine planting of containerized woody species. Typically installed in or at the edge of cropland or pasture this scenario is used to address Wind Erosion and Inadequate Habitat for Fish and Wildlife resource concerns. Specifically, the establishment of dense vegetation in a linear design can be used to reduce erosion caused by wind and provide for several habitat elements depending on the needs identified in a habitat assessment. Tree rows are spaced 15 feet apart. Depending on design and plant species selection, this scenario can provide: habitat conectivity, food, and cover for wildlife. The 422 standard for wildlife criteria calls for a minimum of two species of native plants.Typical installation involves tillage to prepare the site for planting using Site Preparation (490). Trees and/or shrubs adapted for local climatic and edaphic (pertaining to the soil) conditions are typically planted at 8 foot intervals (this will vary with species selection and density goals). Plant species adapted to the local climatic and edaphic conditions that address the resource concern will be stated in the specification for the site. There is tremendous overlap between this practice and conservation practice 380 Windbreak/Shelterbelt establishment. The main difference is that conservation practice 380 is exclusively woody plants where practice 422 provides for the use of herbaceous materials. If a fence is needed to facilitate establishment use practice 382, Fence. Seedbed preparation will be completed thru 490, Tree/Shrub Site Preparation.

Before Situation: Erosion by wind exceeds soil loss tolerance. Habitat patches lack connectivity and cover is inadequate to allow wildlife to exploit cropland food resources.

After Situation: Erosion by wind is reduced to tolerable limits. Inadequate habitat for fish and wildlife is addressed for needs identified in the resource assessment. Habitat patches are connected by dense hedgerow vegetation. Food resources in crop fields are made availble by their proximity to hedgerow cover. Planting may include fruit and mast (fruit of trees such as nuts) bearing species, improving food supply, depending on needs being addressed.

Scenario Feature Measure: Length of Hedgerow

Scenario Unit: Foot

Scenario Typical Size: 800

Total Scenario Cost: $723.05

Scenario Cost/Unit: $0.90

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	8	$191.27
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	$19.99	8	$159.95
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	$174.01	1	$174.01
Materials						
Tree, conifer, seedling, containerized, 6 cu. in.	1517	Containerized conifer stock, 6 cubic inches (e.g., "multipot" plug), 1.4" x 4.6". Includes materials and shipping only.	Each	$0.31	200	$61.11
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	8	$54.69
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.2	$29.93
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.1	$28.10
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.2	$23.98

Practice: 472 - Access Control

Scenario: #1 - Animal exclusion from sensitive areas (FI)

Scenario Description: Exclude animals from an area in order to address identified resource concerns. This is for facilitating exclusion of animals to protect or enhance natural resource values and/or to allow for fuel loads to accumulate to address other resource issues. Control will be by permanent or temporary electric fencing. Any need for permanent fencing will be planned and installed using the Fence practice (382). Clearing of brush and trees is not necessary. Resource concerns include wildlife habitat degradation, undesirable plant productivity and health, and/or excessive sediment in surface waters.

Before Situation: Sensitive areas are threatened by the adverse actions of domestic and/or wild animals. The importance of the sensitive areas can include (but are not limited to): wildlife habitat, plant species composition, newly established trees and/or plants, stream bank stability, and/or water quality.

After Situation: Adequate fuel loads are permitted to accumulate so that other conservation practices may be implemented and/or sensitive areas are protected from adverse actions of domestic and/or wild animals by excluding them from the area.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $671.59

Scenario Cost/Unit: $16.79

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	4	$79.98
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$15.57	38	$591.62

Practice: 484 - Mulching

Scenario: #2 - Erosion Control Blanket

Scenario Description: Installation of erosion control blanket on critical areas with steep slopes, grassed waterways or diversions.. Blanket is typically made of coconut coir, wood fiber, straw and is typically covered on both sides with polypropylene netting. Used to help control erosion and establish vegetative cover.

Before Situation: There are areas of concentrated flow and a grassed waterway is being installed. Soil erosion is a concern and there is little to no vegetation.

After Situation: Implementation Requirements are preprared according to the 484 Mulching Standard and implemented. The erosion control blanket is placed on concentrated flow areas and secured with ground stables. Soil erosion is minimized and vegetative cover is established.

Scenario Feature Measure: Area Covered by Mulch

Scenario Unit: Square Foot

Scenario Typical Size: 5000

Total Scenario Cost: $6,379.01

Scenario Cost/Unit: $1.28

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	8	$175.78
Materials						
Erosion Control Blanket, biodegradable	1213	Biodegradable erosion control blanket, typically a composite of natural fibers with reinforcing polymer netting. Materials and shipping only.	Square Yard	$1.24	5000	$6,203.24

Practice: 484 - Mulching

Scenario: #5 - Hydro-mulching

Scenario Description: Installation of mulch through hydraulic methods on critical areas with steep slopes, grassed waterways or diversions. The mulch is comprised of wood cellulose fiber pulp and may include seed, fertilizer, and other approved materials. Mulch is typically applied at a rate of 1500 pounds per acre as a slurry by using hydroseeding methods. Used to help control erosion and establish vegetative cover.

Before Situation: Areas being seeded to permanent cover. Soil erosion is a concern and there is little to no vegetation.

After Situation: The hydro-mulch is applied to appropriate areas as needed for vegetation establishment. Soil erosion is minimized and vegetative cover is established.

Scenario Feature Measure: Area Covered by Mulch

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $2,136.97

Scenario Cost/Unit: $2,136.97

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total

Equipment Installation

Seeding Operation, hydroseeder	1291	Hydroseeding with typical 1500 to 3600 gallon seeder. Includes all costs for equipment, power unit, and labor.	Acre	$2,136.97	1	$2,136.97

Practice: 484 - Mulching

Scenario: #6 - Natural Materials - Large Area

Scenario Description: Application of straw mulch or other other state approved natural material to reduce erosion and facilitate the establishment of vegetative cover on large areas including salt affected soils. Mulch provides full coverage and is typically used with critical area planting. 2 tons per acre of straw applied through mechanical methods.

Before Situation: Typical scenario is applying mulch on large areas including salt affected soils after permanent cover planting. The potential for soil erosion is high and mulch is needed to stabilize the soil, reduce evaporative losses, and facilitate the establishment of vegetative cover.

After Situation: Straw mulch has been applied to areas needing mulch. Erosion and sedimentation is reduced, evaporation losses are minimized, water and soil quality is protected, and vegetative cover is established.

Scenario Feature Measure: Area Covered by Mulch

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $7,297.05

Scenario Cost/Unit: $364.85

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	22	$525.99
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	$19.99	20	$399.88
Equipment Installation						
Mulcher, straw blower	1305	Straw bale mulcher/blower to mechanically spread small or large straw bales. Labor not included.	Hour	$45.22	20	$904.36
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	22	$551.20
Materials						
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$122.89	40	$4,915.61

Practice: 484 - Mulching

Scenario: #1 - Natural Material - Straw

Scenario Description: Application of straw mulch or other other state approved natural material to reduce erosion and facilitate the establishment of vegetative cover. Mulch provides full coverage and is typically used with critical area planting. 2 tons per acre of straw applied and anchored with light tillage equipment, treader, knifed in, etc.

Before Situation: Typical scenario is applying mulch on 1 acres of a disturbed site around a newly constructed structural practice. The potential for soil erosion is high and mulch is needed to stabilize the soil and facilitate the establishment of vegetative cover.

After Situation: Straw mulch has been applied to areas needing mulch. Erosion and sedimentation is reduced, water and soil quality is protected, and vegetative cover is established.

Scenario Feature Measure: Area Covered by Mulch

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $445.72

Scenario Cost/Unit: $445.72

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	2	$47.82
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	$19.99	4	$79.98
Equipment Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	2	$50.11
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	1	$22.03
Materials						
Straw	1237	Small grain straw (non organic and certified organic). Includes materials only.	Ton	$122.89	2	$245.78

Practice: 484 - Mulching

Scenario: #4 - Tree and Shrub - Rolls

Scenario Description: Barrier fabric or other suitable natural or synthetic mulch is installed with a new tree and shrub planting. Typically used to retain soil moisture, control soil temperature, and minimize erosion by providing cover during the installation of conservation practices. Two 300 foot tree rows will use barrier fabric to conserve moisture. Rate is per linear foot (300' roll x 2= 600') and 3 staples/pins per tree.

Before Situation: Site conditions vary, and erosion and wildlife habitat have been identified as concerns. Barrier fabric (as mulch) is added to address soil moisture loss. Sites are typically on field edges, each tree row to be mulched individually.

After Situation: Barrier fabric rolls are installed with 3 metal pins/staples per tree. Moisture is retained, temperature controlled, and erosion is minimized.

Scenario Feature Measure: Number of Trees Installed

Scenario Unit: Foot

Scenario Typical Size: 600

Total Scenario Cost: $377.35

Scenario Cost/Unit: $0.63

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	2	$47.82
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	$19.99	7	$139.96
Equipment Installation						
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$25.05	2	$50.11
Materials						
Mulch, polyethylene plastic, 1.0 mil	1303	1.0 mil polyethylene plastic mulch, with anchoring. Includes materials and shipping only.	Square Yard	$0.35	400	$139.46

Practice: 484 - Mulching

Scenario: #3 - Tree and Shrub - Squares

Scenario Description: Barrier fabric or other suitable natural or synthetic mulch is installed with a new tree and shrub planting. Typically used to retain moisture during the installation of conservation practices. Rate is per tree/shrub and assumes 1 square yard of barrier fabric and 5 staples/tree.

Before Situation: Site conditions vary and erosion and wildlife habitat have been identified as concerns. Fabric squares (as mulch) are added to address soil moisture and temperature issues. Sites are often remote and trees may not be planted in rows, requiring each tree to be mulched individually.

After Situation: Barrier fabric squares are installed with 5 sod staples each, around individual trees and shrubs to retain moisture and regulate soil temperature.

Scenario Feature Measure: Number of Trees Mulched

Scenario Unit: Each

Scenario Typical Size: 100

Total Scenario Cost: $238.53

Scenario Cost/Unit: $2.39

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total

Equipment Installation

Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	$2.39	100	$238.53

Practice: 490 - Tree/Shrub Site Preparation

Scenario: #5 - Hand site preparation

Scenario Description: This practice typically involves grubbing all vegetation from the area of ground prior to the establishment of trees and/or shrubs. Typical sites include land such as old fields, pastures, rangelands, or abandoned forests that are mostly grass or weed covered. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health, and inadequate structure and composition.

Before Situation: The site contains undesirable vegetation including herbaceous and woody plants. Noxious and invasive species may also be present. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Soils are compacted as a result of recent timber harvesting activities or other land uses. If left untreated poor survival or reduced growth of trees/shrubs will occur, and wildlife habitat conditions will not improve.

After Situation: All undesirable vegetation has been grubbed out of multiple 4 ft by 4 ft areas, leaving bare soil, at each planting spot. Tree seedlings and/or shrubs are planted at each spot. Adequate moisture, space and light is available, allowing plants to grow properly. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 1 acres.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $320.04

Scenario Cost/Unit: $320.04

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	12	$239.93
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	$40.05	2	$80.11

Practice: 490 - Tree/Shrub Site Preparation

Scenario: #1 - Mechanical, Heavy

Scenario Description: This practice involves the use of heavy machinery and chemical to treat an area in order to improve site conditions for establishing trees and/or shrubs. Typical sites include trees and brush cover that is not appropriate to the site or providing the desired condition for the landowner. Chemical application is needed to treat resprouting and smaller trees. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health and inadequate structure and composition and soil quality degredation - soil erosion - sheet and rill.

Before Situation: The site is dominated by undesirable vegetation including herbaceous plants and significant amounts of woody vegetation (trees and brush) occupying the site. There is also a significant component of woody debris onsite. Noxious and invasive species may also be present on the site. Soils are compacted as a result of past heavy equipment activities or from other land uses. Sheet and rill erosion is ocurring in areas where the soil was severely disturbed expsoing bare soil. If left untreated, soil compaction and erosion issues will result in poor survival or reduced growth of trees/shrubs to be established on the site.

After Situation: Undesirable vegetation has been removed using mechanical and chemical methods reducing competition for target trees and/or shrubs. Woody debris has been removed to facilitate tree/shrub planting operations. Soil compaction has been alleviated, allowing moisture penetration and proper root growth. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size is 6 acres.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 6

Total Scenario Cost: $1,924.31

Scenario Cost/Unit: $320.72

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$27.55	4	$110.22
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	$40.05	9	$360.48
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	6	$7.77
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	6	$253.79
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	6	$37.22
Heavy mechanical site prep, raking	1317	Mechanical operations that pushing and raking trees and vegetation. Requires heavy equipment such as dozers. Includes equipment, power unit and labor costs.	Acre	$192.47	6	$1,154.83

Practice: 490 - Tree/Shrub Site Preparation

Scenario: #2 - Mechanical, Medium

Scenario Description: This practice involves the use of light/moderate machinery and chemical application to clear above ground vegetation and to also rip/cut/lift underground root systems in order to improve site conditions for establishing trees and/or shrubs. Chemical application is needed to treat resprouting and smaller trees. Typical sites include abandoned fields, pastures, rangelands, or forestlands that have been harvested. This following resource concerns: soil quality degredation - compaction, soil erosion - sheet and rill, and degraded plant condition - undesirable plant productivity and health, and inadequate structure and composition.

Before Situation: Undesirable vegetation is present on the site including herbaceous plants and sparse woody competition. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs. Soils are compacted as a result of harvesting heavy equipment activities or other land uses.

After Situation: Undesirable vegetation has been removed using medium equipment; material cut, removed and piled. This enhances site conditions for planting and survival of trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size of the practice is 6 acres.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 6

Total Scenario Cost: $1,701.78

Scenario Cost/Unit: $283.63

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	16	$382.54
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	$40.05	1	$40.05
Materials						
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	6	$7.77
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	6	$253.79
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	6	$37.22
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$45.10	16	$721.68
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 490 - Tree/Shrub Site Preparation

Scenario: #6 - Windbreak, chemical only

Scenario Description: This practice involves the use of chemical treatment in order to prepare a site for tree row planting and remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, or forestland that was recently harvested. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health, and inadequate structure and composition.

Before Situation: Ground needs prepared for establishemnt of trees and shrubs in rows. Undesirable vegetation is present on the site including herbaceous and woody vegetation. Noxious and invasive species may also be present. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation: Ground has been prepare to establish tree and shrub rows. Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size of the practice is 1.5 acres.

Scenario Feature Measure: Area of treatment

Scenario Unit: Acre

Scenario Typical Size: 1.5

Total Scenario Cost: $115.89

Scenario Cost/Unit: $77.26

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1.5	$23.89
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	1.5	$1.94
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	3	$18.61
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 490 - Tree/Shrub Site Preparation

Scenario: #4 - Windbreak, chemical and mechanical

Scenario Description: This practice involves the use of various mechanical equipment and chemical treatments, order to prepare a site for tree row planting, remove undesirable vegetation, and improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, or forestland that was recently harvested. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health, and inadequate structure and composition.

Before Situation: Ground needs prepared for establishemnt of trees and shrubs in rows. Undesirable vegetation is present on the site including herbaceous and woody vegetation. Noxious and invasive species may also be present. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation: Ground has been prepared to establish tree and shrub rows. Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size of the practice is 1.5 acres.

Scenario Feature Measure: area of treatment

Scenario Unit: Acre

Scenario Typical Size: 1.5

Total Scenario Cost: $443.40

Scenario Cost/Unit: $295.60

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	3	$71.73
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	1.5	$23.89
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	1.5	$1.94
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.20	1.5	$9.31
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	1.5	$16.90
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	1.5	$25.19
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	0.5	$35.72

Practice: 490 - Tree/Shrub Site Preparation

Scenario: #3 - Windbreak, mechanical only

Scenario Description: This practice involves the use of various mechanical equipment in order to prepare a site for tree row planting and remove undesirable vegetation and improve site conditions for establishing trees and/or shrubs. Typical sites include abandoned fields, pastures, rangelands, or forestland that was recently harvested. This practice is typically used to address the following resource concerns: degraded plant condition - undesirable plant productivity and health, and inadequate structure and composition.

Before Situation: Ground needs prepared for establishment of trees and shrubs in rows. Undesirable vegetation is present on the site including herbaceous plants and woody vegetation. Noxious and invasive species may also be present on the site. If left uncontrolled, undesirable vegetation will inhibit successful establishment of target species of trees and/or shrubs.

After Situation: Ground has been prepare to establish tree and shrub rows. Undesirable vegetation has been treated using appropriate herbicides, reducing competition for target trees and/or shrubs. Site conditions are favorable for successful establishment of trees and/or shrubs. The typical size of the practice is 1.5 acres.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 1.5

Total Scenario Cost: $139.01

Scenario Cost/Unit: $92.67

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	3	$71.73
Equipment Installation						
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	1.5	$16.90
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	3	$50.38

Practice: 511 - Forage Harvest Management

Scenario: #5 - Conversion to Non-irrigated

Scenario Description: The timely cutting and removal of forages such as hay, green chop, or ensilage on land that is converted from irrigated cropland to non-irrigated grassland on a 100 percent of the irrigated cropland acres. Improved cultural practices and recordkeeping result in better forage quality and better livestock performance.

Before Situation: Annual crops are produced and harvested under normal irragation.

After Situation: Perennial forage crops are harvested on non-irrigated acres. Forage cutting heights are raised to leave at least 3-4" stubble height for cool season grasses and 6" for warm season grasses. Increased residual forage results in much faster plant regrowth. Forage quality tests are submitted to an accredited lab for analysis. Records of forage quality components, cutting heights, moisture content, and harvest schedule are regularly kept to track increased forage quality and improved livestock performance.

Scenario Feature Measure: Acres converted to non-irragted forage

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $125.92

Scenario Cost/Unit: $3.15

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$25.93	1	$25.93
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Materials						
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	2	$54.19

Practice: 511 - Forage Harvest Management

Scenario: #4 - Doublecropping - Delayed harvest and subsequent planting

Scenario Description: In doublecropped annual forages, delaying the harvest of the first crop will provide feed and shelter for ground nesting birds. Delaying the harvest results in a decrease in overall forage quality. Farmers could see as much as a 50% reduction in market value due to declines in protein (~50%) and digestibility (~20%), making the forage crop less palatable and lower in relative feed value. The selected fields should be large enough to promote ground nesting birds. After the young have fledged the second crop will be planted, approximately one month later than normal. Subsequently, the harvest of the second crop will cause an approximately 20% yield decline. The selected area should be large enough to buffer adults and nestlings from silage chopping in adjacent areas or fields. After young have fledged the field will be chopped and used as grain or silage. This practice is best planned cooperatively with the farmer and appropriate wildlife agencies far enough in advance to reduce disturbance to ground nesting birds. For example, Tricolored Blackbirds need a 35-day window from the time of nest building to fledge young and the silage needs to remain uncut until then.

Before Situation: Double cropped annual forage crops are produced and harvested; ground nesting birds are disturbed and/or fledgling birds are killed in the process.

After Situation: Double cropped annual crops are harvested with a delayed mowing and a subesquent later planting of the second crop; forage quality is compromised somewhat, however, the survival of ground nesting birds is promoted.

Scenario Feature Measure: Increased grassland bird populations.

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $125.92

Scenario Cost/Unit: $3.15

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$25.93	1	$25.93
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Materials						
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	2	$54.19

Practice: 511 - Forage Harvest Management

Scenario: #1 - Improved Forage Quality

Scenario Description: Improved cultural practices and recordkeeping result in better forage quality and better livestock performance.

Before Situation: Forage cutting heights are as close to the ground as equipment will allow resulting in very low stubble height. Plant regrowth is very slow. Forage quality tests are not regularly done. Records of forage quality components, cutting heights, moisture content, and harvest schedule are not regularly kept.

After Situation: Forage cutting heights are raised to leave at least 3-4" stubble height for cool season grasses and 6"-8" (use a boot on the mower) for warm season grasses. Increased residual forage results in much faster plant regrowth. Forage quality tests are submitted to an accredited lab for analysis. Records of forage quality components, cutting heights, moisture content, and harvest schedule are regularly kept to track increased forage quality and improved livestock performance.

Scenario Feature Measure: Improved Relative Feed Value

Scenario Unit: Acre

Scenario Typical Size: 30

Total Scenario Cost: $132.61

Scenario Cost/Unit: $4.42

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$32.62	1	$32.62
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Materials						
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	2	$54.19

Practice: 511 - Forage Harvest Management

Scenario: #2 - Organic Preemptive Harvest

Scenario Description: Preemptive harvest of forage crops to prevent damage from insects (such as leafhopper on alfalfa) or other pests results in better forage quality and better livestock performance.

Before Situation: Forage pests are usually controlled with pesticides.

After Situation: In organic or transitioning to organic systems, forage pests are controlled by executing a preemptive harvest before pests can damage forage quality. Forage yields are reduced because of immature stage of forage growth. Forage tests are submitted to an accredited lab for analysis. Records of forage quality components are used to adjust feeding rations.

Scenario Feature Measure: Relative Feed Value Maintained

Scenario Unit: Acre

Scenario Typical Size: 30

Total Scenario Cost: $132.61

Scenario Cost/Unit: $4.42

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$32.62	1	$32.62
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Materials						
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	2	$54.19

Practice: 511 - Forage Harvest Management

Scenario: #3 - Perennial Crops - Delayed Mowing

Scenario Description: In perennial forage crops, the delaying the harvest of the first cutting to promote the reproduction of ground nesting birds. Delaying the harvest of the first cutting will benefit ground nesting birds; research at the University of Vermont showed that breeding success for declining grassland songbirds (e.g. Bobolink) went from 0 on a regularly harvested hay field to 2.8 fledglings per female per year when the first harvest on a hayfield was delayed until August 1st. Bobolinks, Eastern Meadowlarks, and Savannah Sparrows require a nesting period to fledge young that lasts through the end of July in most parts of the eastern US. The delayed harvest results in a decrease in overall forage quality. Farmers could see as much as a 50% reduction in market value due to declines in protein (~50%) and digestibility (~20%), making the forage crop less palatable and lower in relative feed value. The selected fields should be large enough to promote ground nesting birds. After young have fledged the field will be harvested for dry forages.

Before Situation: Perennial forage crops are produced and harvested; ground nesting birds are disturbed and/or fledgling birds are killed in the process.

After Situation: Perrenial crops are harvested with a delayed mowing; forage quality is compromised, however, the survival of ground nesting birds is promoted.

Scenario Feature Measure: Increased grassland bird populations.

Scenario Unit: Acre

Scenario Typical Size: 30

Total Scenario Cost: $132.61

Scenario Cost/Unit: $4.42

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$32.62	1	$32.62
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Materials						
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	2	$54.19

Practice: 512 - Forage and Biomass Planting

Scenario: #10 - Bermuda Grass Establishment-Sprigging with fertilizer

Scenario Description: Sprigging new grasses with sprigging application for the purpose of providing forage, increasing plant diversity, soil quality and fertility, and plant health. This practice may be utilized for organic or regular production. This scenario includes fertilizer, sprigs, equipment and labor for seedbed prep, tillage, sprigging,and spreading.

Before Situation: Poor or nonexistent stand of grass species. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $3,527.23

Scenario Cost/Unit: $176.36

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Nitrogen (N), Anhydrous Ammonia	68	Price per pound of N supplied by Anhydrous Ammonia. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	400	$171.49
One Species, Warm Season, Introduced Perennial Grass (seed or sprigs)	2323	Introduced, warm season perennial grass seed or sprig. Includes material and shipping only.	Acre	$64.09	20	$1,281.73
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	$0.56	400	$224.20
Equipment Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	20	$138.99
Ground sprigging	1101	Includes costs for equipment, power unit and labor.	Acre	$74.27	20	$1,485.44
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	20	$225.38

Practice: 512 - Forage and Biomass Planting

Scenario: #11 - Bermuda Grass Establishment-Sprigging with fertilizer and lime

Scenario Description: Sprigging new grasses with sprigging application for the purpose of providing forage, increasing plant diversity, soil quality and fertility, and plant health. This practice may be utilized for organic or regular production. This scenario includes fertilizer, sprigs, equipment and labor for seedbed prep, tillage, sprigging, and spreading.

Before Situation: Poor or nonexistent stand of grass species. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $4,724.77

Scenario Cost/Unit: $236.24

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	20	$986.30
Nitrogen (N), Anhydrous Ammonia	68	Price per pound of N supplied by Anhydrous Ammonia. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	400	$171.49
One Species, Warm Season, Introduced Perennial Grass (seed or sprigs)	2323	Introduced, warm season perennial grass seed or sprig. Includes material and shipping only.	Acre	$64.09	20	$1,281.73
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	$0.56	400	$224.20
Equipment Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.95	20	$138.99
Ground sprigging	1101	Includes costs for equipment, power unit and labor.	Acre	$74.27	20	$1,485.44
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$10.56	20	$211.25
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	20	$225.38

Practice: 512 - Forage and Biomass Planting

Scenario: #5 - Introduced Perennial Grasses-Legume

Scenario Description: Establish or reseed adapted perennial introduced grasses and legumes to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

Before Situation: Poor or nonexistent stand of grass species. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 60

Total Scenario Cost: $3,256.87

Scenario Cost/Unit: $54.28

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	60	$1,295.92
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	60	$676.14
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2319	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$21.41	60	$1,284.81

Practice: 512 - Forage and Biomass Planting

Scenario: #6 - Introduced Perennial Grasses-Legume, foregone income

Scenario Description: Establish or reseed adapted perennial introduced grasses and legumes to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding. The land being seeded was previously cropland with a typical rotation of wheat and corn.

Before Situation: Cropland being converted to grass. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 60

Total Scenario Cost: $4,658.07

Scenario Cost/Unit: $77.63

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	60	$1,295.92
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	60	$676.14
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$15.57	90	$1,401.20
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2319	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$21.41	60	$1,284.81

Practice: 512 - Forage and Biomass Planting

Scenario: #12 - Introduced Perennial Grasses-Legumes on irrigated cropland

Scenario Description: Establish or reseed adapted perennial introduced grasses and legumes to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

Before Situation: Irrigated cropland being converted to pasture and/or hay. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on croplan, ,hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 60

Total Scenario Cost: $4,480.62

Scenario Cost/Unit: $74.68

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	60	$1,255.79
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	60	$655.20
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2319	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$21.41	120	$2,569.62

Practice: 512 - Forage and Biomass Planting

Scenario: #13 - Introduced Perennial Grasses-Legumes on irrigated cropland, forgone income

Scenario Description: Establish or reseed adapted perennial introduced grasses and legumes to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding. The land being seeded was previously cropland with a typical rotation of wheat and corn.

Before Situation: Irrigated cropland being converted to pasture and/or hay. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 60

Total Scenario Cost: $7,359.61

Scenario Cost/Unit: $122.66

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	60	$1,255.79
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	60	$655.20
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2319	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$21.41	120	$2,569.62

Practice: 512 - Forage and Biomass Planting

Scenario: #9 - Introduced Perennial Grasses with lime application

Scenario Description: Establish or reseed adapted perennial introduced grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial introduced grasses for pasture, hayland, and wildlife openings. Includes a lime application. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

Before Situation: Poor or nonexistent stand of grass species. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $2,509.32

Scenario Cost/Unit: $125.47

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	20	$986.30
One Species, Cool Season, Introduced Perennial Grass	2313	Introduced, cool season perennial grass. Includes material and shipping only.	Acre	$32.72	20	$654.42
Equipment Installation						
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$10.56	20	$211.25
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	20	$431.97
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	20	$225.38

Practice: 512 - Forage and Biomass Planting

Scenario: #7 - Introduced Perennial &Native Grass Mix

Scenario Description: Establish or reseed adapted introduced grasses and at least one native species to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of grasses for pasture, hayland, and wildlife openings. Native grass species, which have a significantly greater cost than introduced species, comprise one third of the grass mixture. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

Before Situation: Existing stand of perennial grasses, a monoculture, or no grasses present. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $6,323.01

Scenario Cost/Unit: $79.04

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	80	$1,727.89
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.27	80	$901.52
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2319	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$21.41	40	$856.54
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	$70.93	40	$2,837.06

Practice: 512 - Forage and Biomass Planting

Scenario: #8 - Introduced Perennial &Native Grass Mix, foregone income

Scenario Description: Establish or reseed adapted introduced grasses and at least one native species to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of grasses for pasture, hayland, and wildlife openings. Native grass species, which have a significantly greater cost than introduced species, comprise one third of the grass mixture. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding. The land being seeded was previously cropland with a typical rotation of wheat and corn.

Before Situation: Land currently being cropped. Resource concerns may include undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $9,120.58

Scenario Cost/Unit: $114.01

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Four Species Mix, Cool Season, Introduced Perennial (2 grasses, 2 legumes)	2319	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$21.41	40	$856.54
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	$70.93	40	$2,837.06

Practice: 512 - Forage and Biomass Planting

Scenario: #1 - Native Perennial Grasses, 1 species

Scenario Description: Establish or reseed adapted perennial native warm season grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial native warm season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

Before Situation: Poorly managed/degraded pasture land or cropland being converted to pasture and/or hay.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $8,222.11

Scenario Cost/Unit: $102.78

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Materials						
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	$70.93	80	$5,674.12

Practice: 512 - Forage and Biomass Planting

Scenario: #2 - Native Perennial Grasses, 1 species, forgone income

Scenario Description: Establish or reseed adapted perennial native warm season grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial native warm season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding. The land being seeded was previously cropland with a typical rotation of wheat and corn.

Before Situation: Cropland being converted to pasture and/or hay.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland ,hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $11,101.10

Scenario Cost/Unit: $138.76

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	$70.93	80	$5,674.12

Practice: 512 - Forage and Biomass Planting

Scenario: #3 - Native Perennial Grasses, multi species

Scenario Description: Establish or reseed adapted perennial native warm season grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial native warm season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

Before Situation: Poorly managed/degraded pasture land or cropland being converted to pasture and/or hay.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $20,226.01

Scenario Cost/Unit: $252.83

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Materials						
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	80	$17,678.01

Practice: 512 - Forage and Biomass Planting

Scenario: #4 - Native Perennial Grasses, multi species, forgone income

Scenario Description: Establish or reseed adapted perennial native warm season grasses to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial native warm season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding. The land being seeded was previously cropland with a typical rotation of wheat and corn.

Before Situation: Cropland being converted to pasture and/or hay.

After Situation: Suitable species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $23,104.99

Scenario Cost/Unit: $288.81

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	80	$17,678.01

Practice: 512 - Forage and Biomass Planting

Scenario: #14 - Organic

Scenario Description: Establish or reseed adapted organic perennial cool season grasses or cool season grass and legumes mix to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial cool season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding.

Before Situation: Poorly managed/degraded pasture or cropland being converted to pasture and/or hay.

After Situation: Suitable organic species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $8,991.37

Scenario Cost/Unit: $112.39

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	160	$1,747.21
Materials						
Certified Organic, Three Species Mix, Cool Season, Perennial Grasses and Legumes	2340	Certified organic cool season perennial grass and legume mix. Includes material and shipping only.	Acre	$69.62	80	$5,569.77

Practice: 512 - Forage and Biomass Planting

Scenario: #15 - Organic, forgone income

Scenario Description: Establish or reseed adapted organic perennial cool season grasses or cool season grass and legumes mix to improve or maintain livestock/wildlife nutrition and health, extend the length of the grazing season, and provide soil cover to reduce erosion. Used for either conventional or no-till seeding of perennial cool season grasses for pasture, hayland, and wildlife openings. This practice may be utilized for organic or regular production. This scenario includes seed, equipment and labor for seedbed prep, tillage, and seeding. The land being seeded was previously cropland with a typical rotation of wheat and corn.

Before Situation: Cropland being converted to pasture and/or hay.

After Situation: Suitable organic species are established to improve forage quality and quantity and reduce soil erosion on cropland, hayland, pasture, and/or biomass production.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $11,870.36

Scenario Cost/Unit: $148.38

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	160	$1,747.21
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Certified Organic, Three Species Mix, Cool Season, Perennial Grasses and Legumes	2340	Certified organic cool season perennial grass and legume mix. Includes material and shipping only.	Acre	$69.62	80	$5,569.77

Practice: 512 - Forage and Biomass Planting

Scenario: #16 - PP Interseed Legumes

Scenario Description: Interseed legumes and/or forbs into an existing grass stand for the purpose of increasing plant diversity, soil quality and fertility, plant health and enhancing the quality of forage. Scenario is appropriate for conventional production. Payment includes seed, seeding and fertility for interseeding establishment.

Before Situation: Existing grass stand that needs additional species diversity.

After Situation: A more diverse grass stand provides improved forage quality and availability, and improved soil condition. Payment scenario is based on red and ladino clover interseeded into a 20 acre cool season grass stand. Inputs are based on medium to low existing fertility.

Scenario Feature Measure: Acres of Forage and Biomass Planting

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $5,067.58

Scenario Cost/Unit: $253.38

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Lime, ENM	75	Fertilizer: Limestone Spread on field.	Ton	$49.31	40	$1,972.59
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	$0.56	700	$392.35
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	$0.43	2000	$862.57
Two Species Mix, Cool Season Annual (1 grass and 1 legume)	2314	Cool season annual grass and legume mix. Includes material and shipping only.	Acre	$54.10	20	$1,082.08
Equipment Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.73	20	$134.68
Lime application	953	Lime application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$10.24	20	$204.70
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	20	$418.60

Practice: 528 - Prescribed Grazing

Scenario: #4 - Conversion, Non-Irrigated (FI)

Scenario Description: Design and implementation of a grazing system on newly established grazinglands, which were previously irrigated cropland, that will enhance pasture condition and ecosystem function as well as optimize efficiency and economic return through monitoring (ex:photo points, stubble height after grazing, etc) and record keeping.

Before Situation: Previously irrigated cropland converted to grazinglands to promote desirable and efficient use of forage plants, benefitting soil and water resources. No previously established stocking rates have been established for newly established forage plants. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation: Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances pasture condition and function through protection of sensitive areas, and efficient harvest of forage resources. Grazing system success will be evaluated through short term monitoring.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $4,206.62

Scenario Cost/Unit: $26.29

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.05	52	$2,082.75
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	52	$1,718.58
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$15.57	20	$311.38

Practice: 528 - Prescribed Grazing

Scenario: #7 - Habitat Mgt., Grouse

Scenario Description: Development and implementation of a grazing schedule that will create, restore, and/or enhance habitat components for grouse species including Lesser prairie-chicken and Sage grouse (identified wildlife species of concern).

Before Situation: Wildlife cover, shelter, food, water and movement are limited due to grazingland condition. Plant health and vigor are negatively impacted by one or more of the following: poor grazing distribution, timing of grazing and inadequate rest and recovery periods. Water quality may be impacted by increased runoff and erosion. In addition, reduced vegetative cover increases the opportunity for encroachment of noxious and invasive weeds.

After Situation: A grazing system is altered and/or enhanced to benefit habitat for targeted wildlife species. Additional benefits include improved rangeland and/or pasture health, adequate rest and recovery periods, protection of sensitive areas, improved water quality and reduced risk of invasive or noxious weed encroachment. In order to achieve this, implementation of a rest/rotation or deferred grazing system will be required. A portion of the acres (20% for Sage Grouse Initiative) may be deferred during periods of critical wildlife use.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $2,286.74

Scenario Cost/Unit: $14.29

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$31.26	26	$812.86
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	$40.05	13	$520.69
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	26	$859.29
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10

Practice: 528 - Prescribed Grazing

Scenario: #8 - Livestock Deferment (FI)

Scenario Description: Defer livestock grazing for a 12 month period to allow for regrowth and recovery to occur on a 40 acre grazed range unit where a plant or animal resource concerns exists. Complete livestock exclusion is required during the specified time period. Deferment may be necessary on whole units or portions of units as determined by appropriate assessment.

Before Situation: Inadequate plant cover exists for nesting, brooding, and/or winter habitat for upland birds on grazing/wildlife lands. Inadequate plant growth or regrowth after livestock use does not permit the use by wildlife and/or creates a plant condition resource concern.

After Situation: Adequte cover exists after deferment which provides adequate cover for wildlife or plant growth/recovery.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $671.59

Scenario Cost/Unit: $16.79

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	4	$79.98
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$15.57	38	$591.62

Practice: 528 - Prescribed Grazing

Scenario: #9 - Pasture Standard

Scenario Description: Design and implementation of a grazing system that will enhance pasture condition and ecosystem function as well as optimize efficiency and economic return through monitoring (ex:photo points, stubble height after grazing, etc) and record keeping.

Before Situation: Current grazing system exhibits undesirable and inefficient use of forage plants, and such use may have a negative impact on pasture condition, as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation: Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances pasture condition and function through protection of sensitive areas, and efficient harvest of forage resources. Grazing system success will be evaluated through short term monitoring.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 150

Total Scenario Cost: $1,879.47

Scenario Cost/Unit: $12.53

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	26	$519.85
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	$31.26	13	$406.43
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	26	$859.29
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10

Practice: 528 - Prescribed Grazing

Scenario: #5 - Range, 30-73% Rest

Scenario Description: Design and implementation of a grazing system that will enhance pasture condition and ecosystem function by providing rest to the pastures during the growing season (30-73% rest) as well as optimize efficiency and economic return through monitoring (ex: trend, composition, production, etc), record keeping.

Before Situation: Current grazing system exhibits undesirable and inefficient use of forage plants and such use may have a negative impact on pasture condition, as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation: Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances pasture condition and function through proper rest and recovery periods, protection of sensitive areas, proper utilization, and efficient harvest of forage resources. Grazing system success will be evaluated through long term monitoring.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $1,948.77

Scenario Cost/Unit: $12.18

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.05	26	$1,041.38
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	26	$859.29
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10

Practice: 528 - Prescribed Grazing

Scenario: #6 - Range, Greater than 73% Rest

Scenario Description: Design and implementation of a grazing system that will enhance pasture condition and ecosystem function by providing maximum rest to the pastures during the growing season (greater than 73% rest) as well as optimize efficiency and economic return through monitoring (ex: trend, composition, production, etc), record keeping.

Before Situation: Current grazing system exhibits undesirable and inefficient use of forage plants and such use may have a negative impact on pasture condition, as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation: Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances pasture condition and function through proper rest and recovery periods, protection of sensitive areas, proper utilization, and efficient harvest of forage resources. Grazing system success will be evaluated through long term monitoring.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 160

Total Scenario Cost: $2,428.63

Scenario Cost/Unit: $15.18

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	24	$479.86
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	$40.05	26	$1,041.38
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	26	$859.29
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10

Practice: 528 - Prescribed Grazing

Scenario: #2 - Range, 3-6 Pastures

Scenario Description: Design and implementation of a grazing system using a minimum of 3, and not more than 6, pastures in rotation that will enhance rangeland health and ecosystem function as well as optimize efficiency and economic return through monitoring (ex: trend, composition, production, etc), and record keeping.

Before Situation: Current grazing system exhibits undesirable and inefficient use of forage plants, and such use may have a negative impact on rangeland health, as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation: Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in rotation in a way that enhances rangeland health and function through proper rest and recovery periods, protection of sensitive areas, proper utilization, and efficient harvest of forage resources. Grazing system success will be evaluated through long term monitoring.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 1000

Total Scenario Cost: $7,602.81

Scenario Cost/Unit: $7.60

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	50	$999.71
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	$40.05	80	$3,204.24
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	100	$3,304.97
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10

Practice: 528 - Prescribed Grazing

Scenario: #3 - Range, 7 or More Pastures

Scenario Description: Design and implementation of a grazing system, using a minimum of 7 pastures in rotation, that will enhance rangeland health and ecosystem function, as well as optimize efficiency and economic return through monitoring (ex: trend, composition, production, etc), and record keeping.

Before Situation: Current grazing system exhibits undesirable and inefficient use of forage plants and such use may have a negative impact on rangeland health, as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation: Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in rotation in a way that enhances rangeland health and function through proper rest and recovery periods, protection of sensitive areas, proper utilization, and efficient harvest of forage resources. Grazing system success will be evaluated through long term monitoring.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 1000

Total Scenario Cost: $10,456.24

Scenario Cost/Unit: $10.46

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	70	$1,399.59
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	$40.05	100	$4,005.29
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	150	$4,957.46
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10

Practice: 528 - Prescribed Grazing

Scenario: #1 - Small Ranch Unit

Scenario Description: Design and implementation of a grazing system on small pasture less than 320 acres that will enhance rangeland health and ecosystem function as well as optimize efficiency and economic return through monitoring (ex:photo points, stubble height after grazing, etc) and record keeping. Beginning ranchers implementing an initial grazing system on small ranchettes.

Before Situation: Current grazing system on a small ranch unit (<320 acres) exhibits undesirable and inefficient use of forage plants and such use may have a negative impact on rangeland health, as well as soil and water resources. Stocking rates are likely higher than the current level of production and efficiency of use can support without management changes. There is currently no monitoring plan in place to evaluate change on the landscape.

After Situation: Prescribed grazing system is designed to protect the health and vigor of the plant communities that are in place. Livestock are managed in a way that enhances rangeland health and function through protection of sensitive areas, and efficient harvest of forage resources. Grazing system success will be evaluated through short term monitoring.

Scenario Feature Measure: Acres of Treatment

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $3,118.26

Scenario Cost/Unit: $38.98

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.05	26	$1,041.38
Acquisition of Technical Knowledge						
Training, Workshops	294	Educational seminar or series of meetings emphasizing interaction and exchange of information among a usually small number of participants.	Each	$45.80	1	$45.80
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	60	$1,982.98
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10

Practice: 550 - Range Planting

Scenario: #1 - Native -Standard prep

Scenario Description: Establishment of a mixture of PREDOMINANTLY NATIVE adapted perennial species on a rangeland unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Predominantly Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with a LIGHT TO MODERATE TILLAGE and seeding with a no-till drill, range drill, or broadcasting.

Before Situation: Rangeland with existing stand of perennial or annual grasses OR monoculture OR no grasses present where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Resource Concerns may include: undesirable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of PREDOMINANTLY NATIVE adapted perennial vegetation such as grasses, forbs, legumes, shrubs, and trees to improve forage quality and quantity and reduce soil erosion on rangeland, native or naturalized pasture, grazed forest or other suitable location.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $10,599.30

Scenario Cost/Unit: $132.49

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	8	$175.78
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.38	80	$1,710.52
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$11.18	80	$894.02
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.50	1	$253.50
Materials						
Two Species Mix, Warm Season, Native Perennial Grass	2325	Native, warm season perennial grass. Includes material and shipping only.	Acre	$94.57	80	$7,565.49

Practice: 550 - Range Planting

Scenario: #2 - Native, Standard Prep (FI)

Scenario Description: Establishment of a mixture of NATIVE adapted perennial species on a grazed land unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with LIGHT TO MODERATE TILLAGE and seeding with a no-till drill, range drill, or by broadcasting.

Before Situation: Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Resource concerns may include: undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of NATIVE adapted perennial vegetation such as grasses, forbs, and legumes improve forage quality and quantity and reduce soil erosion on grazed range, pasture, forest or other suitable location.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $23,104.99

Scenario Cost/Unit: $288.81

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	80	$17,678.01

Practice: 550 - Range Planting

Scenario: #3 - Native, Heavy Prep

Scenario Description: Establishment of a mixture of NATIVE adapted perennial species on a grazed land unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping &heavy disk) and seeding with a no-till drill, range drill, or by broadcasting.

Before Situation: Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Existing conditions often require complete suppression or eradication of existing vegetation to ensure success of the planting. Resource concerns may include: undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of NATIVE adapted perennial vegetation such as grasses, forbs, and legumes improve forage quality and quantity and reduce soil erosion on grazed range, pasture, forest or other suitable location.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $21,527.81

Scenario Cost/Unit: $269.10

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.27	80	$1,301.81
Materials						
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	80	$17,678.01

Practice: 550 - Range Planting

Scenario: #4 - Native, Heavy Prep (FI)

Scenario Description: Establishment of a mixture of NATIVE adapted perennial species on a grazed land unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping &heavy disk) and seeding with a no-till drill, range drill, or by broadcasting.

Before Situation: Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Existing conditions often require complete suppression or eradication of existing vegetation to ensure success of the planting. Resource concerns may include: undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of NATIVE adapted perennial vegetation such as grasses, forbs, and legumes improve forage quality and quantity and reduce soil erosion on grazed range, pasture, forest or other suitable location.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $24,406.80

Scenario Cost/Unit: $305.09

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.27	80	$1,301.81
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Three plus Species Mix, Warm Season, Native Perennial	2327	Native, warm season perennial grass. Includes material and shipping only.	Acre	$220.98	80	$17,678.01

Practice: 550 - Range Planting

Scenario: #5 - Native, Wildlife, or Pollinator (FI)

Scenario Description: Establishment of a mixture of PREDOMINANTLY NATIVE adapted perennial species on a grazed land unit to improve habitat for pollinators,beneficial insects, and wildlife species. Seed mix of PREDOMINANTLY NATIVE SPECIES IS CHOSEN TO SPECIFICALLY BENEFIT WILDLIFE (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) or POLLINATORS (eg. inclusion of 5-10 forb species) based on range conditions. FOR POLLINATOR HABITAT: Consideration is given to selecting plants that bloom sequentially throughout the growing season, where feasible. For honeybee foraging habitat, species are selected which will be in bloom when hives are in the area. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping &heavy disk) and seeding with a no-till drill, range drill, or by broadcasting.

Before Situation: Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Existing conditions often require complete removal, suppression, or eradication of existing vegetation to ensure success of planting. Resource concerns may include: inadequate habitat for wildlife (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of PREDOMINANTLY NATIVE adapted perennial vegetation, such as grasses, forbs, legumes, with an emphasis on species beneficial to wildlife or Pollinators on grazed range, pasture, forest, or other suitable location. For Pollinator habitat: Plants that bloom sequentially throughout the growing season are established, where feasible.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 50

Total Scenario Cost: $17,269.79

Scenario Cost/Unit: $345.40

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	50	$1,046.49
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	50	$546.00
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.27	50	$813.63
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	75	$1,799.37
Materials						
Native Grass and Forb Mix, for Wildlife (including pollinators) or Ecosystem Restoration	2335	Native grass and forb/legume mix, including specialized species. Includes material and shipping only.	Acre	$261.29	50	$13,064.30

Practice: 550 - Range Planting

Scenario: #6 - Non Native, Wildlife, or Pollinator (FI)

Scenario Description: Establishment of a mixture of adapted perennial species on a grazed land unit to improve habitat for pollinators,beneficial insects, and wildlife species. Seed mix of PREDOMINANTLY NATIVE SPECIES IS CHOSEN TO SPECIFICALLY BENEFIT WILDLIFE (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) or POLLINATORS (eg. inclusion of 5-10 forb species) based on range conditions. FOR POLLINATOR HABITAT: Consideration is given to selecting plants that bloom sequentially throughout the growing season, where feasible. For honeybee foraging habitat, species are selected which will be in bloom when hives are in the area. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping &heavy disk) and seeding with a no-till drill, range drill, or by broadcasting.

Before Situation: Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Existing conditions often require complete removal, suppression, or eradication of existing vegetation to ensure success of planting. Resource concerns may include: inadequate habitat for wildlife (ex: big game spp, Sage grouse, Lesser Prairie Chicken, others) undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of adapted perennial vegetation, such as grasses, forbs, legumes, with an emphasis on species beneficial to wildlife or Pollinators on grazed range, pasture, forest, or other suitable location. For Pollinator habitat: Plants that bloom sequentially throughout the growing season are established, where feasible.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 50

Total Scenario Cost: $11,751.79

Scenario Cost/Unit: $235.04

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	50	$1,046.49
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	50	$546.00
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.27	50	$813.63
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Native or Non-Native Grass and Forb Mix, for Wildlife (including pollinators) or Ecosystem Restoration	2502	Native or Non-Native Grass and Forb Mix, including specialized species. Includes material and shipping only.	Acre	$129.33	50	$6,466.68

Practice: 550 - Range Planting

Scenario: #7 - Non Native, Standard Prep (FI)

Scenario Description: Establishment of a mixture of PREDOMINANTLY NON-NATIVE adapted perennial species on a grazed land unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Predominantly Non-Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with a LIGHT TO MODERATE tillage and seeding with a no-till drill, range drill, or by broadcasting.

Before Situation: Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Existing conditions often require complete suppression or eradication of existing vegetation to ensure success of planting. Resource concerns may include: undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of PREDOMINANTLY NON-NATIVE adapted perennial vegetation such as grasses, forbs, and legumes improve forage quality and quantity and reduce soil erosion on grazed range, pasture, forest or other suitable location.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $9,153.04

Scenario Cost/Unit: $114.41

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Three Species Mix, Cool Season, Introduced Perennial Grass	2315	Cool season, introduced grass mix. Includes material and shipping only.	Acre	$46.58	80	$3,726.05

Practice: 550 - Range Planting

Scenario: #8 - Non Native, Heavy Prep (FI)

Scenario Description: Establishment of a mixture of PREDOMINANTLY NON-NATIVE adapted perennial species on a grazed land unit to improve forage condition, improve wildlife habitat and/or reduce erosion. Seed mix of Predominantly Native species is chosen based on range conditions and availability of seed. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping &heavy disk) and seeding with a no-till drill, range drill, or by broadcasting.

Before Situation: Rangeland or cropland with or without an existing stand of perennial or annual grasses, OR a monoculture, OR no grasses are present, where natural reseeding or vegetation enhancement by grazing management alone is unlikely. Existing conditions often require complete suppression or eradication of existing vegetation to ensure success of planting. Resource concerns may include: undesireable plant productivity and health, inadequate feed and forage for livestock, soil erosion and soil quality.

After Situation: Establishment of PREDOMINANTLY NON-NATIVE adapted perennial vegetation such as grasses, forbs, and legumes improve forage quality and quantity and reduce soil erosion on grazed range, pasture, forest or other suitable location.

Scenario Feature Measure: Acres of Range Planting

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $10,454.85

Scenario Cost/Unit: $130.69

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	80	$873.60
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.27	80	$1,301.81
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	120	$2,878.99
Materials						
Three Species Mix, Cool Season, Introduced Perennial Grass	2315	Cool season, introduced grass mix. Includes material and shipping only.	Acre	$46.58	80	$3,726.05

Practice: 550 - Range Planting

Scenario: #9 - Saline (FI)

Scenario Description: Establish and maintain permanent herbaceous vegetation on saline/sodic sites. Grass seeding on 20 acres of saline/sodic affected soils. This practice designed for Saline Seep with Recharge or Discharge Area and Saline/Sodic soils. Seed mix of Predominantly Non-Native species is chosen based on site conditions and availability of seed. Planting by preparing a seedbed with MODERATE TO HEAVY TILLAGE (ex: ripping &heavy disk) and seeding with a no-till drill, range drill, or broadcasting.

Before Situation: Cropland is without existing stand of annual grasses OR monoculture OR no grasses present where natural reseeding or vegetation enhancement is unlikely. Existing conditions often require complete suppression or eradication of existing vegetation to ensure success of planting. Resource concerns may include: undesirable plant productivity and health, soil erosion and soil quality. Saline areas left unattended continue to expand.

After Situation: The establishment and maintenance of permanent herbaceous vegetation on saline/sodic sites. Grass seeding on 20 acres of saline/sodic affected soils. This practice designed for Saline Seep with Recharge or Discharge Area and Saline/Sodic soils.

Scenario Feature Measure: Acres of Saline Planting

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $7,028.20

Scenario Cost/Unit: $351.41

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	20	$418.60
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	20	$218.40
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.27	20	$325.45
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$324.58	6.6	$2,142.24
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$271.38	6.7	$1,818.26
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$175.18	6.7	$1,173.74
Materials						
Three Species Mix, Cool Season, Introduced Perennial Grass	2315	Cool season, introduced grass mix. Includes material and shipping only.	Acre	$46.58	20	$931.51

Practice: 585 - Stripcropping

Scenario: #1 - Strips

Scenario Description: This scenario describes the implementation of a stripcropping system that is designed specifically for the control of wind/water erosion or minimizing the transport of wind blown particles or sediments or other water borne contaminants originating from runoff on cropland. Implementation will result in alternating strips of erosion susceptible crops with erosion resistant crops that are oriented as close to perpendicular to prevailing winds/water flows as possible. The designed system will reduce erosion/sediment/contaminants to desired objectives. Payment for implementation is to defray the costs of designing the system, installing the strips on the landscape appropriately, and integrating a crop rotation that includes water erosion resistant species.

Before Situation: In this geographic area, excessive wind/water erosion is caused by raising crops in a manner that allows wind erosion or water flows to occur due to lack of residue or other conservation measures causing erosion, degradation of soil health through loss of topsoil and organic matter, along with offsite negative impacts to water quality and wildlife habitat.

After Situation: A stripcropping system that includes at least two or more strips within the planning area will be designed to include parallel strips of approximately equal widths of wind/water erosion resistant crop species with non-erosion resistant crop species. Widths will be determined using current wind or water erosion prediction technology to meet objectives. The design and implementation of a stripcropping system will minimize erosion, protect soil quality, reduce offsite deposition/sedimentation, and benefit offsite wildlife habitat. Erosion prediction before and after practice application will be recorded showing the design and benefits of the practice. Erosion-resistant strips in rotation must be managed to maintain the planned vegetative cover and surface roughness.

Scenario Feature Measure: area of strips

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $168.11

Scenario Cost/Unit: $2.10

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	4	$79.98
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	4	$88.13

Practice: 590 - Nutrient Management

Scenario: #1 - Basic

Scenario Description: This scenario describes the implementation of a basic nutrient management system on > = 40 acres of cropland where there is no manure application. The planned NM system will meet the current 590 standard. Implementation will result in the proper rate, source, method of placement, and timing of nutrients. Payment for implementation is to defray the costs of soil testing, analysis, consultant services that provide nutrient recommendations based on LGU recommendations or crop removal rates and an associated nutrient budget, and recordkeeping. Records demonstrating implementation of the 4 R's of the NM criteria (Right Source of Nutrients, Right Time of Application, Right Rate, and Right Method of Application) will be required.

Before Situation: In this geographic area, a fertility program is either non existent or does not meet the 590 nutrient management standard. Soil testing is not completed on a regular basis and applications of fertilizers are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients are transported to surface waters through runoff or soil erosion or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients.

After Situation: A nutrient management system will be developed to meet the NRCS 590 standard. The development and implementation of a nutrient management plan (NMP) will benefit plant productivity and reduce off-site degradation. A nutrient budget will be developed for each field(s) based on soil test analysis and land grant university recommendations or crop removal rates. On planning units, typically 40 acres or larger, soil testing is completed according to LGU recommendations. The use of pre-plant soil tests will assist with the proper development of the annual nutrient budget. Records will be provided annually of the current soil test, analysis, amount of application, forms and rates of nutrients for each field, including post-harvest analysis. Nutrient applications will be completed in a manner that minimizes nutrient runoff and leaching or build up of excess nutrient concentrations.

Scenario Feature Measure: Acres of nutrient management applied.

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $151.11

Scenario Cost/Unit: $3.78

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$10.13	1	$10.13
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	$19.99	1	$19.99
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.96	1	$98.96
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	1	$22.03

Practice: 590 - Nutrient Management

Scenario: #252 - Basic NM system with manure

Scenario Description: This scenario describes the implementation of a basic nutrient management system on planning units 40 ac or larger of cropland or hayland where there is manure or compost application in addition to commercial fertilizer applications. The planned NM system will meet the current 590 Nutrient Management standard. Implementation will result in the proper rate, source, method of placement, and timing of nutrients while minimizing off-site degradation or the excessive built up of N and P. Payment for implementation is to defray the costs of soil testing, manure testing, analysis, proper implementation, that provide nutrient recommendations based on LGU recommendations or crop removal rates and an associated nutrient budget, and recordkeeping. Risk assessments including PI (phosphorus index) and NI (nitrogen index) will be completed as part of the 590 Nutrient Management Plan. Records demonstrating implementation of the 4 R's of the NM plan will be maintained by the producer.

Before Situation: In this geographic area, a fertility program is either non existent or does not meet the 590 Nutrient Management standard. Soil testing and manure testing is not completed on a regular basis and applications of nutrients are not based on land grant university recommendations. Nutrients and manure solids are transported to surface waters through runoff, tile drainage, erosion or to groundwater through leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Fields have little or no erosion protection often times resulting in wind, sheet, rill, and ephemeral erosion.

After Situation: A nutrient management system that includes manure as a source will be developed to meet the NRCS 590 Nutrient Management standard. The development and implementation of a nutrient management plan (NMP) will benefit plant productivity and reduce off-site degradation. A NMP, to include the nitrogen and phosphorus risk assessments will be developed for each field(s) based on soil tests and manure test analysis along with land grant university recommendations or crop removal rates. On a planning unit soil testing is completed according to LGU recommendations. The use of pre-plant soil nitrogen or plant tissue tests will assist with the proper development of the annual nutrient budget. The use of post-harvest soil and/or tissue tests will help establish the adequacy of the plan in meeting crop needs while minimizing P application rate and residual N. Records will be provided annually documenting current soil tests, manure tests, analyses, amount of application, forms and rates of nutrients for each field, and crop yields. Applications will be completed in a manner that minimizes nutrient runoff and leaching or build up of excess nutrient concentrations.

Scenario Feature Measure: <Unknown>

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $158.52

Scenario Cost/Unit: $3.96

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	2	$39.99
Materials						
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$47.16	1	$47.16
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	1	$27.10
Test, Soil Nitrogen Testing	311	Pre-Side Dress/Deep Soil Testing. Includes materials and shipping only.	Each	$12.11	1	$12.11
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$10.13	1	$10.13
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	1	$22.03

Practice: 590 - Nutrient Management

Scenario: #4 - Basic, combined manure-fertilizer

Scenario Description: This scenario describes the implementation of a basic nutrient management system on > = 40 acres of cropland for 3 years where commercial fertilizers and/or manure is applied. The planned NM system will meet the current 590 standard. Implementation will result in the proper rate, source, method of placement, and timing of nutrients. Application rates will be based on LGU recommendations or crop removal rates and an associated nutrient budget. Payment for implementation is to defray the costs of soil testing, manure testing when applied, and recordkeeping. Risk assessments including the PI (phosphorus index) and NI (nitrogen index) will be completed with applications of manure completed based on risk results. Records demonstrating implementation of the 4 R's of the NM criteria (Right Source of Nutrients, Right Time of Application, Right Rate, and Right Method of Application) will be required along with risk assessments. Implementation will result in the proper rate, source, method of placement, and timing of nutrients while minimizing off-site degradation or the excessive build up of N and P.

Before Situation: In this geographic area, a fertility program is either non existent or does not meet the 590 nutrient management standard. Soil and manure testing is not completed on a regular basis and applications of fertilizers and manure are not based on land grant university recommendations or a nutrient budget. An environmental evaluation or risk assessment is not completed. Nutrients and manure solids are transported to surface waters through runoff or soil erosion or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Fields have little or no erosion protection often times resulting in wind, sheet, rill, and ephemeral erosion.

After Situation: A nutrient management system that includes commercial fertilizers and manure will be developed to meet the NRCS 590 standard. The development and implementation of a nutrient management plan (NMP) will benefit plant productivity and reduce off-site degradation. A nutrient budget will be developed for each field(s) based on soil and manure test analysis and land grant university recommendations or crop removal rates. On planning units, typically 40 acres or larger, soil testing is completed according to LGU recommendations. The use of pre-plant soil tests will assist with the proper development of the annual nutrient budget. Applications of manure are based on risk assessments (PI - phosphorus index and NI - Nitrogen Index). The use of post-harvest soil and/or tissue tests (results interpreted by crop consultant) will help establish the adequacy of the plan in meeting crop needs while minimizing P application rate and residual N or the use of a Pre-Side-Dress Soil Nitrogen Test (PSNT) or a Pre-Top-Dress Tissue Test (PTDTT) prior to the rapid biomass growth of the plant will assist the producer in evaluating the mineralization of Nitrogen from manure in providing adequate nitrogen to meet the crop requirements, thus reducing the potential for off-site impacts. Records will be provided annually documenting current soil and manure (when applied) test analyses, amount of application, forms and rates of nutrients for each field, including post-harvest analysis. Nutrient applications will be completed in a manner that minimizes nutrient runoff and leaching or build up of excess nutrient concentrations.

Scenario Feature Measure: Acres of nutrient management applied.

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $193.77

Scenario Cost/Unit: $4.84

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Test, Manure Analysis	306	Moisture, Total N, P, K. Includes materials and shipping only.	Each	$47.16	0.33	$15.56
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	1	$27.10
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$10.13	1	$10.13
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	$19.99	1	$19.99
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.96	1	$98.96
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	1	$22.03

Practice: 590 - Nutrient Management

Scenario: #250 - Enhanced Nutrient Management

Scenario Description: This scenario takes a conventional cropping system where either no nutrient management or only a basic nutrient management is being practiced. An enhanced nutrient management system includes split applications and multiple nutrient analyses (other than only soil tests) and methods that more concisely enable scheduling of appropriate nutrient applications or use of nitrogen stabilizers or controlled release products. Nutrients are transported to surface waters through runoff or wind erosion in quantities that degrade water quality and limit use of intended purposes.

Before Situation: In this geographic area, conventional fertility programs involve very little or no soil or manure testing. Application of fertilizers, including manures and amendments, are completed annually based upon tradition that does not specifically consider the detrimental affects of improper timing or rates of nutrients, or excess nutrient build-up in the soil. Fields exceed soil loss tolerances. Runoff flows into adjacent streams, water courses, tile drains, field surface drains, or other water courses causing degradation to receiving waters or leaching of nutrients to shallow ground water sources. There is typically no environmental evaluation of the potential for off-site movement. Soil quality may also be detrimentally affected.

After Situation: The development and implementation of a Nutrient Management Plan (NMP) will benefit plant productivity and reduce off-site movement of nutrients. The use of pre-plant soil nitrogen tests will assist with the refinement of the nitrogen application rates in accordance with Land Grant University fertilizer guides. The NMP will include the use of the four R's (Right Source of Nutrients, Right Time of Application, Right Rate, and Right Method of Application). These include practices such as use of split applications, slow release nutrients, nitrogen stabilizers, proper timing of application, more appropriate formulations, banding, etc. Additional nitrogen tests including PSNT (pre-sidedress nitrogen test), CSNT (corn stalk nitrate test), chlorophyll meters, spectral analysis, etc., may be used to further refine nutrient applications. Record keeping will document application of nutrients based on the 4 R's and crop yields. Typical treatment area is 40 acres. Soil testing is completed according to LGU recommendations. Analysis are completed at least once every three years for P and K, and N tests prior to nitrogen application whenever nitrogen is applied. Nutrients via fertilizers and/or manures are applied in a manner that minimizes nutrient runoff and leaching.

Scenario Feature Measure: Acres of nutrient management applied.

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $574.88

Scenario Cost/Unit: $14.37

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Nitrogen-Urease inhibitor	260	Nitrogen-Urease inhibitor	Acre	$10.59	40	$423.77
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$10.13	1	$10.13
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	$19.99	1	$19.99
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.96	1	$98.96
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	1	$22.03

Practice: 590 - Nutrient Management

Scenario: #251 - Precision Nutrient Management

Scenario Description: This scenario describes the implementation of a precision nutrient management system on cropland. The planned NM system will meet the current 590 Nutrient Management standard. Payment for implementation is to defray the costs of soil testing and analysis that provide nutrient recommendations based on LGU recommendations or crop removal rates and an associated nutrient budget, recordkeeping, and monitoring on a precision grid or management unit level. Records demonstrating implementation of the 4 R's of at the NM plan will be required. This scenario goes beyond the basic NM system by using technologies that improve efficiency and effectiveness of nutrient management by utilizing precision location techniques and tools. Precision nutrient management techniques ensure that the right rate, proper timing, and proper placement of nutrients minimize non-point source pollution and provide proper amounts of nutrients to the crop where it is needed and not applying where it is not needed.

Before Situation: In this geographic area, a fertility program is already in place, however, applied nutrients are applied across large acreages based on a lack of representative soil samples or analyses. The current NM system may or may not meet 590 standards, however, could be improved by more strategic nutrient applications. Because whole fields are fertilized with the same rate, excess nutrients may be applied in some areas while inadequate amounts of nutrients are applied in other areas. Due to the mono-application rate, excess nutrients are transported to surface waters through runoff, tile drains, erosion or to ground water from leaching in quantities that degrade water quality and limit use of intended purposes. Soil quality may be degraded by excess or inadequate nutrients. Applications do not consider the detrimental affects of improper timing or improper rates. Whole fields with like crops and rotation are fertilized the same.

After Situation: A 590 Nutrient Management Plan is developed and soil testing is completed as a representative assessment of nutrient concentrations in each management zone. Soil sampling consists of methods that allow for various zones to be established. Zone maps are created and a nutrient budget developed for each zone. An application rate (prescription) is developed for each zone based on representative soil analysis and zone nutrient budget for each year of the Nutrient Management Plan. Nutrient applications are based on LGU recommendations. Soil testing is completed annually for N and at least once every three years for P-K. Application of nutrients is completed so that non-point source pollution is minimized. Nutrients are applied based on realistic yield expectations. Records are maintained for all nutrient applications and soil testing. Record keeping will include all soil tests, analysis, zone maps, nutrient prescriptions and budgets for the 4R's, as-applied applications and crop yields.

Scenario Feature Measure: Acres of nutrient management applied.

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $1,037.40

Scenario Cost/Unit: $25.94

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	2	$66.10
Fertilizer, precision application	952	Fertilizer application performed by light bar/GPS navigation system. Includes equipment, power unit and labor costs.	Acre	$11.60	40	$464.12
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	1	$22.03
Labor						
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	$31.26	2	$62.53
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.96	2	$197.91
Materials						
Test, Soil Test, Precision, Grid or Zone	300	Includes materials, shipping, labor, and equipment costs.	Each	$14.04	16	$224.71

Practice: 595 - Integrated Pest Management (IPM)

Scenario: #2 - Advanced IPM for Field Crops

Scenario Description: A comprehensive IPM plan with LGU-approved pest prevention, avoidance and monitoring techniques and pest thresholds (where available) is applied in Large Scale Field/Forage Crops to address all identified resource concerns with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Before Situation: Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to an identified resource concern (e.g. Water Quality – Impacts to Human Drinking Water).

After Situation: After implementing the 595 practice, a comprehensive IPM plan with Land Grant University approved pest prevention, avoidance and monitoring techniques and pest thresholds (where available) is applied to help meet the minimum criteria for all identified resource concerns with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Scenario Feature Measure: Acres of management applied

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $1,290.24

Scenario Cost/Unit: $32.26

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$28.37	4	$113.49
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.06	12	$1,176.74

Practice: 595 - Integrated Pest Management (IPM)

Scenario: #1 - Basic IPM for Field Crops

Scenario Description: A basic IPM plan with LGU-approved pest monitoring techniques and pest thresholds (where available) is applied in Large Scale Field/Forage Crops to address multiple identified resource concerns (e.g. Water Quality – Impacts to Human Drinking Water and Pollinator Impacts) with either risk prevention (e.g. planned pesticides have no risks to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Before Situation: Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to two or more identified resource concerns (e.g. Water Quality – Impacts to Human Drinking Water and Impacts on Pollinators).

After Situation: After implementing the 595 practice, a basic IPM system has been implemented with Land Grant University approved pest monitoring techniques and pest thresholds (where available) to help meet the minimum criteria for two or more identified resource concerns (e.g. Water Quality - Impacts to Human Drinking Water and Impacts on Pollinators) with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Scenario Feature Measure: <Unknown>

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $869.61

Scenario Cost/Unit: $21.74

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$28.37	3	$85.12
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.06	8	$784.49

USDA - Natural Resources Conservation Service

Practice: 595 - Integrated Pest Management (IPM)

Scenario: #3 - Basic IPM for Fruit and Vegetable Production

Scenario Description: A basic IPM plan with LGU-approved pest monitoring techniques and pest thresholds (where available) is applied in Large Scale Small Fruit/Vegetable Crops to address multiple identified resource concerns (e.g. Water Quality - Impacts to Human Drinking Water and Pollinator Impacts) with either risk prevention (e.g. planned pesticides have no risk to identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Before Situation: Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to two or more identified resource concerns (e.g. Water Quality – Impacts to Human Drinking Water and Impacts on Pollinators).

After Situation: After implementing the 595 practice, a basic IPM system has been implemented with Land Grant University approved pest monitoring techniques and pest thresholds (where available) to help meet the minimum criteria for two or more identified resource concerns (e.g. Water Quality - Impacts to Human Drinking Water and Impacts on Pollinators) with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Scenario Feature Measure: <Unknown>

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $1,150.86

Scenario Cost/Unit: $115.09

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$28.37	6	$170.24
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.06	10	$980.62

Practice: 595 - Integrated Pest Management (IPM)

Scenario: #4 - Basic IPM for Orchards

Scenario Description: A basic IPM plan with LGU-approved pest monitoring techniques and pest thresholds (where available) is applied in Large Scale Orchard/Specialty Crops to address multiple identified resource concerns (e.g. Water Quality - Impacts to Human Drinking Water and Pollinator Impacts) with either risk prevention (e.g. planned pesticides have no risks to identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Before Situation: Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to two or more identified resource concerns (e.g. Water Quality – Impacts to Human Drinking Water and Impacts on Pollinators).

After Situation: After implementing the 595 practice, a basic IPM system has been implemented with Land Grant University approved pest monitoring techniques and pest thresholds (where available) to help meet the minimum criteria for two or more identified resource concerns (e.g. Water Quality - Impacts to Human Drinking Water and Impacts on Pollinators) with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Scenario Feature Measure: <Unknown>

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $1,754.66

Scenario Cost/Unit: $175.47

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$28.37	10	$283.74
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.06	15	$1,470.93

USDA - Natural Resources Conservation Service

Practice: 595 - Integrated Pest Management (IPM)

Scenario: #5 - IPM for Small Farms

Scenario Description: A basic IPM plan with LGU-approved pest monitoring techniques and pest thresholds (where available) is applied in Small Farm/ Diversified Systems (e.g. CSA, organic, etc.) to address multiple identified resource concerns (e.g. Water Quality - Impacts to Human Drinking Water and Pollinator Impacts) with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings). This scenario attempts to capture the higher cost/acre of planning and implementing IPM techniques on smaller acreages with very diverse cropping systems.

Before Situation: Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to two or more identified resource concerns (e.g. Water Quality – Impacts to Human Drinking Water and Impacts on Pollinators).

After Situation: After implementing the 595 practice, a basic IPM system has been implemented with Land Grant University approved pest monitoring techniques and pest thresholds (where available) to help meet the minimum criteria for two or more identified resource concerns (e.g. Water Quality - Impacts to Human Drinking Water and Impacts on Pollinators) with either risk prevention (e.g. planned pesticides have no risk to the identified resource concerns) or risk mitigation (e.g. planned pesticides have appropriate mitigation planned from Agronomy Technical Note 5 for “Intermediate”, “High” or “Extra High” WIN-PST Final Hazard Ratings).

Scenario Feature Measure: <Unknown>

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: $701.86

Scenario Cost/Unit: $701.86

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$28.37	4	$113.49
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.06	6	$588.37

Practice: 595 - Integrated Pest Management (IPM)

Scenario: #6 - Risk Prevention IPM

Scenario Description: A comprehensive IPM plan based primarily on LGU-approved pest prevention and avoidance techniques is applied to prevent negative impacts on all identified resource concerns. LGU-approved pest monitoring techniques and pest thresholds may also be included, but suppression techniques cannot pose any hazards to identified resource concerns. This type of system is very difficult to achieve, but may be most commonly achieved in Organic Systems that already rely heavily on prevention and avoidance techniques.

Before Situation: Before practice conditions vary widely. Conditions range from the client is not using many pest suppression techniques (pesticides, tillage for weed control, burning, etc.) to the client is using many different pest suppression techniques for many different pests, but in all cases at least one planned pest suppression technique has risk to an identified resource concern (e.g. Water Quality – Impacts to Human Drinking Water).

After Situation: After implementing the 595 practice, a comprehensive IPM plan based primarily on Land Grant University approved pest prevention and avoidance techniques is applied to prevent negative impacts on all identified resource concerns. Land Grant University approved pest monitoring techniques and pest thresholds may also be included, but suppression techniques cannot pose any hazards to identified resource concerns.

Scenario Feature Measure: <Unknown>

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $1,406.22

Scenario Cost/Unit: $140.62

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$28.37	15	$425.60
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.06	10	$980.62

Practice: 603 - Herbaceous Wind Barriers

Scenario: #1 - Annual Species (FI)

Scenario Description: This scenario describes the implementation of herbaceous barriers to reduce wind velocities and wind-borne particulate matter. In this scenario barriers are composed of annual vegetation, living or dead. Plant materials shall be selected for local adaptation and climatic conditions and are resistant to lodging and are non-spreading in their habit. Barriers will be designed as close to perpendicular to prevailing winds as practical. Barrier direction, spacing, and composition needed to achieve the desired purpose shall be designed using the currently approved wind erosion technology. One barrier is planned to be 16 feet wide and 1,320 feet long for 0.5 acre per barrier.

Before Situation: Typically cropland has excessive soil disturbance and unsheltered distance that results in excessive wind erosion that affect soil resources. Seedling development and wildlife habitat are negatively affected by wind-borne sediment and sediment-borne contaminants travelling offsite.

After Situation: Implementation of herbaceous wind barriers will modify the flow and velocity of air dependant upon barrier height, porosity, spacing and wind speed. Orientation is generally placed across an entire field perpendicular to applicable prevailing wind direction. Implementation will reduce soil loss; protect growing plants from damage by wind blown soil particles, provide food and cover for wildlife. Payment is for the design and implementation of annual barriers and required reestablishment.

Scenario Feature Measure: linear feet of barrier planted

Scenario Unit: Foot

Scenario Typical Size: 1320

Total Scenario Cost: $161.22

Scenario Cost/Unit: $0.12

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	2	$39.99
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	0.5	$10.80
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.17	$25.44
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.16	$44.96
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.17	$20.39
Materials						
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	$39.29	0.5	$19.65

Practice: 603 - Herbaceous Wind Barriers

Scenario: #2 - Perennial species (FI)

Scenario Description: This scenario describes the implementation of herbaceous barriers to reduce wind velocities and wind-borne particulate matter. In this scenario barriers are composed of perennial living vegetation. Plant materials shall be selected for local adaptation and climatic conditions and are resistant to lodging and are non-spreading in their habit. Barriers will be designed as close to perpendicular to prevailing winds as practical. Barrier direction, spacing, and composition needed to achieve the desired purpose shall be designed using the currently approved wind erosion technology. One barrier is planned to be 16 feet wide and 1,320 feet long for 0.5 acre per barrier.

Before Situation: Typically cropland has excessive soil disturbance and unsheltered distance that results in excessive wind erosion that affect soil resources. Seedling development and wildlife habitat are negatively affected by wind-borne sediment and sediment-borne contaminants travelling offsite.

After Situation: Implementation of perennial herbaceous wind barriers will modify the flow and velocity of air dependant upon barrier height, porosity, spacing and wind speed. Orientation is generally placed across an entire field perpendicular to applicable prevailing wind direction. Implementation will reduce soil loss; protect growing plants from damage by wind blown soil particles, provide food and cover for wildlife. Payment is for the design and implementation of perennial barriers and required reestablishment.

Scenario Feature Measure: linear feet of barrier planted

Scenario Unit: Foot

Scenario Typical Size: 1320

Total Scenario Cost: $177.04

Scenario Cost/Unit: $0.13

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	2	$39.99
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$21.60	0.5	$10.80
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	0.17	$25.44
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	0.16	$44.96
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	0.17	$20.39
Materials						
One Species, Warm Season, Native Perennial Grass	2322	Native, warm season perennial grass. Includes material and shipping only.	Acre	$70.93	0.5	$35.46

Practice: 612 - Tree/Shrub Establishment

Scenario: #8 - Hardwood Est.-Direct Seeding

Scenario Description: Native seeds (acorns, nuts, etc) from native tree species are directly planted in the soil. The direct seeding is done with a broadcast seeder so the seeding rates have been increased. Site preparation is completed (disking to eliminate competing vegetation). The native seeds are collected/purchased locally to ensure trees are known to be adapted to local conditions. Resource concerns are degraded plant condition, and inadequate habitat for fish and widllife.

Before Situation: The hardwood forest is degrading. High value species, lumber and widlife habitat are not regenerating due to changes in the natural disturbance regime or past harvesting. Unwanted shade tolerant tree species have regenerated and are in the overstory competing with desirable species as well as in the mid and understory where they will eventually out-compete desirable species.

After Situation: Seeds from native species are collected or purchased and planted at prescribed rates. Site preparation is done prior to direct seeding. Degraded plant condition and wildlife habitat are on an upward trend.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $5,496.65

Scenario Cost/Unit: $549.67

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	6	$152.12
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	$23.15	8	$185.23
Equipment Installation						
Mechanical nut planter	1601	Mechanical nut planter for direct seeding of trees and shrubs. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$2.07	4	$8.28
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	4	$43.68
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	4	$97.12
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	$168.62	2	$337.25
Materials						
Trees and shrubs, seed	1871	Tree or shrub seed, e.g., acorns, to establish trees. Includes materials and shipping only.	Pound	$4.67	1000	$4,672.97

Practice: 612 - Tree/Shrub Establishment

Scenario: #8 - Hardwood Planting 1 gal pots

Scenario Description: Hardwood seedlings (potted) to be planted to restablish an upland hardwood forest. Planting will be by hand. The resource setting is an area that historically was an upland hardwood forest. Resource concerns are degrade plant condition - undesireable productivity and health, and Inadequate structure and composition; inadequate habitat for fish and wildlife.

Before Situation: The native forest that has been removed and the land is either row cropped, grazed or hayed or brushy forest. If any upland trees exist they are poor quality tree or undesirable species. Terrain is gently to moderately sloping with soil erosion-sheet and rill ocurring.

After Situation: The area of treatment is 10 acres. Potted/containerized hardwood seedlings are planted by hand. Post vegetation control should be evaluated and conducted it necessary.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $9,261.44

Scenario Cost/Unit: $926.14

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	20	$439.44
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	$40.95	8	$327.61
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	15	$180.65
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.59	8	$172.70
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	$1.00	100	$100.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.50	2	$507.00
Materials						
Tree, hardwood, seedling or transplant, potted, 1/2 to 1 gal.	1531	Potted hardwood tree, 1/2 to 1 gal. Includes materials and shipping only.	Each	$5.02	1500	$7,534.04

Practice: 612 - Tree/Shrub Establishment

Scenario: #1 - Individual tree - hand planting

Scenario Description: Tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Wildlife habitat is degraded by loss of forest conditions. This resource concern addressed is degraded plant condition -- and inadequate structure and composition, and inadequate wildlife &fish habitat.

Before Situation: The stocking level of the forest does not meet the minimum recommended number of trees per acre. The existing condition of the forest stand does not meet the landowners objectives. To be a viable forest additional seedlings need planting. Wildlife habitat is rated poor.

After Situation: The prescribed number of trees are hand planted on 20 acres, and the objectives of the landowner are met. The forest will provide wildlife habitat, provide a long term ground cover, and capture atmospheric carbon.

Scenario Feature Measure: Area Planted

Scenario Unit: Each

Scenario Typical Size: 6000

Total Scenario Cost: $3,069.79

Scenario Cost/Unit: $0.51

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	12	$263.66
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	$40.95	4	$163.80
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	10	$120.43
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.59	8	$172.70
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	$1.00	100	$100.00
Materials						
Tree, conifer, seedling, containerized, 8 cu. in.	1518	Containerized conifer stock, 8 cubic inches (e.g. 1.5" x 6"). Includes materials and shipping only.	Each	$0.37	6000	$2,249.19

Practice: 612 - Tree/Shrub Establishment

Scenario: #2 - Individual tree - hand planting w/browse protection

Scenario Description: Tree seedlings will be hand planted in the forested area where few or no forest trees are growing, the existing stand of trees needs underplanting, or the previously planted seedling tree stocking level is below desirable conditions. Seedlings are protected from wildlife browsing. Wildlife habitat is degraded by loss of forest conditions. The resource concerns addressed include degraded plant condition: inadequate structure and composition and inadequate wildlife &fish habitat.

Before Situation: The stocking level does not meet the minimum recommended number of trees per acre and does not meet the landowner's objectives. To be a viable forest, additional seedlings need planting. Wildlife habitat is rated poor. Wildlife are known to browse tree seedlings in the area causing great damage.

After Situation: The prescribed number of trees are hand planted, and the objectives of the landowner are met. Seedlings are protected from widlife browsing by installing some type of protective device. A forest will provide wildlife habitat, long term ground cover, and capture atmospheric carbon.

Scenario Feature Measure: Each Planted Seedling

Scenario Unit: Each

Scenario Typical Size: 6000

Total Scenario Cost: $33,372.15

Scenario Cost/Unit: $5.56

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	230	$5,325.40
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	$45.15	20	$903.08
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	100	$1,204.31
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	16	$341.60
Materials						
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	6000	$9,442.28
Tree shelter, wire mesh	1557	5 feet tall, Woven Wire mesh, 6"x 6" opening or smaller, 10 gauge wire (minimum) , cage placed around seedling for animal protection. Materials only.	Each	$2.32	6000	$13,906.28
Tree, conifer, seedling, containerized, 8 cu. in.	1518	Containerized conifer stock, 8 cubic inches (e.g. 1.5" x 6"). Includes materials and shipping only.	Each	$0.37	6000	$2,249.19

Practice: 612 - Tree/Shrub Establishment

Scenario: #10 - Shrub Planting

Scenario Description: Shrubs are planted to provide a more diverse habitat. Plantings are in either uplands or bottomlands. The site lacks ground level habitat structure and diversity for widlife. Resource concern is inadequate habitat for fish and wildife - habitat fragmentation.

Before Situation: No shrubbery vegetation, or very little, is present under the forest overstory. Wildlife species that need shrub cover are not present. An adequate stand of overstory trees is present, but it is a single level, not multi-level.

After Situation: A 10 acre area is planted with shrubs. Shrubs are not planted over the entire 10 acres. They are planted in groups or motts. The motts, more or less circular in shape, are 50 feet in diameter, with 50 shrubs planted within each mott. 4 motts are planted per acre for a total of 200 shrubs per acre. Motts are randomly established to take advantage of site conditions and shrub species being planted.

Scenario Feature Measure: Area of Treatment

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $2,316.08

Scenario Cost/Unit: $231.61

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	12	$263.66
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	$40.95	6	$245.70
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	10	$120.43
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.59	6	$129.53
Mobilization						
Mobilization, Material, distance > 50 miles	1043	Mobilization cost of materials for special cases where the distance from the supplier delivery point to the job site exceeds 50 miles. The costs for shipping by UPS or bulk freight shipping to a location within 50 miles of the job site have already been included in the component price.	Dollar	$1.00	100	$100.00
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.50	2	$507.00
Materials						
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	2000	$949.76

Practice: 612 - Tree/Shrub Establishment

Scenario: #10 - Shrub Thicket

Scenario Description: Shrubs are planted to provide a more diverse habitat. Plantings are in either uplands or bottomlands. The site lacks ground level habitat structure and diversity for widlife. Resource concern is inadequate habitat for fish and wildife - habitat fragmentation.

Before Situation: No shrubbery vegetation, or very little, is present in the forest understory. Wildlife species that need shrub cover are not present. An adequate stand of overstory trees is present, but it is a single level, versus the desired multi-level structure.

After Situation: A 30x50 foot area is planted with 150 shrubs forming a dense thicket. The thicket is established to take advantage of site conditions and shrub species being planted.

Scenario Feature Measure: Per shrub

Scenario Unit: Each

Scenario Typical Size: 150

Total Scenario Cost: $294.76

Scenario Cost/Unit: $1.97

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	2	$50.71
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	$23.15	4	$92.62
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tillage, Light	945	Includes light disking (tandem) or field cultivator. Includes equipment, power unit and labor costs.	Acre	$10.92	0.5	$5.46
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	150	$71.23
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	10	$0.93

Practice: 612 - Tree/Shrub Establishment

Scenario: #4 - Trees, Machine planted - no tubes

Scenario Description: This practice involves planting tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a medium density planting rate. Typical scenario will consist of 1000 feet of trees. The resource concerns addressed are degraded plant condition: undesirable plant productivity and health, inadequate structure and composition, and degraded wildlife habitat. Terrain is moderately sloping and will be planted with a mechanical tree planter. Smaller size seedlings (1-0) are planted.

Before Situation: The land has little or no tree cover, or is stocked with the wrong tree species. Competing vegetation is a concern before and after planting. Soil condition is degraded due to the loss of the native forest ecosystem (organic matter in topsoil depleted). Native wildlife habitat is lacking. The main resource concern is degraded plant condition: inadequate structure and composition.

After Situation: Land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. Establishing forest vegetation also creates corridors for wildlife movement.

Scenario Feature Measure: Number of Trees

Scenario Unit: Each

Scenario Typical Size: 100

Total Scenario Cost: $299.10

Scenario Cost/Unit: $2.99

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	2	$50.71
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	$23.15	4	$92.62
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	100	$78.25
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 612 - Tree/Shrub Establishment

Scenario: #6 - Trees, Machine planted, no tubes, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. This practice involves planting of tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a medium density planting rate. Typical scenario will consist of 1000 feet of trees. The resource concerns addressed are degraded plant condition: undesirable plant productivity and health, inadequate structure and composition, and degraded wildlife habitat. Terrain is moderatey sloping and will be planted with a mechanical tree planter. Smaller size seedlings (1-0) are planted.

Before Situation: The land has little or no tree cover, or is stocked with the wrong tree species. Competing vegetation is a concern before and after planting. Soil condition is degraded due to the loss of the native forest ecosystem (organic matter in top soil depleted). Native wildlife habitat is lacking. The main resource concern is degraded plant condition: inadequate structure and composition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. Establishing forest vegetation also creates corridors for wildlife movement. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Number of Trees

Scenario Unit: Each

Scenario Typical Size: 100

Total Scenario Cost: $923.63

Scenario Cost/Unit: $9.24

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	2	$50.71
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	$23.15	10	$231.54
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	3	$64.05
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	4000	$464.26
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	100	$78.25
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 612 - Tree/Shrub Establishment

Scenario: #3 - Trees, Machine planted with tubes for animal protection

Scenario Description: This practice involves planting tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a medium density planting rate. Typical scenario will consist of 1000 feet of trees with tubes for animal protection. The resource concerns addressed are degraded plant condition: undesirable plant productivity and health, inadequate structure and composition, and degraded wildlife habitat. Terrain is moderately sloping and will be planted with a mechanical tree planter. Smaller size seedlings (1-0) are planted.

Before Situation: The land has little or no tree cover, or is stocked with the wrong tree species. Competing vegetation is a concern before and after planting. Soil condition is degraded due to the loss of the native forest ecosystem (organic matter in topsoil depleted). Native wildlife habitat is lacking. The main resource concern is degraded plant condition: inadequate structure and composition.

After Situation: Land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. Establishing forest vegetation also creates corridors for wildlife movement. Planted trees have vexar tubes, or something similar, installed as protection from animal damage.

Scenario Feature Measure: Number of Trees

Scenario Unit: Each

Scenario Typical Size: 100

Total Scenario Cost: $973.52

Scenario Cost/Unit: $9.74

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	2	$50.71
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	$23.15	4	$92.62
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	100	$4.82
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	100	$157.37
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	100	$512.23
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	100	$78.25
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 612 - Tree/Shrub Establishment

Scenario: #5 - Trees, Machine planted with tubes for animal protection, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. This practice involves planting of tree seedlings after the site has been prepared for seedling growth and establishment. The productivity of the site is good and will handle a medium density planting rate. Typical scenario will consist of 1000 feet of trees with tubes for animal protection. The resource concerns addressed are degraded plant condition: undesirable plant productivity and health, inadequate structure and composition, and degraded wildlife habitat. Terrain is moderately sloping and will be planted with a mechanical tree planter. Smaller size seedlings (1-0) are planted.

Before Situation: The land has little or no tree cover, or is stocked with the wrong tree species. Competing vegetation is a concern before and after planting. Soil condition is degraded due to the loss of the native forest ecosystem (organic matter in topsoil depleted). Native wildlife habitat is lacking. The main resource concern is degraded plant condition: inadequate structure and composition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Land is established with permanent tree cover that will improve degraded plant condition, reduce soil erosion, establish wildlife habitat, sequester carbon and reduce invasive species presence. Establishing forest vegetation also creates corridors for wildlife movement. Planted trees have vexar tubes, or something similar, installed as protection from animal damage. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Number of Trees

Scenario Unit: Each

Scenario Typical Size: 100

Total Scenario Cost: $1,598.05

Scenario Cost/Unit: $15.98

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	2	$50.71
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	$23.15	10	$231.54
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	3	$64.05
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	100	$4.82
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	4000	$464.26
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	100	$157.37
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	100	$512.23
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	100	$78.25
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 643 - Restoration and Management of Rare and Declining Habitats

Scenario: #1 - Monitoring &Management, Low Intensity and Complexity - No Foregone Income

Scenario Description: Setting is any land use with the potential to provide habitat for species of plants and animals identified as Rare and Declining and the habitat potential is not currently being captured. The identified habitat limiting factors can be restored, enhanced or created, with the application of this practice alone, or in combination with other supporting and facilitating practices. Monitoring will be used to determine if the conservation system meets or exceeds the minimum planning criteria for the targeted wildlife. Management will be implemented based on the findings of the habitat assessment and monitoring. Habitat management and monitoring needed to treat the resource concerns requires no training, no qualitative data assessment, no water quality monitoring and is low in complexity and intensity. Examples of prescribed monitoring, include but are not limited to: photo points taken, documentation of livestock utilization, regeneration/breeding success, completing an annual management records log, documenting wildlife sightings, documenting location and species of invasive plants and condition of vegetative and structural treatments. No decision or treatment associated with this practice or facilitating practices will require foregone income. The planner will specify locations and identify the methods to the customer who will implement the monitoring and management plan.

Before Situation: Existing degraded plant conditions and resulting inadequate habitat for fish and wildlife have resulted in low use of the area by target species identified as Rare and Declining and other associated species.

After Situation: Based on the results of a State approved upland wildlife habitat assessment process, the application of habitat management efforts and prescribed monitoring have been implemented. With the application of this practice alone, or in combination with other supporting and facilitating practices, the inadequate habitat conditions have been addressed. Monitoring and resulting management has maximized the benefits of the needed habitat treatment efforts.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 100

Total Scenario Cost: $291.04

Scenario Cost/Unit: $2.91

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	4	$92.62
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	2	$64.05
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	$0.17	100	$17.04
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$69.23	1	$69.23

Practice: 643 - Restoration and Management of Rare and Declining Habitats

Scenario: #2 - Monitoring &Management, with Foregone Income

Scenario Description: Setting is any land use with the potential to provide habitat for species of plants and animals identified as Rare and Declining and the habitat potential is not currently being captured. The identified habitat limiting factors can be restored, enhanced or created with the application of this practice alone, or in combination with other supporting and facilitating practices. Monitoring will be used to determine if the conservation system meets or exceeds the minimum planning criteria for the targeted wildlife. Management will be implemented based on the findings of the habitat assessment and monitoring. Habitat management and monitoring needed to treat the resource concerns requires no training, no qualitative data assessment, no water quality monitoring and is low in complexity and intensity. Examples of prescribed monitoring, include but are not limited to: photo points taken, documentation of livestock utilization, regeneration/breeding success, completing an annual management records log, documenting wildlife sightings, documenting location and species of invasive plants and condition of vegetative and structural treatments. Treatment associated with this practice or facilitating practices will require foregone income. The planner will specify locations and identify the methods to the customer who will implement the monitoring and management plan. Includes foregone income.

Before Situation: Existing degraded plant conditions and resulting inadequate habitat for fish and wildlife have resulted in low use of the area by target species identified as Rare and Declining and associated species.

After Situation: Based on the results of a State-approved upland wildlife habitat assessment process, the application of habitat management efforts and prescribed monitoring have been implemented. With the application of this practice alone, or in combination with other supporting and facilitating practices, the inadequate habitat conditions have been addressed. Monitoring and resulting management has maximized the benefits of the needed habitat treatment efforts.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 100

Total Scenario Cost: $2,067.65

Scenario Cost/Unit: $20.68

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	4	$92.62
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	2	$64.05
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	$0.17	100	$17.04
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$69.23	1	$69.23
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$17.77	100	$1,776.61

Practice: 643 - Restoration and Management of Rare and Declining Habitats

Scenario: #3 - Wildlife Enhancement, Livestock exclusion (FI)

Scenario Description: Lifestock excluded from wildlife areas for habitat development/enhancement. The area is monitored and adaptive management is implemented as needed based on the findings of the monitoring effort. A typical monitoring effort is to visit the area to assure that the fence is turning cattle and gates are closed. Typical size is 640 acres.

Before Situation: Wildlife habitat is grazed during the primary nesting and development seasons of targeted wildlife species.

After Situation: Livestock excluded for wildlife habitat enhancement of targeted wildlife species. Implementation includes exclusion of livestock to allow for sufficient regrowth of the habitat (vegetation) resulting in the loss of income. The montoring and management assures that the area is excluded from grazing during critical nexting periods for ground nesting birds.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 640

Total Scenario Cost: $11,460.62

Scenario Cost/Unit: $17.91

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$45.15	2	$90.31
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$17.77	640	$11,370.31

Practice: 644 - Wetland Wildlife Habitat Management

Scenario: #1 - Haul fill with Native seed bank.

Scenario Description: This scenario covers all wetland habitats not covered under 643. Involves hauling in material (mats and plugs obtained from off site) with a unique soil texture, seedbank, and vegetative reproductive potential. Haul/fill is used as macrotopograpic development of unique texture and seedbank that will provide the soil medium (texture) to increase plant richness and diversity in an otherwise monotypic soil/landscape/plant community. This scenario is utilized when habitat assessment indicates Inadequate Habitat for Fish or Wildlife-habitat degradation. The typical size range for this scenario is 5 to 50 acres. This scenario would be applied on any land use where wetland habitats are utilized by targeted species. This practice scenario is typically used to reduce soil erosion, improve soil quality, improve water quality, and develop wildlife habitat as part of a habitat management system. This scenario is utilized to increase species diversity and richness. Monitoring of site by a biologist, post installation, will be required to determine management strategies for appropriate wetland dependant species. Establishment of vegetation will require methods including the use of seed-bearing topsoil, transplanted vegetation mats and plugs, and other appropriate methods used to cover and treat patches, 10-25% of each wetland acre. Fertilization will NOT be required.

Before Situation: A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a lack of annual cover (non-persistent) or vegetation for wetland dependant wildlife. Resource concerns identified may indicate that the current management system provides little to no wildlife habitat, with habitat limiting factors such as quality, quantity and continuity of forage, cover, shelter and space being identified.

After Situation: Planning unit has adequately addressed needed cover by adding macrotopography with annual and/or perennial vegetation. Mats and plugs will provide plants for cover and forage for target species. Forage may include the vegetation itself or promote an abundance of beneficial insects. This scenario does not apply to plantings for forage production or critical area plantings, and vegetation established under this scenario will remain unharvested. Fetilization will NOT be required.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $1,912.81

Scenario Cost/Unit: $191.28

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic Yard	$5.30	100	$529.72
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10
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	$19.99	5	$99.97
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$98.96	10	$989.57
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	$174.01	1	$174.01
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 644 - Wetland Wildlife Habitat Management

Scenario: #3 - Management and monitoring only, foregone income (FI)

Scenario Description: Site management will include managing/monitoring the site to provide food and cover for wetland wildlife species on cropland. Annual vegetation (crops or other annual vegetation) will be allowed to establish and persist during critical nesting and brood rearing seasons and will remain standing (not harvested) until migratory species have left the site. The setting is on lands used for the production of crops where the slope gradient is less than two percent and soils are not excessivly drained. The State-approved habitat evaluation or appraisal found that a limiting factor for wetland wildlife is the absence of sufficient cover and food in the area. The manipulation of existing cover will be accomplished through mechanical methods to provide a diverse vegetation mosaic, within and adjacent to the existing wetland, addressing inadequate habitat for wetland wildlife. Where this occurs on cropped fields, annual crops will be lost for one growing season (foregone income is included).

Before Situation: The site lacks sufficient and diverse cover and food needed for optimal wetland wildlife habitat or target species. Typically the site has been previously manipulated and utilized for agricultural. With the loss of abundant and diverse cover and food throughout the site, both plant and animal species that are dependent on these elements are no longer present, or are in decline, within the planning unit.

After Situation: Agricultural crop or annual vegetation has been allowed to persist providing needed food and cover for identified species. Crops and annual vegetation will not be harvested during the critical seasons as identified by the habitat evaluation. As a result of the installation, habitat needs have been adequately met.

Scenario Feature Measure: Wetland Wildlife Cover and Food

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $1,996.77

Scenario Cost/Unit: $199.68

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	10	$167.93
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$149.65	3.3	$493.86
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$280.99	3.3	$927.27
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$119.92	3.4	$407.72

Practice: 644 - Wetland Wildlife Habitat Management

Scenario: #2 - Wetland Hydrology Management

Scenario Description: Water level manipulation will require the use of Water Control Structures (587) and hand labor implementation techniques on constructed wetlands. The setting is all landuses, but typically is on lands used for the production of crops and/or fish and wildlife where the slope gradient is less than two percent and soils that are not excessivly drained. The State-approved habitat evaluation or appraisal found that a limiting factor for wetland wildlife is the absence of sufficient cover and food in the area. The manipulation of existing cover will be accomplished thru managing water levels to provide a diverse vegetation mosaic within and adjacent to the existing wetland addressing inadequate habitat for wetland wildlife. Stop log structure is installed under a separate conservation practice code (587) Structure for Water Control.

Before Situation: The site lacks sufficient and diverse cover and food needed for optimal wetland wildlife habitat or target species. Typically the site has been previously manipulated and utilized for agricultural, livestock or forest production. With the loss of abundant and diverse cover and food throughout the site, both plant and animal species that are dependent on these elements are no longer present or are in decline within the planning unit.

After Situation: Wetland water levels are managed to create optimal winter forage and cover for migrating wetland wildlife by drawing down water levels during the summer creating vegetative features essential for identified species. As a result of the installation, habitat needs have been met adequately.

Scenario Feature Measure: Wetland Wildlife Food and Cover

Scenario Unit: Acre

Scenario Typical Size: 5

Total Scenario Cost: $357.67

Scenario Cost/Unit: $71.53

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	5	$99.97
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	$40.05	3	$120.16
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$33.05	2	$66.10
Mobilization						
Mobilization, very small equipment	1137	Equipment that is small enough to be transported by a pick-up truck with typical weights less than 3,500 pounds. Can be multiple pieces of equipment if all hauled simultaneously.	Each	$71.44	1	$71.44

Practice: 645 - Upland Wildlife Habitat Management

Scenario: #2 - Greater Prairie Chicken Habitat Development

Scenario Description: Field size is 640 acres. Each acre in the treatment unit will be burned only once in three years. Each acre in treatment unit will be burned once within the three year period. This is a monitoring for GPC habitat conditions not a burning scenario. Habitat conditions will be monitored 4 times a year and vegetative data will be collected using percent ground cover within a 30 foot radius plot at 10 locations.

Before Situation: The grasslands of the Flint Hills region in Kansas, and the area east thereof, are commonly used for early intensive stocking. Annual spring burning of these native warm season range units is common for animal performance benefits. This cultural burning practice does not leave adequate nesting habitat for greater prairie-chicken. Typically the entire acreage is burned annually.

After Situation: To benefit air quality, plant health and vigor and wildlife habitat, each acre will be burned only once in a three year period. Treatment units are range, pasture, or grazed forest. Nesting habitat for GPC will be developed through limiting burning, and improving habitat based on data collected at the 10 monitoring sites.

Scenario Feature Measure: Area monitored

Scenario Unit: Acre

Scenario Typical Size: 640

Total Scenario Cost: $6,997.86

Scenario Cost/Unit: $10.93

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$18.64	80	$1,490.82
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	$25.93	60	$1,555.53
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	$37.44	20	$748.86
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	100	$3,202.64

Practice: 645 - Upland Wildlife Habitat Management

Scenario: #7 - Honeybee Monitoring

Scenario Description: Setting is land with cover that has the potential to provide foraging habitat for European honey bees. Safe honey bee forage will be provided and managed throughout the summer. Monitoring will be used to determine if the goal of providing safe forage for the honey bee is being met. Monitoring will involve measuring the use of different flowering species by honey bees and native polinators, per NRCS monitoring guidelines.

Before Situation: Insects, fungi and flowering weeds are managed with the use of periodic application of pesticides, without regard to the honey bee. Minimal forage and cover habit is available to native pollinators and other wildlife.

After Situation: This area will be managed honey bee forage. Application of pesticides will not be applied during the flowering season. These area will provide safe honey bee forage for a maximum period of time during the growing season, resulting in improved hive health and improved forage and cover habitat for associated wildlife. Monitoring data is used to assist in adaptive management decisions such as pesticide spraying timing and termination of planting following flowering to maximize benefits to the honeybee and minimize risks to the health of the bee associated with pesticide applications.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $1,659.15

Scenario Cost/Unit: $20.74

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$25.93	38	$985.17
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	$37.44	18	$673.98

Practice: 645 - Upland Wildlife Habitat Management

Scenario: #5 - Honeybee Habitat Single Species Mix with Monitoring and Foregone Income

Scenario Description: Setting is cropland with the potential to provide foraging habitat for European honey bees and the decision of the landuser is to forgo planting of corn, soybeans or wheat for this year to benefit the bee. Safe honey bee forage will be provided during the summer under this scenario. This scenario will include the planting of a single spacies annual grass or legume for honey bee forage. Monitoring will be used to determine if the goal of providing safe forage for the honey bee is being met. Monitoring will involve measuring the use of different flowering species by honey bees and native polinators, per NRCS monitoring guidelines.

Before Situation: Corn, soybeans and wheat fields planted continuously or in rotation with other grain crops. Insects, fungi and flowering weeds are managed with the use of periodic application of pesticides, without regard to the honey bee. Minimal forage and cover habit is available to native pollinators and other wildlife.

After Situation: In lieu of planting the area to grain, this area will be planted to a single species annual for honey bee forage this year. Application of pesticides will not be applied during the flowering season. These areas will provide safe honey bee forage for a maximum period of time during the growing season, resulting in improved hive health and improved forage and cover habitat for associated wildlife. Monitoring data is used to assist in adaptive management decisions such as pesticide spraying timing and termination of planting following flowering to maximize benefits to the honeybee and minimize risks to the health of the bee associated with pesticide applications.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $27,049.19

Scenario Cost/Unit: $338.11

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$25.93	38	$985.17
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	$37.44	18	$673.98
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$324.58	26.7	$8,666.32
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$271.38	26.7	$7,245.90
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$175.18	26.6	$4,659.91
Materials						
One Species, Cool Season, Annual Grass or Legume	2311	Cool season annual grass or legume. Includes material and shipping only.	Acre	$39.29	80	$3,143.52

Practice: 645 - Upland Wildlife Habitat Management

Scenario: #6 - Honeybee Habitat Multi Species Mix with Monitoring and Foregone Income

Scenario Description: Setting is cropland with the potential to provide foraging habitat for European honey bees and the decision of the landuser is to forgo planting of corn, soybeans or wheat for this year to benefit the bee. Safe honey bee forage will be provided during the summer under this scenario. This scenario will include the planting of a multi-specie annual mixture for honey bee forage. Monitoring will be used to determine if the goal of providing safe forage for the honey bee is being met. Monitoring will involve measuring the use of different flowering species by honey bees and native polinators, per NRCS monitoring guidelines.

Before Situation: Corn, soybeans and wheat fields planted continuously or in rotation with other grain crops. Insects, fungi and flowering weeds are managed with the use of periodic application of pesticides, without regard to the honey bee. Minimal forage and cover habit is available to native pollinators and other wildlife.

After Situation: In lieu of planting the area to grain, this area will be planted to a mixture of multi species annuals for honey bee forage this year. Application of pesticides will not be applied during the flowering season. These area will provide safe honey bee forage for a maximum period of time during the growing season, resulting in improved hive health and improved forage and cover habitat for associated wildlife. Monitoring data is used to assist in adaptive management decisions such as pesticide spraying timing and termination of planting following flowering to maximize benefits to the honeybee and minimize risks to the health of the bee associated with pesticide applications.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 80

Total Scenario Cost: $28,712.15

Scenario Cost/Unit: $358.90

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$25.93	38	$985.17
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	$37.44	18	$673.98
Equipment Installation						
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	$20.93	80	$1,674.39
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$324.58	26.7	$8,666.32
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$271.38	26.7	$7,245.90
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$175.18	26.6	$4,659.91
Materials						
Five Species Mix, Cool Season, Annual Grasses and Legumes	2320	Cool season, introduced grass and legume mix. Includes material and shipping only.	Acre	$60.08	80	$4,806.49

Practice: 645 - Upland Wildlife Habitat Management

Scenario: #1 - Monitoring, Management, Foregone Income

Scenario Description: Setting is grazingland with the potential to provide habitat for species of plants and animals identified as Rare and Declining and the habitat potential is not currently being captured. The identified habitat limiting factors can be restored, enhanced or created, with the application of this practice alone, or in combination with other supporting and facilitating practices. Monitoring will be used to determine if the conservation system meets or exceeds the minimum planning criteria for the targeted wildlife species. Management will be implemented based on the findings of the habitat assessment and monitoring. Habitat management and monitoring needed to treat the resource concerns requires no training, no qualitative data assessment, no water quality monitoring and is low in complexity and intensity. Examples of prescribed monitoring, include but are not limited to: photo points taken, use documentation by livestock, regeneration/breeding success, completing an annual management records log, documenting wildlife sightings, documenting location and species of invasive plants and condition of vegetative and structural treatments. No decision or treatment associated with this practice or facilitating practices will require income foregone. The planner will specify locations and identify the methods to the customer who will implement the monitoring and management plan.

Before Situation: Existing degraded plant conditions and resulting inadequate habitat for fish and wildlife have resulted in low use of the area by target species identified as Rare and Declining and associated species.

After Situation: Based on the results of a State-approved upland wildlife habitat assessment process, the application of habitat management efforts and prescribed monitoring have been implemented. With the application of this practice alone, or in combination with other supporting and facilitating practices, the inadequate habitat conditions have been addressed. Monitoring has maximized the benefits of the needed habitat treatment efforts.

Scenario Feature Measure: Acres Managed and Monitored.

Scenario Unit: Acre

Scenario Typical Size: 100

Total Scenario Cost: $2,645.76

Scenario Cost/Unit: $26.46

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$18.64	5	$93.18
Materials						
Miscellaneous, containers, traps, etc.	298	Pheromone Traps, Culture container with lid. Includes materials and shipping only.	Each	$4.04	6	$24.24
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	2	$64.05
Rangeland/grassland field monitoring kit	967	Miscellaneous tools needed to complete rangeland/grassland monitoring. Materials may include camera, clippers, plot frame, scale, tape measure, etc. Includes materials and shipping only.	Each	$48.10	1	$48.10
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	$0.17	100	$17.04
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	100	$2,399.16

Practice: 645 - Upland Wildlife Habitat Management

Scenario: #3 - Wildlife Habitat Enhancement (FI)

Scenario Description: Exclusion of livestock on 640 acres of rangeland for the enhancement of habitat for wildlife.

Before Situation: Wildlife habitat is grazed during the primary nesting and development periods of targeted wildlife species.

After Situation: Livestock are excluded for wildlife habitat enhancement for the targeted wildlife species. Implementation includes the exclusion of livestock to allow for adequate regrowth and development of the habitat.

Scenario Feature Measure: Acres Excluded

Scenario Unit: Acre

Scenario Typical Size: 640

Total Scenario Cost: $15,429.49

Scenario Cost/Unit: $24.11

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$37.44	2	$74.89
Foregone Income						
FI, Grazing AUMs	2079	Grazing is the Primary Land Use	Animal Unit Month	$23.99	640	$15,354.61

Practice: 645 - Upland Wildlife Habitat Management

Scenario: #4 - Wildlife Habitat Enhancement - Former Cropland (FI)

Scenario Description: Setting is cropland with the potential to provide habitat for species of plants and animals identified as Rare and Declining and the habitat potential is not currently being captured. The identified habitat limiting factors can be restored, enhanced or created, with the application of this practice alone, or in combination with other supporting and facilitating practices. Monitoring will be used to determine if the conservation system meets or exceeds the minimum planning criteria for the targeted wildlife. Management will be implemented based on the findings of the habitat assessment and monitoring. Habitat management and monitoring needed to treat the resource concerns requires no training, no qualitative data assessment, no water quality monitoring and is low in complexity and intensity. Examples of prescribed monitoring, include but are not limited to: photo points taken, livestock utlization records, regeneration/breeding success, completing an annual management records log, documenting wildlife sightings, documenting location and species of invasive plants and condition of vegetative and structural treatments. The planner will specify locations and identify the methods to the customer who will implement the monitoring and management plan. Includes foregone income. Setting is cropland that will be managed to benefit rare and declining habitats through deferral or seeding to permanent or annual vegetation.

Before Situation: Existing cropland production of a soybean, corn, and wheat rotation on cropped fields. This creates a degraded plant condition which results in inadequate habitat for fish and wildlife resulting in low use of the area by target species identified as Rare and Declining and associated species.

After Situation: Based on the results of a State-approved upland wildlife habitat assessment process, the application of habitat management efforts and prescribed monitoring have been implemented. With the application of this practice alone, or in combination with other supporting and facilitating practices, the inadequate habitat conditions have been addressed. Monitoring will highlight the benefits of the habitat treatment efforts.

Scenario Feature Measure: Acres Managed and Monitored

Scenario Unit: Acre

Scenario Typical Size: 100

Total Scenario Cost: $25,771.63

Scenario Cost/Unit: $257.72

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$37.44	2	$74.89
Foregone Income						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	$324.58	33.3	$10,808.55
FI, Soybeans Dryland	1961	Dryland Soybeans is Primary Crop	Acre	$271.38	33.3	$9,037.02
FI, Wheat Dryland	1963	Dryland Wheat is Primary Crop	Acre	$175.18	33.4	$5,851.17

Practice: 647 - Early Successional Habitat Development/Management

Scenario: #3 - Chemical

Scenario Description: This practice addresses inadequate wildlife habitat for species requiring early successional habitat. This scenario provides early successional habitat by setting back succession and manipulating species composition by disking vegetation and creating bare ground. The typical setting for this scenario is at the edge of crop fields, in pastures, and in odd areas such as pivot corners. This scenario is applicable nationwide. Where the management of woody plants is required to create or maintain early successional habitat, conservation practice 314, brush management, or 666, forest stand improvement, should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community, conservation practice 315, herbaceous weed control, should be used. Where the seedbank is inadequate for natural regeneration and planting is required, use conservation practice 550, range seeding, or 327, Conservation Cover. Where the need is to create early successional habitat within or at the edge of woodland or forest, use conservation practice 666, forest stand improvement, to remove trees.

Before Situation: The site is static or trending to higher successional plant species. The disturbance regime to maintain a lower successional stage is lacking. Pastures are often monotypic, lacking in diversity. Bare ground for seedling establishment is absent. Stands are often dense and inhibit the movements of younger wildlife species such as game bird chicks. The site may need to be "pre-treated" with mowing or a prescribed burn (338) in order to make the herbicide more effective.

After Situation: The application of this scenario improves wildlife habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, brood rearing habitat is improved both by the resultant food resources and the increased openess of the plant community that allows chicks to negotiate the terrain and exploit those food resources.

Scenario Feature Measure: width and length of treated area

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $526.62

Scenario Cost/Unit: $26.33

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$19.99	6	$119.96
Materials						
Herbicide, Glyphosate	334	A broad-spectrum, non-selective systemic herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$15.93	20	$318.52
Equipment Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$22.03	4	$88.13

Practice: 647 - Early Successional Habitat Development/Management

Scenario: #2 - Disking

Scenario Description: This practice addresses inadequate wildlife habitat for species requiring early successional habitat. This scenario provides early successional habitat by setting back succession and manipulating species composition by disking vegetation and creating bare ground. The typical setting for this scenario is at the edge of crop fields, in pastures, and in odd areas such as pivot corners. This scenario is applicable nationwide. Where the management of woody plants is required to create or maintain early successional habitat, conservation practice 314, brush management, or 666, forest stand improvement, should be used. Where chemical control of weeds, including invasives, is required to reduce competition for the desired plant community, conservation practice 315, herbaceous weed control, should be used. Where the seedbank is inadequate for natural regeneration and planting is required, use conservation practice 550, range seeding, or 327, Conservation Cover. Where the need is to create early successional habitat within or at the edge of woodland or forest, use conservation practice 666, forest stand improvement, to remove trees.

Before Situation: The site is static or trending to higher successional plant species. The disturbance regime to maintain a lower successional stage is lacking. Pastures are often monotypic, lacking in diversity. Bare ground for seedling establishment is absent. Stands are often dense and inhibit the movements of younger wildlife species such as game bird chicks.

After Situation: The application of this scenario improves wildlife habitat for species requiring early successional plant communities by reducing competition and creating bare ground for the establishment of early successional plants. Additionally, brood rearing habitat is improved both by the resultant food resources and the increased openess of the plant community that allows chicks to negotiate the terrain and exploit those food resources.

Scenario Feature Measure: width and length of treated area

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $503.78

Scenario Cost/Unit: $25.19

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	$16.79	30	$503.78

Practice: 647 - Early Successional Habitat Development/Management

Scenario: #1 - Mowing

Scenario Description: This scenario addresses inadequate habitat for fish and wildlife where succession is set back by mowing short, herbaceous vegetation prior to using another treatment, to create early successional habitat (disking, herbicide application, etc.). Mowing can be used to increase structural diversity by creating areas of shorter vegetation preferred by some species or during certain life stages of species. The typical setting for this scenario is at the edge of crop fields, in pastures, at the edge of woodlands or brushy areas, and in odd areas such as pivot corners. Where additional chemical control of weeds, including invasives grasses, is required to reduce competition for the desired plant community, conservation practice 315, herbaceous weed control, should be used. Where the seedbank is inadequate for natural regeneration and seeding is required, use conservation practice 327, Conservation Cover, or 550, Range Planting. Where the need is to create early successional habitat within or at the edge of a woodland or forest use conservation practice 666, forest stand improvement, to remove trees.

Before Situation: The site is static or trending to a later successional plant community. The disturbance regime to maintain an earlier successional plant community is lacking. Pastures are often monotypic, lacking in diversity. Competition for sunlight from dense grass stands prevents seedling establishment. Stands are often dense and inhibit the movements of young wildlife such as game bird chicks. Area lacks diversity in the height of vegetation.

After Situation: Early successsional habitat created or maintained. Mowing has provided more sunlight for forb establishment or has prepared the site for another treatment (disking, herbicide application, etc.). Typically, mowing, by itself, is not an effective tool for the creation of early successional habitat unless the site already contains features such as bare ground, low litter, above average diversity of forbs, etc. The heterogeneity of the habitat structure has been increased.

Scenario Feature Measure: width and length of treated area

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $277.03

Scenario Cost/Unit: $13.85

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.91	5	$119.54
Equipment Installation						
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	$52.50	3	$157.49

Practice: 649 - Structures for Wildlife

Scenario: #7 - Brush Pile - Small

Scenario Description: Small brush piles are created to provide shrubby/woody escape cover for wildlife. Pushing or cutting of select small trees and placement in selected locations to provide wildlife cover. Typical scenario of 10' x 20' area for structure covered by interlocking limbs of trees less than 12 inches in diameter.

Before Situation: The existing habitat lacks escape, ground nesting and safe loafing cover.

After Situation: Small brush piles provide needed escape, ground nesting and safe loafing cover for targeted wildlife species.

Scenario Feature Measure: brush piles

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: $33.93

Scenario Cost/Unit: $33.93

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.66	0.5	$11.83
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$44.19	0.5	$22.10

Practice: 649 - Structures for Wildlife

Scenario: #8 - Brush Pile - Large

Scenario Description: Downed tree structures are created to provide shrubby/woody escape cover for wildlife. Existing sod will be killed prior to placement of tree structures. Felling of select trees and placement in selected locations to provide wildlife cover. Typical scenario of 30' x 50' area for structure covered by interlocking limbs of trees at least 12" in diameter.

Before Situation: The existing habitat lacks escape, ground nesting and safe loafing cover.

After Situation: Large brush piles provide needed escape, ground nesting and safe loafing cover for targeted wildlife species.

Scenario Feature Measure: brush piles

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: $138.10

Scenario Cost/Unit: $138.10

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.66	1	$23.66
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	$21.97	3	$65.92
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.33	1	$4.33
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$44.19	1	$44.19

Practice: 649 - Structures for Wildlife

Scenario: #5 - Escape Ramp

Scenario Description: Retrofit an existing watering trough/tank with an appropriately designed and installed wildlife escape ramp to reduce wildlife mortality and maintain water quality within the watering facility.

Before Situation: Existing watering facilities lack escape potential for wildlife. This results in death of the small wildlife accessing the facility for water, and resulting poor water quality as the animal decays.

After Situation: Watering facilities provide wildlife safe access. Water quality is improved within the watering facility and wildlife mortality is reduced.

Scenario Feature Measure: Each Ramp

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: $35.69

Scenario Cost/Unit: $35.69

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	0.5	$10.99
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound	Each	$24.70	1	$24.70

Practice: 649 - Structures for Wildlife

Scenario: #6 - Fence Markers, Vinyl Undersill

Scenario Description: Existing fences are retrofitted with vinyl markers that increase wire visibility and reduce mortality due to collision for wildlife species of concern. Markers are installed approximately every 3 feet along top wire. Scenario is typically implemented along fences in potential high risk areas (red areas in SGI Fence Collision Risk Model) or where a known problem exists.

Before Situation: Wire fences located in high risk areas pose a collision threat to wildlife of special concern.

After Situation: Fence related mortality of species of special concern is reduced.

Scenario Feature Measure: feet of fence marked

Scenario Unit: Foot

Scenario Typical Size: 1320

Total Scenario Cost: $205.07

Scenario Cost/Unit: $0.16

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	5	$109.86
Materials						
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding. Priced per foot of fence per each wire. Materials only.	Foot	$0.06	1320	$79.20
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	0.5	$16.01

Practice: 649 - Structures for Wildlife

Scenario: #1 - Nesting Box, Small no pole

Scenario Description: A structure is provided to support the nesting and rearing of smaller targeted species, such as bees and birds, and is directly mounted to a tree, building or other structure. Addresses resource concern for wildlife of inadequate cover/shelter

Before Situation: The area lacks sufficient nesting habitat sites (natural cavities). A suitable location to mount the box is available.

After Situation: The installation of nesting and rearing boxes support the life-cycle needs of targeted speces, such as birds, bats and pollinators. These structures/features enhance habitat, cover, and improve species survivability.

Scenario Feature Measure: Number of structures

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: $41.76

Scenario Cost/Unit: $41.76

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	0.5	$10.99
Materials						
Habitat Box, Bird	251	Bluebird nesting box to increase nesting success. Each is 1-1/2" x 6" x 12-1/2" w/ 1-1/2" diameter opening. Includes materials and shipping.	Each	$30.77	1	$30.77

Practice: 649 - Structures for Wildlife

Scenario: #2 - Nesting Box, Small, with wood pole

Scenario Description: Constructing a nest box and mounting on a pole. A structure is provided to support the nesting and rearing of targeted species, such as pollinators and birds. Trees, buildings or other structures are not available. These structures are designed to meet targeted species biology and life history needs. Addresses Resource Concern: Inadequate Cover/Shelter.

Before Situation: This area lacked sufficient nesting sites to support viable populations of targeted species. Location and conditions suggest that predator guards are not needed.

After Situation: The installation nesting and rearing boxes support the life-cycle needs of targeted speces, such as blue birds and waterfowl. Location and conditions suggest that predator guards are not needed. These structures/features enhance habitat, cover, and improve species survivability.

Scenario Feature Measure: Number of structures with poles.

Scenario Unit: Number

Scenario Typical Size: 1

Total Scenario Cost: $62.35

Scenario Cost/Unit: $62.35

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Habitat Box, Bird	251	Bluebird nesting box to increase nesting success. Each is 1-1/2" x 6" x 12-1/2" w/ 1-1/2" diameter opening. Includes materials and shipping.	Each	$30.77	1	$30.77
Post, Wood, CCA treated, 6" x 8'	12	Wood Post, End 6" X 8', CCA Treated. Includes materials and shipping only.	Each	$15.10	1	$15.10
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	$21.97	0.75	$16.48

Practice: 649 - Structures for Wildlife

Scenario: #3 - Nesting Box, Large

Scenario Description: A structure is provided to support the nesting and rearing of larger targeted species such as waterfowl, bats and barn owls, and is directly mounted to a tree, building or other structure. These structures are designed to meet targeted species biology and life history needs. Addresses Resource Concern: Inadequate Cover/Shelter.

Before Situation: The area lacks sufficient overall habitat conditions to support viable populations of targeted species. A suitable location to mount the box is available. Predator guards not needed.

After Situation: The installation of nesting and rearing boxes support the life-cycle needs of targeted species, such as birds, bats and pollinators. Because of suitable location and conditions the nesting box can be directly mounted such as on a tree or building, thereby eliminating the need for mounting poles and predator guards. Species such as cavity dwelling birds and pollinators use this approach, but this treatment is not limited to those species. These structures/features enhance habitat, cover, and improve species survivability.

Scenario Feature Measure: Number of structures.

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: $83.20

Scenario Cost/Unit: $83.20

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	0.5	$10.99
Materials						
Habitat Box, waterfowl	1449	Wood Duck Box, typically 24" x 11" x 12" with 4" wide oval entrance, single. Includes material and shipping only.	Each	$72.22	1	$72.22

Practice: 649 - Structures for Wildlife

Scenario: #4 - Nesting Box or Rapture Perch, Large, with Pole

Scenario Description: Constructing a nest box or rapture perch on a steel pole with a predator guard where needed. A structure is provided to support the nesting and rearing of larger targeted species such as woodducks, bats, barn owls or to provide needed perches or nesting structures for raptures. Addresses Resource Concern: Inadequate Cover/Shelter.

Before Situation: The area lacks sufficient overall nesting sites to support viable populations of targeted species. Predator guards provide needed protection of target species during nesting and rearing.

After Situation: The installation of pole mounted nesting and rearing boxes support the life-cycle needs of targeted species, such as bats and waterfowl.

Scenario Feature Measure: Number of structures

Scenario Unit: Each

Scenario Typical Size: 1

Total Scenario Cost: $242.90

Scenario Cost/Unit: $242.90

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	0.5	$16.01
Concrete, CIP, formless, non reinforced	36	Non reinforced concrete cast-in-placed without forms by chute placement. Typical strength is 3000 to 4000 psi. Includes materials, labor and equipment to transport, place and finish.	Cubic Yard	$145.76	0.1	$14.58
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	$21.97	1.5	$32.96
Materials						
Habitat Box, waterfowl	1449	Wood Duck Box, typically 24" x 11" x 12" with 4" wide oval entrance, single. Includes material and shipping only.	Each	$72.22	1	$72.22
Pipe, steel, galvanized, threaded, 1¼ ", schedule 40	256	Spec. A-53, includes coupling and clevis hanger assembly sized for covering, 10' OC	Foot	$7.70	10	$77.00
Predator Guard	1461	Predator guards (i.e. stove pipes, cone, hole guard, etc.) for habitat boxes. Materials only. Includes material and shipping only.	Each	$30.14	1	$30.14

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #5 - Coppicing - less than 50 percent of the windbreak

Scenario Description: Coppicing of selected trees and understory vegetation in a windbreak/shelterbelt is needed to ensure that species composition and stand structure continue to serve their intended purpose. Resource concern is Degraded plant condition- undesirable plant productivity and health.

Before Situation: One acre of windbreak/shelterbelt renovation carried out through manipulating species composition, stand structure, and stocking by the cutting of selected trees and understory vegetation for coppicing and by removing or disposing of slash so it does not interfere with the intended purpose of the renovation. This manipulation does not include pruning.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $944.33

Scenario Cost/Unit: $0.94

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	9	$228.19
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	$23.15	5	$115.77
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$43.71	8	$349.67
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$250.71	1	$250.71

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #6 - Coppicing - greater than 50 percent of the windbreak

Scenario Description: Coppicing of selected trees and understory vegetation in a windbreak/shelterbelt is needed to ensure that species composition and stand structure continue to serve their intended purpose. Resource concern is Degraded plant condition- undesirable plant productivity and health.

Before Situation: One acre of windbreak/shelterbelt renovation carried out through manipulating species composition, stand structure, and stocking by the cutting of selected trees and understory vegetation for coppicing and by removing or disposing of slash so it does not interfere with the intended purpose of the renovation. This manipulation does not include pruning.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $1,266.89

Scenario Cost/Unit: $1.27

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	13	$329.60
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	$23.15	7	$162.08
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$43.71	12	$524.50
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$250.71	1	$250.71

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #15 - Hand Planted, Bare Root

Scenario Description: Single 600 foot row of bare root shrubs, conifers, hardwoods, or a combination, for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition

After Situation: Wind velocity suitably reduced to minimize soil erosion or to manage snow deposition. Additional wildlife food and cover provided.

Scenario Feature Measure: Length of tree row

Scenario Unit: Foot

Scenario Typical Size: 600

Total Scenario Cost: $159.74

Scenario Cost/Unit: $0.27

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	3	$69.46
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	40	$19.00
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	20	$8.34
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	20	$15.65
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #17 - Hand Planted, Bare Root, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Single 600 foot row of bare root shrubs, conifers, hardwoods, or a combination, for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Length of tree row

Scenario Unit: Foot

Scenario Typical Size: 600

Total Scenario Cost: $681.90

Scenario Cost/Unit: $1.14

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	6	$138.92
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	2400	$278.56
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	40	$19.00
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	20	$8.34
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	20	$15.65
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #16 - Hand Planted, Potted

Scenario Description: Single 600 foot row of potted shrubs, conifers, hardwoods, or a combination, for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition.

After Situation: Wind velocity suitably reduced to minimize soil erosion or to manage snow deposition. Additional wildlife food and cover provided.

Scenario Feature Measure: Length of tree row

Scenario Unit: Foot

Scenario Typical Size: 600

Total Scenario Cost: $445.91

Scenario Cost/Unit: $0.74

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	3	$69.46
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Shrub, seedling or transplant, potted, 1/2 to 1 gal.	1526	Potted shrub, 1/2 to 1 gal. Includes materials and shipping only.	Each	$4.99	40	$199.61
Tree, conifer, seedling or transplant, potted, 1 qt.	1534	Potted conifer tree, 1 quart. Includes materials and shipping only.	Each	$3.16	20	$63.18
Tree, hardwood, seedling or transplant, potted, 1 qt.	1529	Potted hardwood tree, 1 quart. Includes materials and shipping only.	Each	$3.32	20	$66.38
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #18 - Hand Planted, Potted, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Single 600 foot row of potted shrubs, conifers, hardwoods, or a combination, for wind protection, wildlife habitat, or snow management. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers based on feet of trees. This practice is typically applied to crop, pasture or range lands. Resource Concerns to be addressed may include: Soil Erosion (wind); Excess/Insufficient Water (drifted snow, inefficient moisture management); Water Quality Degradation (excess nutrients in surface waters, excessive sediment in surface waters,); Degraded Plant Condition (undesirable plant productivity and health); Inadequate habitat for Fish and Wildlife (food, cover/shelter, continuity); Inefficient Energy Use (facilities, farming/ranching practices and field operations).

Before Situation: Agricultural field, livestock paddock, feedlot or farmstead needing protection from wind, additional wildlife food and cover, or management of snow deposition. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: Wind velocity suitably reduced to minimize soil erosion, or to manage snow deposition. Additional wildlife food and cover. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Length of tree row

Scenario Unit: Foot

Scenario Typical Size: 600

Total Scenario Cost: $968.07

Scenario Cost/Unit: $1.61

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	6	$138.92
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	2400	$278.56
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, potted, 1/2 to 1 gal.	1526	Potted shrub, 1/2 to 1 gal. Includes materials and shipping only.	Each	$4.99	40	$199.61
Tree, conifer, seedling or transplant, potted, 1 qt.	1534	Potted conifer tree, 1 quart. Includes materials and shipping only.	Each	$3.16	20	$63.18
Tree, hardwood, seedling or transplant, potted, 1 qt.	1529	Potted hardwood tree, 1 quart. Includes materials and shipping only.	Each	$3.32	20	$66.38
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	20	$1.85

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #3 - Removal <8 inches DBH with Skidsteer

Scenario Description: Windbreak renovation requires the removal of degraded or inappropriate trees or shrubs within a windbreak. This may include removal of entire rows, including stumps or roots, or selected trees/shrubs in order to prepare for the planting of a replacement row within the windbreak, improve the health of the remaining rows, and/or allow for supplemental planting to expand the windbreak. Resource concerns include Degraded plant condition- undesirable plant productivity and health, Livestock Production-Inadequate livestock shelter, Soil erosion-wind.

Before Situation: Reduce wind impacts by renovating 1,000 foot windbreaks or shelterbelts using heavy equipment to remove selected trees with average DBH < 8 Inches. Typically trees and shrubs are cleared by a Skidsteer using a tree shear or saw. All slash material from cutting and pruning is either scattered and crushed, piled and crushed, chipped, or removed from the treatment area.

After Situation: Integrity and function of windbreak restored.

Scenario Feature Measure: Length of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $966.69

Scenario Cost/Unit: $0.97

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	11	$278.89
Equipment Installation						
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	$43.71	10	$437.08
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$250.71	1	$250.71

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #4 - Removal > 8 inches DBH with Dozer

Scenario Description: Windbreak renovation requires the removal of degraded or inappropriate trees or shrubs within a windbreak. This may include removal of entire rows, including stumps or roots, or selected trees/shrubs in order to prepare for the planting of a replacement row within the windbreak, improve the health of the remaining rows, and/or allow for supplemental planting to expand the windbreak. Resource concerns include Degraded plant condition- undesirable plant productivity and health, Livestock Production-Inadequate livestock shelter, Soil erosion-wind.

Before Situation: Reduce wind impacts by renovating 1,000 foot windbreaks or shelterbelts using heavy equipment to remove selected trees with average DBH > 8 inches. Typically trees and shrubs are cleared by dozer (D-6 or equivalent) using a brush rake or blade. All slash material from cutting and pruning is either scattered and crushed, piled and crushed, chipped, or removed from the treatment area.

After Situation: Integrity and function of windbreak restored.

Scenario Feature Measure: Length of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $2,767.36

Scenario Cost/Unit: $2.77

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
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	$35.09	11	$386.01
Equipment Installation						
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hour	$190.27	10	$1,902.67
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	$478.68	1	$478.68

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #1 - Sod Release

Scenario Description: Reduce competition from sod around trees/shrubs within a windbreak/shelterbelt. Apply appropriate herbicide to stress or kill competing sod vegetation between and/or within tree/shrub row. A herbicide application is completed to significantly reduce competition from sod (grass) in the windbreak.

Before Situation: 1000 feet of livestock shelterbelt, 4 row mix of deciduous and conifer trees/shrubs deteriorating due to being sod bound. Resouce concerns: Degrade plant condition- undesirable plant productivity and health; Livestock Production-Inadequate livestock shelter..

After Situation: Integrity of windbreak restored. Domestic animal protection restored.

Scenario Feature Measure: Length of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $340.34

Scenario Cost/Unit: $0.34

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	2	$43.94
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	1	$100.62
Materials						
Herbicide, Sethoxydim	339	A selective post emergence herbicide used to control annual and perennial grass weeds. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$19.14	1	$19.14
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.14	1	$6.14
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	$170.50	1	$170.50

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #9 - Supplemental Plantings-Bare Root

Scenario Description: Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the hand planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $635.29

Scenario Cost/Unit: $635.29

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	7	$162.08
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$90.95	2	$181.91
Materials						
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	150	$62.55
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	200	$156.50
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	6	$72.26

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #10 - Supplemental Plantings-Bare Root, Wildlife Protection

Scenario Description: Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter. Herbivore (deer, rabbits, etc.) damage is likely, so each tree must be protected with a rigid tube tree shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the hand planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row, and 15'-20' between rows.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $3,180.98

Scenario Cost/Unit: $3,180.98

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	15	$347.31
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$90.95	2	$181.91
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	350	$16.86
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	350	$550.80
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	350	$1,792.80
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	150	$62.55
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	200	$156.50
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	6	$72.26

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #7 - Supplemental Planting-Container

Scenario Description: Parts of the windbreak being renovated have died. Supplemental plantings of containerized trees/shrubs will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition -Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the planting of containerized tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows. Planting is achieved through hand planting.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $490.38

Scenario Cost/Unit: $490.38

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	3	$65.92
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	2	$201.23
Materials						
Tree, conifer, seedling, containerized, 10 cu. in.	1519	Containerized conifer stock, 10 cubic inches (approx 6" plug), 1.7" x 6"). Includes materials and shipping only.	Each	$0.57	350	$199.14
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	2	$24.09

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #8 - Supplemental Planting-Container, Wildlife Protection

Scenario Description: Parts of the windbreak being renovated have died. Supplemental plantings of containerized trees/shrubs will improve the effectiveness and longevity of the windbreak. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition -Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter. Herbivore (deer, rabbits, etc.) damage is likely, so each tree must be protected with a rigid tube tree shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the hand planting of containerized tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $3,252.03

Scenario Cost/Unit: $3,252.03

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$23.15	15	$347.31
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$90.95	3	$272.86
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	350	$16.86
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	350	$550.80
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	350	$1,792.80
Tree, conifer, seedling, containerized, 10 cu. in.	1519	Containerized conifer stock, 10 cubic inches (approx 6" plug), 1.7" x 6"). Includes materials and shipping only.	Each	$0.57	350	$199.14
Equipment Installation						
Hand tools, tree planting	1590	Various hand tools for digging holes and planting trees such as augers, dibble bars, planting shovel, hoe-dad. Equipment only. Labor not included.	Hour	$12.04	6	$72.26

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #11 - Supplemental Plantings-Machine

Scenario Description: Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the machine planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $279.80

Scenario Cost/Unit: $0.28

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	1	$25.35
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	$23.15	5.5	$127.35
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	66	$31.34
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	33	$13.76
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	33	$25.82
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #13 - Supplemental Plantings-Machine, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Trees and shrubs will be planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row, with rows 16 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the machine planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: The integrity and function of the windbreak is restored. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $1,057.12

Scenario Cost/Unit: $1.06

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	1	$25.35
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	$23.15	11.5	$266.27
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	4000	$464.26
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	66	$31.34
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	33	$13.76
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	33	$25.82
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #12 - Supplemental Plantings-Machine, Wildlife Protection

Scenario Description: Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Trees and shrubs planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row with rows 16 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter. Herbivore (deer, rabbits, etc.) damage is likely, so each tree must be protected with a rigid tube tree shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the machine planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows.

After Situation: The integrity and function of the windbreak is restored.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $771.22

Scenario Cost/Unit: $0.77

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	1	$25.35
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	$23.15	7.5	$173.65
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	1	$21.35
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	66	$3.18
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	66	$31.34
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	66	$103.87
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	66	$338.07
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	33	$13.76
Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	33	$25.82
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #14 - Supplemental Plantings-Machine, Wildlife Protection, supplemental water for establishment

Scenario Description: Tree planting in an area where supplemental water is needed for successful establishment. Generally these areas would be considered arid or drought stricken, but other factors may contribute to requiring supplemental water. Parts of the windbreak being renovated have died. Supplemental plantings of bare root trees/shrubs will improve the effectiveness and longevity of the windbreak. Trees and shrubs will be planted with a tree planting machine. Shrubs will be planted with a spacing of 4 to 6 feet and hardwoods/conifers 8 to 12 feet apart in the row, with rows 16 feet apart. The scenario will include 1/3 shrubs, 1/3 hardwoods, and 1/3 conifers. Resource concerns include Soil erosion - Wind erosion, Degraded plant condition - Inadequate structure and composition, and Livestock production limitation - Inadequate livestock shelter. Herbivore (deer, rabbits, etc.) damage is likely, so each tree must be protected with a rigid tube tree shelter.

Before Situation: Dead trees/shrubs are inhibiting windbreak effectiveness. A one (1.0) acre windbreak/shelterbelt is expanded through the planting of bare root tree and shrub seedlings at a average spacing of 8' (shrubs 4'-6', deciduous/conifer trees 8'-12') within row and 15'-20' between rows. Planting is achieved through machine planting. The area generally includes arid or drought conditions that greatly reduce the success of tree survival.

After Situation: The integrity and function of the windbreak is restored. Greatly improved success rate of the windbreak due to the supplemental water during establishment.

Scenario Feature Measure: Area of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $1,548.55

Scenario Cost/Unit: $1.55

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$25.35	1	$25.35
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	$23.15	13.5	$312.58
Equipment Installation						
Mechanical tree planter	1600	Mechanical tree planter. Requires a pulling unit of either tractor or small dozer depending upon site conditions. Does not include labor.	Hour	$6.84	1	$6.84
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	$24.28	1	$24.28
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.35	2	$42.70
Materials						
Cable ties, plastic	1575	Plastic cable ties (typ. 8-12") to assist in securing items. Materials only.	Each	$0.05	66	$3.18
Micro Irrigation, drip irrigation system, small scale	2170	An above ground, small scale, micro-irrigation system. Includes miniature emitters, tubes, or applicators placed along a water delivery line. Includes materials and shipping only.	Square Foot	$0.12	4000	$464.26
Micro Irrigation, screen or disc filter, < 3"	2524	Micro Irrigation, small manual flush screen or disc filter, <3 inch nominal size. Includes materials only.	Each	$152.79	1	$152.79
Shrub, seedling or transplant, bare root, 6-18"	1506	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.47	66	$31.34
Stakes, wood, 3/4" x 3/4" x 60"	1583	3/4" x 3/4" x 60" wood stakes to fasten items in place. Includes materials only.	Each	$1.57	66	$103.87
Tree shelter, solid tube type, 4" x 60"	1567	4" x 60" tree tube for protection from animal damage. Materials only.	Each	$5.12	66	$338.07
Tree, conifer, seedling, bare root, 1-1	1513	Bare root conifer trees, 1-1 (2 years old). Includes materials and shipping only.	Each	$0.42	33	$13.76

Tree, hardwood, seedling or transplant, bare root, 6-18"	1509	Bare root hardwood trees 6-18" tall. Includes materials and shipping only.	Each	$0.78	33	$25.82
Wire flags	1586	Small vinyl flags attached to wire stakes, typically, 36" in length, for marking tree rows	Each	$0.09	40	$3.71

Practice: 650 - Windbreak/Shelterbelt Renovation

Scenario: #2 - Thinning

Scenario Description: Windbreak is thinned by hand w/chainsaw and cut stumps have herbicide applied to prevent undesirable sprouting.

Before Situation: Windbreak functionality has decreased. Windbreak tree and/or shrub species are overly dense and do not provide the desired wind protection. Resouce concern is Degrade plant condition- undesirable plant productivity and health.

After Situation: Integrity of windbreak restored, function and health improved.

Scenario Feature Measure: Length of Renovation

Scenario Unit: Foot

Scenario Typical Size: 1000

Total Scenario Cost: $629.16

Scenario Cost/Unit: $0.63

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	10	$219.72
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	2	$201.23
Materials						
Herbicide, Triclopyor	338	Refer to WIN-PST for product names and active ingredients. Materials and shipping	Acre	$42.30	1	$42.30
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.33	10	$43.28
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	$61.32	2	$122.63

Practice: 656 - Constructed Wetland

Scenario: #1 - Medium, 0.5 ac or less

Scenario Description: This practice scenario includes the basic earthwork and native and/or organic wetland vegetation needed to create a constructed wetland to treat contaminated agricultural runoff for a medium site (i.e. 0.5 ac or less). All other components, such as water control structures, dikes or upstream sediment basins, must be paid for under facilitating practices. Soil, water and tissue sampling are required. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrients and pathogens. Associated practices: Structure for Water Control (587); Sediment Basin (350); Dike (356); Pond Sealing or Lining, Compacted Clay Treatment (521D); Pond Sealing or Lining, Flexible Membrane (521A); Fence (382); Grade Stabilization Structure (410); Pumping Plant (533); Waste Transfer (634)

Before Situation: Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

After Situation: A 0.25 acre constructed wetland (i.e. 45' x 240') will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland site is near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the influent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is transported to a waste storage facility or discharged off site, if permitted by regulation.

Scenario Feature Measure: Area of Constructed Wetland

Scenario Unit: Acre

Scenario Typical Size: 0.25

Total Scenario Cost: $4,034.01

Scenario Cost/Unit: $16,136.04

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	$299.47	0.25	$74.87
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	$2.53	400	$1,012.44
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	$0.90	200	$179.63
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	$19.99	14	$279.92
Materials						
Native Aquatic Plants, Emergent or Submerged	2336	Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping.	Each	$1.37	1350	$1,844.03
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	1	$27.10
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$10.13	2	$20.25
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$42.13	8	$337.06
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 656 - Constructed Wetland

Scenario: #2 - Large, more than 0.5 to 1.0 ac.

Scenario Description: This practice scenario includes the basic earthwork and native and/or organic wetland vegetation needed to create a constructed wetland to treat contaminated agricultural runoff for a large site (i.e. >0.5 ac). All other components, such as water control structures, dikes or upstream sediment basins, must be paid for under facilitating practices. Soil, water and tissue sampling are required. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrients and pathogens. Associated practices: Structure for Water Control (587); Sediment Basin (350); Dike (356); Pond Sealing or Lining, Compacted Clay Treatment (521D); Pond Sealing or Lining, Flexible Membrane (521A); Fence (382); Grade Stabilization Structure (410); Pumping Plant (533); Waste Transfer (634).

Before Situation: Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

After Situation: A 1.0 acre wetland (i.e. 95' x 460') will be constructed with an average 18" depth. Only the earthwork and wetland vegetation are considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland site is near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the influent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is transported to a waste storage facility or discharged off site, if permitted by regulation.

Scenario Feature Measure: Area of Constructed Wetland

Scenario Unit: Acre

Scenario Typical Size: 1

Total Scenario Cost: $11,431.04

Scenario Cost/Unit: $11,431.04

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	$299.47	1	$299.47
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	$2.53	1619	$4,097.83
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	$0.90	809	$726.59
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	$19.99	37	$739.78
Materials						
Native Aquatic Plants, Emergent or Submerged	2336	Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping.	Each	$1.37	3605	$4,924.24
Test, Plant Tissue Test	301	Tissue analysis for crops. Includes materials and shipping only.	Each	$27.10	1	$27.10
Test, Soil Test, Standard	299	Includes materials, shiping, labor, and equipment costs.	Each	$10.13	2	$20.25
Test, Standard Water Test, Well Water	309	Well Water Suitability test. Includes materials and shipping only.	Each	$42.13	8	$337.06
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72

Practice: 656 - Constructed Wetland

Scenario: #3 - Large, more than 1.0 ac.

Scenario Description: This practice scenario includes the basic earthwork needed to create a constructed wetland to improve water quality for a large site (i.e. >1.0ac). All other components, such as water control structures, dikes or upstream sediment basins, must be paid for under facilitating practices. The purpose of the practice is to address resource concerns related to water quality degradation due to excess nutrients. Associated practices: Structure for Water Control (587); Sediment Basin (350); Dike (356); Pond Sealing or Lining, Compacted Clay Treatment (521D); Pond Sealing or Lining, Flexible Membrane (521A); Fence (382); Grade Stabilization Structure (410); Pumping Plant (533); Waste Transfer (634).

Before Situation: Contaminated agricultural runoff causes excess ponding and/or water quality degradation.

After Situation: A 1.25 acre wetland (i.e. 110' x 500') will be constructed with an average 12" depth. Only the earthwork is considered in this scenario. Any structures or sediment basins will be designed under a separate practice. The constructed wetland site iz near the property boundary, but still takes cropland out of production (1/2 wetland acreage). The constructed wetland treats the influent by reducing excess nutrients and adding oxygen through wetland plants and functions before the effluent is discharged off site.

Scenario Feature Measure: Area of Constructed Wetland

Scenario Unit: Acre

Scenario Typical Size: 1.25

Total Scenario Cost: $11,313.45

Scenario Cost/Unit: $9,050.76

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Clearing and Grubbing	40	Clearing and Grubbing, includes materials, equipment and labor	Acre	$299.47	1.25	$374.34
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	$2.53	1020	$2,581.71
Stripping and stockpiling, topsoil	1199	Stripping and stockpiling of topsoil adjacent to stripping area. Includes equipment and labor.	Cubic Yard	$0.90	1020	$916.09
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	$19.99	46	$919.73
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$258.72	1	$258.72
Materials						
Native Aquatic Plants, Emergent or Submerged	2336	Native aquatic emergent or submerged. All required materials for establishing vegetation. Includes material and shipping.	Each	$1.37	4585	$6,262.86

Practice: 657 - Wetland Restoration

Scenario: #2 - Depression Sediment Removal

Scenario Description: A Depressional HGM (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) class wetland is to be restored by removing sediment. The typical size of sediment removal is 1 acre. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22-INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The wetland has been converted to agricultural production, and the tract may or may not be drained with a surface ditch. The watershed has been converted from a native to an agricultural landuse, and the resultant soil erosion has deposited an average of 9 inches of sediment in the bottom of the depression.

After Situation: The deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include 327-Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Excavation

Scenario Unit: Cubic Yard

Scenario Typical Size: 1613

Total Scenario Cost: $6,748.04

Scenario Cost/Unit: $4.18

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$478.68	1	$478.68
Equipment Installation						
Excavation, common earth, large equipment, 1500 ft	1221	Bulk excavation of common earth including sand and gravel with scrapers with average haul distance of 1500 feet. Includes equipment and labor.	Cubic Yard	$3.89	1613	$6,269.36

Practice: 657 - Wetland Restoration

Scenario: #4 - Ditchplug - Lateral Restoration

Scenario Description: A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) is to be restored by filling in the drainage ditch. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The wetland has been converted to agricultural production, and the tract has been drained with a surface ditch. The watershed has been converted from a native to an agricultural landuse.

After Situation: The drain has been closed by lateral restoration. The ditch has been filled for a distance determined by the permeability of the soil. The earthfill is done with compactive effort. Facilitative practices include 327-Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Earthfill

Scenario Unit: Cubic Yard

Scenario Typical Size: 111

Total Scenario Cost: $930.39

Scenario Cost/Unit: $8.38

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yard	$4.07	111	$451.71
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	$478.68	1	$478.68

Practice: 657 - Wetland Restoration

Scenario: #5 - Embankment - Fill Height <= 4 feet

Scenario Description: A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) is to be restored by filling across the drainage ditch to block drainage. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate strucuture and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The wetland has been converted to agricultural production, and the tract has been drained with a surface ditch. The watershed has been converted from a native to an agricultural landuse.

After Situation: The drain has been closed by blocking the flow with an embankment. The embankment has typical dimentions of 10' topwidth with a fill height of 3', the sideslopes are 3:1 and the length of the fill is 100'. The earthfill is done with compactive effort. Facilitative practices include 327-Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Earthfill

Scenario Unit: Cubic Yard

Scenario Typical Size: 211

Total Scenario Cost: $1,337.34

Scenario Cost/Unit: $6.34

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yard	$4.07	211	$858.66
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	$478.68	1	$478.68

Practice: 657 - Wetland Restoration

Scenario: #1 - Fill in dugout

Scenario Description: Restoring a wetland to its original condition by filling a dugout. Typical size is approximately 1,000 cu. yd. and 1 1/2 acres of land restored. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22-INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The site has a constructed dugout with spoil. A suitable seed bank exists for natural regeneration to re-establish hydrophytic vegetation. The site is grazed.

After Situation: The dugout has been filled, allowing the wetland to function in its original state. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Material Placed

Scenario Unit: Cubic Yard

Scenario Typical Size: 1000

Total Scenario Cost: $3,817.75

Scenario Cost/Unit: $3.82

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic Yard	$3.34	1000	$3,339.07
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	$478.68	1	$478.68

Practice: 657 - Wetland Restoration

Scenario: #3 - Sediment Removal - Saturated Site

Scenario Description: A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) is to be restored by removing sediment. The typical size of sediment removal is 1 acre. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22-INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The wetland has been converted to agricultural production, and the tract may or may not be drained with a surface ditch. The watershed has been converted from a native to an agricultural landuse, and the resultant soil erosion has deposited an average of 9 inches of sediment in the bottom of the depression.

After Situation: The deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include 327-Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Excavation

Scenario Unit: Cubic Yard

Scenario Typical Size: 1613

Total Scenario Cost: $7,306.38

Scenario Cost/Unit: $4.53

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$478.68	1	$478.68
Equipment Installation						
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	$4.23	1613	$6,827.70

Practice: 658 - Wetland Creation

Scenario: #3 - Excavation and Embankment

Scenario Description: A wetland is created on a flat mineral upland at a location where surface runoff may be intercepted and ponded by excavation. The wetland is created by excavating a depression and building a dike to intercept runoff. Resource concern is 22 - INDEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The site is in cropland on an upland, non floodplain site (interfluve).

After Situation: An excavation with an average depth of 24" has created a shallow depression in a broad swale which intercepts surface runoff. The excavated material has been spread on adjacent areas. A dike is also constructed at the site with a 8' topwidth, 3:1 sideslopes, 2' fill height for 200'. The INADEQUATE HABITAT FOR FISH AND WILDLIFE resource concern has been addressed with the provision of seasonal open water for terrestrial, aquatic, and waterfowl species. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Earth Moved

Scenario Unit: Cubic Yard

Scenario Typical Size: 1613

Total Scenario Cost: $7,000.33

Scenario Cost/Unit: $4.34

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yard	$4.07	207	$842.39
Excavation, common earth, large equipment, 150 ft	1223	Bulk excavation of common earth including sand and gravel with dozer >100 HP with average push distance of 150 feet. Includes equipment and labor.	Cubic Yard	$3.70	1406	$5,200.60
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	$478.68	2	$957.35

Practice: 658 - Wetland Creation

Scenario: #2 - Excavation at Saturated Site

Scenario Description: A wetland is created on a saturated flat mineral location where surface runoff may be intercepted and ponded by excavation. Resource concern is 22 - INDEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The site is in cropland on an upland site.

After Situation: An excavation with an average depth of 24" has created a shallow depression in a broad swale which intercepts surface runoff. The excavated material has been spread on adjacent areas. The INADEQUATE HABITAT FOR FISH AND WILDLIFE resource concern has been addressed with the provision of seasonal open water for terrestrial, aquatic, and waterfowl species. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Excavation

Scenario Unit: Cubic Yard

Scenario Typical Size: 1613

Total Scenario Cost: $7,306.38

Scenario Cost/Unit: $4.53

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$478.68	1	$478.68
Equipment Installation						
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	$4.23	1613	$6,827.70

Practice: 658 - Wetland Creation

Scenario: #1 - Wetland Creation, Excavation

Scenario Description: A wetland is created on a flat mineral upland at a location where surface runoff may be intercepted and ponded by excavation. The wetland is created by excavating a depression. Resource concern is 22 - INDEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The site is in cropland on an upland, non floodplain site (interfluve).

After Situation: An excavation with an average depth of 24" has created a shallow depression in a broad swale which intercepts surface runoff. The excavated material has been spread on adjacent areas. The INADEQUATE HABITAT FOR FISH AND WILDLIFE resource concern has been addressed with the provision of seasonal open water for terrestrial, aquatic, and waterfowl species. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Excavation

Scenario Unit: Cubic Yard

Scenario Typical Size: 1613

Total Scenario Cost: $3,951.98

Scenario Cost/Unit: $2.45

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$2.15	1613	$3,473.31
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	$478.68	1	$478.68

Practice: 659 - Wetland Enhancement

Scenario: #3 - Depression Sediment Removal and Ditch Plug

Scenario Description: A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) is to be enhanced. The tract size is 15 acres, and the actual wetland size is 10 acres. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22-INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The wetland has been converted to agricultural production, and the tract drained with a surface ditch. The ditch is 4' average depth, and 12' average width. The wetland receives surface runoff from an adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from a native to an agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.

After Situation: The ditch has been plugged by the installation of a 50' long section of compacted clay fill, and the deposition has been removed down to the original topsoil layer. A herbaceous plant community has been seeded. Facilitative practices include 327-Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Earth Moved

Scenario Unit: Cubic Yard

Scenario Typical Size: 8317

Total Scenario Cost: $19,345.57

Scenario Cost/Unit: $2.33

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yard	$4.07	250	$1,017.37
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	$2.15	8067	$17,370.85
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	$478.68	2	$957.35

Practice: 659 - Wetland Enhancement

Scenario: #1 - Excavation

Scenario Description: A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) is to be enhanced. The tract size is 15 acres, and the actual wetland size is 10 acres. The site is a recharge depression, fed only from surface runoff. Resource Concerns are: 4- SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The wetland has been converted to agricultural production, and the wetland has lost size and storage volume from accumulated sediments. The wetland receives surface runoff from an adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from a native to an agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.

After Situation: Any deposited sediment has been excavated and the depth ofthe wetland has been increased to add storage volume. A herbaceous plant community has been seeded. Facilitative practices include 327-Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Excavation

Scenario Unit: Cubic Yard

Scenario Typical Size: 8067

Total Scenario Cost: $18,328.20

Scenario Cost/Unit: $2.27

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$2.15	8067	$17,370.85
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	$478.68	2	$957.35

Practice: 659 - Wetland Enhancement

Scenario: #2 - Excavation on Saturated Site

Scenario Description: A Depressional HGM class wetland (Hydrogeomorphic approach to classifying the seven types of wetlands as defined by Brinson, 1993) is to be enhanced. The tract size is 15 acres, and the actual wetland size is 10 acres. The site is a recharge depression, fed only from surface runoff. The soils are saturated requiring dewatering and tracked equipemnt. Resource Concerns are: 4-SOIL QUALITY DEGRADATION - Organic matter depletion, 11- WATER QUALITY DEGRADATION - Excess nutrients in surface and ground waters, 12 - WATER QUALITY DEGRADATION - Pesticides transported to surface and ground waters, 16 - WATER QUALITY DEGRADATION - Excessive sediment in surface waters, 18 - DEGRADED PLANT CONDITION - Undesirable plant productivity and health, 19 - DEGRADED PLANT CONDITION, Inadequate structure and composition, 22- INADEQUATE HABITAT FOR FISH AND WILDLIFE - Habitat degradation.

Before Situation: The wetland has been converted to agricultural production, and the wetland has lost size and storage volume from accumulated sediments. The wetland receives surface runoff from an adjacent upland watershed, and ponds water on a shallow perched layer. The watershed has been converted from a native to an agricultural landuse, and the resultant soil erosion has deposited 6" of sediment in the bottom of the depression.

After Situation: Any deposited sediment has been excavated and the depth of the wetland has been increased to add storage volume. A herbaceous plant community has been seeded. Facilitative practices include 327-Conservation Cover. Restoration of hydrology and plant community functions will improve the WATER QUALITY and DEGRADED PLANT CONDITION concerns listed above. The hydrologic and vegetative practices will address the SOIL QUALITY DEGRADATION and INADEQUATE HABITAT FOR FISH AND WILDLIFE concerns. Associated practices are 342-Critical Area Planting, 550-Range Planting, 644-Wetland Wildlife Habitat Management, and 587-Structure for Water Control.

Scenario Feature Measure: Cubic Yards of Excavation

Scenario Unit: Cubic Yard

Scenario Typical Size: 8067

Total Scenario Cost: $35,104.32

Scenario Cost/Unit: $4.35

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$478.68	2	$957.35
Equipment Installation						
Excavation, common earth, wet, side cast, large equipment	1228	Bulk excavation and side casting of wet common earth with hydraulic excavator or dragline with greater than 1 CY capacity. Includes equipment and labor.	Cubic Yard	$4.23	8067	$34,146.97

Practice: 660 - Tree/Shrub Pruning

Scenario: #1 - Pruning-Fire Hazard

Scenario Description: Pruning trees of branches in a forest stand where wildfires are considered a high and very high hazard. Hand tools and power tools are used to cut branches from trees. Resource concerns include Degraded plant condition-wildfire hazard and Undesirable plant productivity and health.

Before Situation: The forest stand is well to over-stocked, generally with 200 to 300+ trees per acre. Branches are touching understory vegetation or are in close proximity to forest floor where a ground fire can ignite the lower branches and move into the upper canopy. Wildfire hazard is very high.

After Situation: The typical forest pruning treatment is 20 acres. Trees are pruned to the desirable height (generally 8-10') based on desired separation space between ground vegetation and tree crown. Pruned branches are treated if they are a hazard, see Woody Residue Treatment standard.

Scenario Feature Measure: area of treatment

Scenario Unit: Acre

Scenario Typical Size: 20

Total Scenario Cost: $4,185.60

Scenario Cost/Unit: $209.28

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	140	$3,076.06
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	$40.95	12	$491.41
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.33	120	$519.32
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hour	$4.94	20	$98.81

Practice: 660 - Tree/Shrub Pruning

Scenario: #4 - Pruning-Wildlife

Scenario Description: Pruning of hard/soft mast trees and shrubs to stimulate increased fruit/nut production for wildlife food. Primarily done around old agricultural fields, in old orchards, in forested areas. Is usually done with a chainsaw or handsaw to open the canopy and remove dead branches to increase airflow and sunlight penetration. Resource concerns are inadequate habitat for fish and wildlife - habitat degrdation and plant condition- undesirable plant productivity and health

Before Situation: Trees have reduced mast production due to tree reaching maturity or heavy shade. Pruning is needed to remove older branches, dead material and increase sunlight into the canopy. New branching will be stimulated, increasing mast production.

After Situation: Selected trees (10 per acre) are re-invigorated with new branching and an increase in mast production.

Scenario Feature Measure: area of treatment

Scenario Unit: Acre

Scenario Typical Size: 2

Total Scenario Cost: $633.99

Scenario Cost/Unit: $317.00

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	20	$439.44
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	$40.95	2	$81.90
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.33	5	$21.64
Pruning tool, pole saw	1319	Gasoline powered pole chainsaw. Labor not included.	Hour	$8.32	5	$41.61
Pruning tools, hand tools	1318	Pruning tools, hand tools, shears, loppers, pole saw, handsaw. Material costs only. Labor not included.	Hour	$4.94	10	$49.41

Practice: 666 - Forest Stand Improvement

Scenario: #5 - Competition Control - Mechanical, Light Equipment

Scenario Description: Using light equipment such as a tractor with brush hog to control vegetation that is competing with desirable trees and species or to reduce the stocking level of a stand of desirable trees. Resource concerns include Undesirable plant productivity and health; Wildlife habitat degradation; Wildfire hazard; and Inadequate structure and composition.

Before Situation: A stand of young, desirable trees is adversely affected by competition either from undesirable species or because the stand is overstocked. The vegetation to be controlled is small enough that it can be mowed or shredded. The work can be done by mowing or shredding strips through the stand, mowing between planted rows, etc.

After Situation: After adjusting the stocking to an acceptable level and/or controlling the competing vegetation, stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the resulting increase of sunlight reaching the forest floor.

Scenario Feature Measure: Area Treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $376.65

Scenario Cost/Unit: $37.66

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Equipment Installation						
Mechanical weed control, Vegetation termination	957	Mechanical operations, Includes: Roller/crimper, mower, shredder, etc. Includes equipment, power unit and labor costs.	Acre	$20.61	10	$206.15
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	$170.50	1	$170.50

Practice: 666 - Forest Stand Improvement

Scenario: #6 - Competition Control - Mechanical, Heavy Equipment

Scenario Description: Using equipment such as a masticator or mulcher to control vegetation that is competing with desirable trees and species or to reduce the stocking level of a stand of desirable trees. The trees to be retained will be marked by a consultant. Resource concerns include Undesirable plant productivity and health; Wildlife habitat degradation; Wildfire hazard; and Inadequate structure and composition.

Before Situation: A stand of desirable trees is adversely affected by competition either from undesirable species, cull trees, or because the stand is overstocked. The vegetation to be controlled is too large to be mowed or shredded. Therefore other mechanical methods such as using masticators or mulchers is necessary.

After Situation: The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $5,004.00

Scenario Cost/Unit: $500.40

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12”, Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	$23.66	30	$709.85
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	15	$1,509.25
Equipment Installation						
Mechanical cutter, chopper	943	Forestry mulcher, flail shredder, hydro axe, brush cutter, etc. Equipment and power unit costs. Labor not included.	Hour	$84.38	30	$2,531.40
Mobilization						
Mobilization, medium equipment	1139	Equipment with 70-150 HP or typical weights between 14,000 and 30,000 pounds.	Each	$253.50	1	$253.50

Practice: 666 - Forest Stand Improvement

Scenario: #7 - Creating Patch Clearcuts

Scenario Description: Creating 2 acre patches in over-mature and/or degraded stands using hand tools such as chainsaws. Resource concerns include: Undesirable plant productivity and health, Inadequate structure and composition, and habitat degradation.

Before Situation: The existing stand is overly mature and/or has been degraded in value by past harvesting practices. The level of acceptable growing stock is too low to justify managing this stand in its present condition. The present form, species composition and structure cannot meet the resource concerns and landowner objectives. Creating small openings by cutting all trees greater than 2" in diameter will foster the regeneration of high-value shade intolerant species. The work will be done with chainsaws.

After Situation: A new, young stand of desirable species is established In addition, early successional wildlife habitat as well as forest type diversity are created.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 2

Total Scenario Cost: $420.79

Scenario Cost/Unit: $210.40

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	16	$351.55
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.33	16	$69.24

Practice: 666 - Forest Stand Improvement

Scenario: #8 - Thinning for Wildlife and Forest Health

Scenario Description: A combination of hand and chemical treatments used to open the canopy of a stand to improve the wildlife habitat and tree health. Resource concerns include: Inadequate structure and composition, Undesirable plant productivity and health, and Habitat degradation.

Before Situation: The stand of mature trees is overstocked resulting in a closed canopy. This condition is causing a lack of structure, herbaceous layer, and diversity that is needed to meet the landowner's objectives for improved wildlife habitat and forest health. Under the supervision of a consultant forester, it will be marked for thinning and timber stand improvement applications that will include cutting with hand tools (chainsaws) and injection. Costs involved in any commercial harvesting including marking, access, and transportation are not included in this scenario. However the costs involved in marking trees to be treated or left and supervising the TSI work is included.

After Situation: The stand is treated to favor diversity of important commercial and wildlife species. The canopy is opened to the extent necessary to promote herbaceous growth and the work is performed without excessive damage to the residual trees and site.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $4,685.15

Scenario Cost/Unit: $468.52

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	16	$351.55
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	8	$804.93
Materials						
Herbicide, Triazine	1321	Broad spectrum herbicide. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$42.78	10	$427.77
Tree Marking Paint	313	Trees to be cut through tree marking are physically identified through the application of paint on the tree. Typically one quart of paint is used to mark one acre of trees. Includes materials and shipping only.	Acre	$6.66	10	$66.62
Equipment Installation						
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	$32.03	16	$512.42
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.33	16	$69.24
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	$61.32	40	$2,452.62

Practice: 666 - Forest Stand Improvement

Scenario: #1 - Pre-commercial Thinning - Hand tools

Scenario Description: Adjusting the stocking of a young, non-merchantable stand of trees. The operation is supervised by a consultant forester and is carried out using hand tools such as chainsaws. Resource concerns include Undesirable plant productivity and health; Wildlife habitat degradation; Wildfire hazard; and Inadequate structure and composition.

Before Situation: The stocking of a stand of trees that are too small to make a commercial thinning exceeds the recommended fully stocked level for the species and site. The effect is much slower growth than is reasonable or expected for the site, increased susceptibility to insects and disease, and an unacceptable devastating wildfire risk.

After Situation: After adjusting the stocking to an acceptable level, stand growth, condition, and overall quality is improved. In addition, wildlife habitat is improved with the resulting increase of sunlight reaching the forest floor.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $2,642.48

Scenario Cost/Unit: $264.25

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$21.97	48	$1,054.65
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	12	$1,207.40
Equipment Installation						
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	$4.33	48	$207.73
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.59	8	$172.70

Practice: 666 - Forest Stand Improvement

Scenario: #2 - Timber Stand Improvement - Single Stem Treatment

Scenario Description: Altering the composition and stocking of a stand of trees by means of individual stem treatment. The trees to be retained are marked by a consultant forester. Resource concerns include Undesirable plant productivity and health; Wildlife habitat degradation; Wildfire hazard; and Inadequate structure and composition.

Before Situation: The existing condition of the stand cannot meet the landowners objectives because the composition consists of unwanted species and the stocking exceeds the recommended level. The species and quality of the trees to be controlled makes a commercial operation unfeasible. Therefore the stand improvement will be carried out with single stem treatment such as injection or basal bark spraying.

After Situation: The composition of the stand can meet the landowners objectives and the growth, condition and quality of the remaining trees is improved.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 10

Total Scenario Cost: $2,741.49

Scenario Cost/Unit: $274.15

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Labor						
Specialist Labor	235	Labor requiring a specialized skill set: Includes Agronomists, Foresters, Biologists, etc. to provide additional technical information during the planning and implementation of the practice. Does not include NRCS or TSP services.	Hour	$100.62	18	$1,811.10
Materials						
Herbicide, Picloram	337	Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$18.77	10	$187.71
Equipment Installation						
Chemical, spot treatment, single stem application	964	Ground applied chemical to individual plants or group of plants, e.g., backpack sprayer treatment. Equipment and labor cost included.	Hour	$61.32	10	$613.15
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	$21.59	6	$129.53

Practice: 666 - Forest Stand Improvement

Scenario: #4 - Timber Stand Improvement - Chemical, Aerial

Scenario Description: Using aerially applied chemicals to release desirable trees from competing and/or overtopping vegetation. Resource concerns include: Undesirable plant productivity and health, and Wildlife habitat degradation.

Before Situation: An adequately stocked stand of desirable species and trees is not growing to its potential for the site due to severe competition from undesirable trees and brush. Releasing the desirable trees from the competition will be achieved through the application of appropriate herbicides according to label directions. Application will be by helicopter as an over-the-top spray. The work will be professionally planned and supervised.

After Situation: The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Scenario Feature Measure: Area treated

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $3,286.39

Scenario Cost/Unit: $82.16

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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	$40.95	8	$327.61
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$40.73	40	$1,629.18
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	40	$51.82
Equipment Installation						
Chemical, aerial application, helicopter	1991	Chemical application performed by helicopter on forest only. Includes equipment, mobilization, and labor.	Acre	$31.94	40	$1,277.78

Practice: 666 - Forest Stand Improvement

Scenario: #3 - Timber Stand Improvement - Chemical, Ground

Scenario Description: Using ground applied chemicals to release young desirable trees from competing and/or overtopping vegetation. Resource concerns include: Undesirable plant productivity and health, and Wildlife habitat degradation.

Before Situation: An adequately stocked stand of desirable species and trees is not growing to its potential for the site due to severe competition from undesirable trees and brush. Releasing the desirable trees from the competition will be achieved through the application of appropriate herbicides according to label directions. Application will be by ground equipment as an over-the-top spray.

After Situation: The released stand of trees contains the composition and quality needed to meet the landowner's objectives and address the resource concerns.

Scenario Feature Measure: Acres treated

Scenario Unit: Acre

Scenario Typical Size: 40

Total Scenario Cost: $1,926.55

Scenario Cost/Unit: $48.16

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
Materials						
Herbicide, Imazapyr	336	Pre and post-emergent, non-selective herbicide for control of undesirable vegetation in non-crop areas. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$40.73	40	$1,629.18
Herbicide, Surfactant	1095	Surfactants reduce the surface tension of water to produce more uniform coverage and penetration of herbicides, and weed killers. Paraffin Based Petroleum Surfactant. Refer to WIN-PST for product names and active ingredients. Includes materials and shipping only.	Acre	$1.30	40	$51.82
Equipment Installation						
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	$6.14	40	$245.55