

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

Scenario: #1 - Wildlife Structures, Low Intensity & Complexity

Scenario Description:

This scenario is for the installation of wildlife structures on all land uses where the targeted species has been identified as Rare and Declining. Structures are of low intensity and low complexity, when habitat assessment indicates Inadequate Habitat for Fish or Wildlife-habitat degradation. This scenario include structures such as: habitat boxes, perch poles, fence markers, down logs and hand built brush piles. The typical size range for this scenario is 1 to 200 acres. This scenario would be applied on any land use where habitats are utilized by species indentified as rare & declining. Intensity is the number of structures to be installed per acre. For this scenario the intensity is <0.5 structure per acre. Complexity is defined by the combination of skill level, equipment needed and ease of accessibility for creating and installing these structures. For this scenario the complexity would include; general labor with minimal supervision or skilled labor without supervision; common hand tools and equipment; installation is within a quarter mile of a drivable road; and terrain is gentle to moderate.

Before Situation:

A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a need for wildlife structures of low intensity with low complexity to bring one or more habitat limiting factors under Inadequate Habitat for Fish or Wildlife, up to planning criteria. Habitat limiting factors include quality, quantity and continuity of forage, cover, shelter, space and water availability. Less than 1 structure per acre is needed to bring the deficient habitat limiting factor up to planning criteria. The structures can be installed within a quarter mile of a drivable road and terrain is gentle to moderate. (consider all the fence markers as one structure)

After Situation:

Installation of wildlife structures bring the identified deficient habitat limiting factors up to planning criteria. The practice is installed using general labor with minimal supervision or skilled labor without supervision with use of common hand tools and small equipment;

Scenario Feature Measure: < 0.5 structures / acre

Scenario Unit: Acres

Scenario Typical Size: 100

Scenario Cost: \$3,508.19

Scenario Cost/Unit: \$35.08

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	100	\$16.00
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	\$50.89	10	\$508.90
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.24	2	\$74.48
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	\$6.31	3	\$18.93
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$4.65	5	\$23.25
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	\$43.67	1	\$43.67
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	\$19.09	40	\$763.60
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	\$38.32	5	\$191.60
Materials						
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound	Each	\$23.88	2	\$47.76
Post, Wood, CCA treated, 6" x 12-14'	13	Wood Post, Line/End 6" X 12-14', CCA Treated. Includes materials and shipping only.	Each	\$26.08	5	\$130.40
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding made by Georgia Pacific. Priced per foot of fence per each wire. Materials only.	Foot	\$0.04	1000	\$40.00

Materials

Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.83	10	\$8.30
Habitat Box, Bat	246	BAT-1 Bat House Single. Includes materials and shipping.	Each	\$52.08	5	\$260.40
Habitat Box, Bee	248	Wood structure with nesting holes (distinct or randomized patterns) made of wood, plastic, or glass. Includes materials and shipping.	Each	\$33.71	5	\$168.55
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	\$29.75	5	\$148.75
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	\$50.33		\$0.00
Predator Guard	1461	Predator guards (i.e. stove pipes, cone, hole guard, etc.) for habitat boxes. Materials only. Includes material and shipping only.	Each	\$28.58	25	\$714.50
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	\$69.82	5	\$349.10

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Scenario: #2 - Wildlife Structures, Medium Intensity and Complexity No Foregone Income

Scenario Description:

This scenario is for the installation of wildlife structures on all land uses where the targeted species has been identified as Rare and Declining. Structures are of medium intensity with medium complexity (also included are sites needing low to medium intensity but high complexity or high intensity but low to medium complexity structures), when habitat assessment indicates Inadequate Habitat for Fish or Wildlife-habitat degradation. This scenario includes all the structures in the Wildlife Structures Low and other structures whose installation may require the use of light (< 70 horse power) to medium (70-150 horse power) sized equipment. The typical size range for this scenario is 1 to 1000 acres. This scenario would be applied on any land use where habitats are utilized by species identified as rare & declining. Intensity is the number of structures to be installed per acre. For this scenario, the intensity can range from <1 structure per acre to >1 structure per acre depending on complexity. Complexity is defined by the combination of skill level, equipment needed and ease of accessibility for creating and installing these structures. For this scenario the complexity would include: general labor with supervision if intensity is medium to high and complexity is low to medium or skilled labor with supervision if intensity is low to medium and complexity is medium to high; common hand tools and/or light to medium equipment; installation is within a half mile of a road: and terrain is gentle to difficult. Decisions or treatments associated with this practice or facilitating practices will require income foregone.

Before Situation:

A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a need for wildlife structures of medium intensity and high to medium complexity to bring one or more habitat limiting factors of inadequate habitat for fish and wildlife, up to planning criteria. (Also included are sites where the planning criteria would require wildlife structures of low to medium intensity and high complexity or high intensity but low complexity) Habitat limiting factors include quality, quantity and continuity of forage, cover, shelter, space and water availability. The intensity can range from <1 structure per acre to >1 structure per acre depending on complexity. All the needed wildlife structures can be installed within a half mile of a drivable road and the terrain can range from gentle to difficult.

After Situation:

Installation of wildlife structures bring the identified deficient habitat limiting factors up to planning criteria. The practice was installed using general labor with supervision (if intensity is medium to high and complexity is low to medium) or skilled labor with supervision (if intensity is low to medium and complexity is medium to high) with the use of common hand tools and/or light to medium equipment.

Scenario Feature Measure: < 1 to >1 structure / acre

Scenario Unit: Acres

Scenario Typical Size: 500

Scenario Cost: \$12,146.20

Scenario Cost/Unit: \$24.29

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.24	8	\$297.92
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	\$50.89	30	\$1,526.70
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$30.77	4	\$123.08
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	500	\$80.00
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	\$6.31	40	\$252.40
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$4.65	5	\$23.25
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.90	5	\$14.50
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.91	5	\$9.55
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	\$43.67	10	\$436.70
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.53	5	\$17.65

Labor

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	\$19.09	100	\$1,909.00
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.47	10	\$234.70
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	\$27.56	6	\$165.36
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	\$38.32	10	\$383.20

Materials

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	\$50.33		\$0.00
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding made by Georgia Pacific. Priced per foot of fence per each wire. Materials only.	Foot	\$0.04	6000	\$240.00
Post, Wood, CCA treated, 6" x 12-14'	13	Wood Post, Line/End 6" X 12-14', CCA Treated. Includes materials and shipping only.	Each	\$26.08	25	\$652.00
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$87.01	5	\$435.05
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$38.57	10	\$385.70
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	\$29.75	25	\$743.75
Corrugated Steel, 28 gage	223	Corrugated or ribbed, galvanized, 28 gauge, includes fasteners, materials only.	sq ft	\$1.56	64	\$99.84
Predator Guard	1461	Predator guards (i.e. stove pipes, cone, hole guard, etc.) for habitat boxes. Materials only. Includes material and shipping only.	Each	\$28.58	25	\$714.50
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound	Each	\$23.88	10	\$238.80
Habitat Box, Bat	246	BAT-1 Bat House Single. Includes materials and shipping.	Each	\$52.08	25	\$1,302.00
Habitat Box, Bee	248	Wood structure with nesting holes (distinct or randomized patterns) made of wood, plastic, or glass. Includes materials and shipping.	Each	\$33.71	25	\$842.75
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.83	10	\$8.30
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic yard	\$26.95	10	\$269.50
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	\$69.82	5	\$349.10
Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$39.09	10	\$390.90

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Scenario: #3 - Wildlife Structures, High Intensity & Complexity - No Foregone Income

Scenario Description:

This scenario is for the installation of wildlife structures on all land uses where the targeted species has been identified as Rare and Declining. Structures are of medium to high intensity and high complexity, when habitat assessment indicates Inadequate Habitat for Fish or Wildlife-habitat degradation. This scenario includes all the structures in the Wildlife Structures-low and medium scenarios but whose installation may require medium to high intensity with high complexity. This scenario may include the installation structures that require the use of heavy (150+ horse power) equipment. The typical size range for this scenario is 100 to 1000 acres. This scenario would be applied on any land use where habitats are utilized by species indetified as rare & declining. Intensity is the number of structures to be installed per acre and for this scenario it can range from <1 structure per acre to >1 structure per acre depending on complexity. Complexity is defined by the combination of skill level, equipment needed and ease of accessibility for creating and installing these structures. For this scenario the complexity would include: skilled labor and general labor with supervision; common hand tools to heavy equipment; for many of the structures, installation is within a mile of a road: and terrain is moderate to difficult. Decisions or treatments associated with this practice or facilitating practices will require income foregone.

Before Situation:

A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a need for wildlife structures of medium to high intensity with high complexity to bring one or more habitat limiting factors of inadequate habitat for fish and wildlife, up to planning criteria. (Also included are sites where the planning criteria would require wildlife structures of low intensity but high complexity or high intensity but low complexity) Habitat limiting factors include quality, quantity and continuity of forage, cover, shelter, space and water availability. The intensity for this scenario may range from <1 structure per acre to >1 structure per acre depending on complexity. Many of the needed structures can be installed within a mile of a drivable road and the terrain will range from moderate to difficult.

After Situation:

Installation of wildlife structures bring the identified deficient habitat limiting factors up to planning criteria. Installation of wildlife structures required skilled labor and general labor with supervision and the use of common hand tools to heavy equipment.

Scenario Feature Measure: < 1 to >1 structure / acre

Scenario Unit: Acres

Scenario Typical Size: 600

Scenario Cost: \$19,158.84

Scenario Cost/Unit: \$31.93

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	600	\$96.00
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hour	\$186.80	6	\$1,120.80
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	\$43.67	12	\$524.04
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.91	10	\$19.10
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.53	15	\$52.95
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$4.65	5	\$23.25
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.90	10	\$29.00
Chainsaw	937	Equipment and power unit costs. Labor not included.	Hour	\$6.31	15	\$94.65
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.24	10	\$372.40
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$30.77	6	\$184.62
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	\$50.89	40	\$2,035.60

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	\$191.03	2	\$382.06
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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	\$27.56	8	\$220.48
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	\$38.32	5	\$191.60
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	\$19.09	100	\$1,909.00
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	\$25.37	8	\$202.96

Materials

Aggregate, Gravel, Graded	46	Gravel, includes materials, equipment and labor to transport and place. Includes washed and unwashed gravel.	Cubic yard	\$39.09	25	\$977.25
Aggregate, Gravel, Ungraded, Quarry Run	1099	Includes materials, equipment and labor	Cubic yard	\$26.95	25	\$673.75
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	\$50.33		\$0.00
Predator Guard	1461	Predator guards (i.e. stove pipes, cone, hole guard, etc.) for habitat boxes. Materials only. Includes material and shipping only.	Each	\$28.58	25	\$714.50
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	\$69.82	25	\$1,745.50
Post, Wood, CCA treated, 6" x 12-14'	13	Wood Post, Line/End 6" X 12-14', CCA Treated. Includes materials and shipping only.	Each	\$26.08	25	\$652.00
Aggregate, Sand, Graded, Washed	45	Sand, typical ASTM C33 gradation, includes materials, equipment and labor to transport and place	Cubic yard	\$38.57	25	\$964.25
Corrugated Steel, 28 gage	223	Corrugated or ribbed, galvanized, 28 gauge, includes fasteners, materials only.	sq ft	\$1.56	128	\$199.68
Vinyl Undersill Strips	241	Marking material using the "undersill" strips of vinyl siding made by Georgia Pacific. Priced per foot of fence per each wire. Materials only.	Foot	\$0.04	10500	\$420.00
Wildlife Escape Ramp	242	Pool size 15' x 30', for small mammals less than one pound	Each	\$23.88	30	\$716.40
Habitat Box, Bat	246	BAT-1 Bat House Single. Includes materials and shipping.	Each	\$52.08	25	\$1,302.00
Habitat Box, Bee	248	Wood structure with nesting holes (distinct or randomized patterns) made of wood, plastic, or glass. Includes materials and shipping.	Each	\$33.71	25	\$842.75
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	\$29.75	25	\$743.75
Dimension Lumber, Treated	1044	Treated dimension lumber with nominal thickness equal or less than 2". Includes lumber and fasteners	Board Foot	\$0.83	10	\$8.30
Rock Riprap, Placed with geotextile	44	Rock Riprap, placed with geotextile, includes materials, equipment and labor to transport and place	Cubic yard	\$87.01	20	\$1,740.20

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Scenario: #4 - 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 quality 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, 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

Scenario Cost: \$1,613.15

Scenario Cost/Unit: \$16.13

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
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	\$43.67	1	\$43.67
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	100	\$16.00
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$30.77	4	\$123.08
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$23.49	16	\$375.84
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$37.24	4	\$148.96
Mower, Bush Hog	940	Equipment and power unit costs. Labor not included.	Hour	\$50.89	16	\$814.24
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	\$19.09	4	\$76.36
Materials						
Miscellaneous, containers, traps, etc.	298	Pheromone Traps, Culture container with lid. Includes materials and shipping only.	Each	\$3.75	4	\$15.00

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Scenario: #5 - Topographic Feature Creation, Low Complexity & Intensity - 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. This scenario is typically occurs on lands used for the production of forest products, grazing and/or fish and wildlife where the slope gradient is less than two percent and predominant soils are not excessively drained. The State-approved habitat evaluation or appraisal found that a limiting factor for species of plants and animals identified as rare and declining is the absence of sufficient variability in microtopographic relief in the area. The construction of low intensity and low complexity topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for rare and declining species. The construction of micro and macro topographic features can be implemented with the use of equipment with less than 70 HP. This scenario is for earthwork, not associated with habitat structures or any other national standard (e.g. Wetland Restoration (657), Wetland Enhancement (659), Wetland Creation (658), and Dike (356)).

Before Situation:

The site lacks sufficient micro- and macrotopographic features needed for optimal habitat for target rare and declining species. Typically the site has been previously manipulated and utilized for agricultural, livestock or forest production. With the loss of hummocks, depressions and other topographic features scattered throughout the site, both plant and animal species that are dependent on the microenvironments created by these features are no longer present or are in decline within the planning unit.

After Situation:

Appropriate low horsepower equipment, such as, rubber tired tractor and farm implements (i.e. – box blade, scraper blade, grader blade, front end-loader, etc) were used to construct planned topographic features essential for identified species. As a result of the installation, the topographic relief needed to provide the varied habitat needs is provided.

Scenario Feature Measure: number and size of constructed features

Scenario Unit: Acre

Scenario Typical Size: 50

Scenario Cost: \$6,126.70

Scenario Cost/Unit: \$122.53

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.53	10	\$35.30
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	50	\$8.00
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$23.49	40	\$939.60
Hydraulic Excavator, .5 CY	930	Track mounted hydraulic excavator with bucket capacity range of 0.3 to 0.8 CY. Equipment and power unit costs. Labor not included.	Hour	\$56.11	40	\$2,244.40
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.91	10	\$19.10
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.90	10	\$29.00
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$4.65	10	\$46.50
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.47	40	\$938.80
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	\$27.56	40	\$1,102.40
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	\$19.09	40	\$763.60

Materials

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	\$50.33		\$0.00
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Practice: 643 - Restoration and Management of Rare and Declining Habitats

Scenario: #6 - Topographic Feature Creation, Medium Complexity & Intensity - 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. This scenario is typically occurs on lands used for the production of forest products, grazing and/or fish and wildlife where the slope gradient is less than two percent and predominant soils are not excessively drained. The State-approved habitat evaluation or appraisal found that a limiting factor for species of plants and animals identified as rare and declining is the absence of sufficient variability in microtopographic relief in the area. The construction of medium intensity and medium complexity topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for rare and declining species. The construction of micro and macro topographic features can be implemented with the use of equipment in the 70-150 HP range due to current site conditions and implementation techniques. This scenario is for earthwork, not associated with habitat structures or any other national standard (e.g. Wetland Restoration (657), Wetland Enhancement (659), Wetland Creation (658), and Dike (356)).

Before Situation:

The site lacks sufficient micro- and macrotopographic features needed for optimal habitat for target rare and declining species. Typically the site has been previously manipulated and utilized for agricultural, livestock or forest production. With the loss of hummocks, depressions and other topographic features scattered throughout the site, both plant and animal species that are dependent on the microenvironments created by these features are no longer present or are in decline within the planning unit.

After Situation:

Appropriate equipment (i.e. – Skidsteer, Farm Tractor, Small Dozer, etc) was used to construct planned topographic features essential for identified species. As a result of the installation, adequate habitat needs have been provided.

Scenario Feature Measure: number and size of constructed features

Scenario Unit: Acre

Scenario Typical Size: 50

Scenario Cost: \$39,646.85

Scenario Cost/Unit: \$792.94

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.90	15	\$43.50
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	50	\$8.00
Backhoe, 80 HP	926	Wheel mounted backhoe excavator with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$56.11	60	\$3,366.60
Dozer, 80 HP	929	Track mounted Dozer with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$67.34	60	\$4,040.40
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$4.65	15	\$69.75
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.91	15	\$28.65
Hydraulic Excavator, 1 CY	931	Track mounted hydraulic excavator with bucket capacity range of 0.8 to 1.5 CY. Equipment and power unit costs. Labor not included.	Hour	\$114.28	60	\$6,856.80
Skidsteer, 80 HP	933	Skidsteer loader with horsepower range of 60 to 90. Equipment and power unit costs. Labor not included.	Hour	\$43.24	60	\$2,594.40
Track Loader, 95HP	935	Equipment and power unit costs. Labor not included.	Hour	\$88.72	60	\$5,323.20
Dozer, 140 HP	927	Track mounted Dozer with horsepower range of 125 to 160. Equipment and power unit costs. Labor not included.	Hour	\$124.56	60	\$7,473.60
Tractor, agricultural, 120 HP	962	Agricultural tractor with horsepower range of 90 to 140. Equipment and power unit costs. Labor not included.	Hour	\$54.71	60	\$3,282.60
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.53	15	\$52.95

Labor

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	\$19.09	60	\$1,145.40
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.47	60	\$1,408.20
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	\$38.32	60	\$2,299.20
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	\$27.56	60	\$1,653.60

Materials

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	\$50.33		\$0.00
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Practice: 643 - Restoration and Management of Rare and Declining Habitats

Scenario: #7 - Topographic Feature Creation, High Complexity & Intensity - 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. This scenario is typically occurs on lands used for the production of forest products, grazing and/or fish and wildlife where the slope gradient is less than two percent and predominant soils are not excessively drained. The State-approved habitat evaluation or appraisal found that a limiting factor for species of plants and animals identified as rare and declining is the absence of sufficient variability in microtopographic relief in the area. The construction of construction of high intensity and high complexity topographic features will provide for diverse soil hydrologic conditions needed to treat the degraded plant condition and/or inadequate habitat for rare and declining species. The construction of micro and macro topographic features will require the use of equipment 150 HP in size or larger due to current site conditions and implementation techniques. This scenario is for earthwork, not associated with habitat structures or any other national standard (e.g. Wetland Restoration (657), Wetland Enhancement (659), Wetland Creation (658), and Dike (356)).

Before Situation:

The site lacks sufficient micro- and macrotopographic features needed for optimal habitat for target rare and declining species. Typically the site has been previously manipulated and utilized for agricultural, livestock or forest production. With the loss of hummocks, depressions and other topographic features scattered throughout the site, both plant and animal species that are dependent on the microenvironments created by these features are no longer present or are in decline within the planning unit.

After Situation:

Appropriate equipment (i.e. – Dozer, Excavator, etc) was used to construct planned topographic features essential for identified species. As a result of the installation, adequate habitat needs have been provided.

Scenario Feature Measure: number and size of constructed features

Scenario Unit: Acre

Scenario Typical Size: 50

Scenario Cost: \$39,321.40

Scenario Cost/Unit: \$786.43

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Earthfill, Manually Compacted	50	Earthfill, manually compacted, includes equipment and labor	Cubic yard	\$4.65	20	\$93.00
Excavation, Common Earth, side cast, small equipment	48	Bulk excavation and side casting of common earth with hydraulic excavator with less than 1 CY capacity. Includes equipment and labor.	Cubic yard	\$1.91	20	\$38.20
Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic yard	\$3.53	20	\$70.60
Earthfill, Dumped and Spread	51	Earthfill, dumped and spread without compaction effort, includes equipment and labor	Cubic yard	\$2.90	20	\$58.00
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	\$191.03	80	\$15,282.40
Satellite imagery, aerial photography, infrared	966	Infrared imagery	Acre	\$0.16	50	\$8.00
Dozer, 200 HP	928	Track mounted Dozer with horsepower range of 160 to 250. Equipment and power unit costs. Labor not included.	Hour	\$186.80	80	\$14,944.00
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	\$38.32	80	\$3,065.60
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	\$25.37	80	\$2,029.60
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	\$19.09	80	\$1,527.20

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	\$27.56	80	\$2,204.80
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Materials

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	\$50.33		\$0.00
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Practice: 643 - Restoration and Management of Rare and Declining Habitats

Scenario: #8 - Establish Annual Vegetation - Broadcast w/ Fertilization No Foregone Income

Scenario Description:

This scenario is for the establishment of annual (non-persistent) vegetation on all land uses where the targeted species has been identified as Rare and Declining. 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 habitats are utilized by species indentified as rare & declining. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality and develop wildlife habitat as part of a habitat management system. Often times this scenario is utilized to temporarily provide cover or forage while permanent vegetation is being established. Vegetation will be established utilizing conventional methods including disking, herbicide applicaiton and broadcast seeding. Fertilization will be required and will be completed in response to a soil test.

Before Situation:

A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a need to establish annual (non-persistent) vegetation to bring one or more habitat limiting factors of inadequate habitat for fish and wildlife, up to planning criteria. An evaluation of the site has indicated resource concerns are present, or may become present during the implementation of the habitat management system planned. Resource concerns identified may include soil erosion with visible rills present resultging in sediment moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The current 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 is adequately covered with annual (non-persistent) vegetation. As a result of installation soil erosion, water/sediment runoff, and/or dust emissions have been eliminated. Plants sown provide 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.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 25

Scenario Cost: \$3,829.65

Scenario Cost/Unit: \$153.19

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$23.49	8	\$187.92
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acre	\$11.93	25	\$298.25
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.43	25	\$160.75
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.82	25	\$145.50
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$15.74	25	\$393.50
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.47	8	\$187.76
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	\$19.09	8	\$152.72

Materials

Materials

Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.90	1250	\$1,125.00
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	\$15.83	25	\$395.75
Potassium, K2O	74	K2O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.32	1000	\$320.00
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	\$0.37	1250	\$462.50
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	\$50.33		\$0.00

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

Scenario: #9 - Establish Annual Vegetation - Broadcast; No Fertilization No Foregone Income

Scenario Description:

This scenario is for the establishment of annual (non-persistent) vegetation on all land uses where the targeted species has been identified as Rare and Declining. 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 habitats are utilized by species identified as rare & declining. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality and develop wildlife habitat as part of a habitat management system. Often times this scenario is utilized to temporarily provide cover or forage while permanent vegetation is being established. Vegetation will be established utilizing conventional methods including disking, herbicide application and broadcast seeding. Fertilization will NOT be required.

Before Situation:

A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a need to establish annual (non-persistent) vegetation to bring one or more habitat limiting factors of inadequate habitat for fish and wildlife, up to planning criteria. An evaluation of the site has indicated resource concerns are present, or may become present during the implementation of the habitat management system planned. Resource concerns identified may include soil erosion with visible rills present resulting in sediment moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The current 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 is adequately covered with annual (non-persistent) vegetation. As a result of installation soil erosion, water/sediment runoff, and/or dust emissions have been eliminated. Plants sown provide 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. Fertilization will NOT be required.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 25

Scenario Cost: \$1,761.40

Scenario Cost/Unit: \$70.46

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$23.49	8	\$187.92
Tillage, Primary	946	Includes heavy disking (offset) or chisel plow. Includes equipment, power unit and labor costs.	Acre	\$15.74	25	\$393.50
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.82	25	\$145.50
Seeding Operation, Broadcast, Ground	959	Broadcast seed via ground operation. May require post tillage operation to incorporate seed. Includes equipment, power unit and labor costs.	Acre	\$11.93	25	\$298.25
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	\$19.09	8	\$152.72
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.47	8	\$187.76
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	\$15.83	25	\$395.75
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	\$50.33		\$0.00

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

Scenario: #10 - Establish Annual Vegetation - Drill w/ Fertilization No Foregone Income

Scenario Description:

This scenario is for the establishment of annual (non-persistent) vegetation on all land uses where the targeted species has been identified as Rare and Declining. 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 habitats are utilized by species indentified as rare & declining. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality and develop wildlife habitat as part of a habitat management system. Often times this scenario is utilized to temporarily provide cover or forage while permanent vegetation is being established. Establishment of vegetation will require methods including light disking, herbicide applicaiton and use of seed drill for planting. Fertilization will be required and will be completed in response to a soil test.

Before Situation:

A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a need to establish annual (non-persistent) vegetation to bring one or more habitat limiting factors of inadequate habitat for fish and wildlife, up to planning criteria. An evaluation of the site has indicated resource concerns are present, or may become present during the implementation of the habitat management system planned. Resource concerns identified may include soil erosion with visible rills present resultging in sediment moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The current 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 is adeqatly covered with annual (non-persistent) vegetation. As a result of installation soil erosion, water/sediment runoff, and/or dust emissions have been eliminated. Plants sown provide 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.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 25

Scenario Cost: \$3,644.15

Scenario Cost/Unit: \$145.77

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Fertilizer, ground application, dry bulk	950	Dry bulk fertilizer application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$6.43	25	\$160.75
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$20.25	25	\$506.25
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.82	25	\$145.50
Tractor, agricultural, 60 HP	963	Agricultural tractor with horsepower range of 50 to 90. Equipment and power unit costs. Labor not included.	Hour	\$23.49	8	\$187.92
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.47	8	\$187.76
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	\$19.09	8	\$152.72
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	\$15.83	25	\$395.75
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	\$50.33		\$0.00

Materials

Potassium, K ₂ O	74	K ₂ O supplied by Muriate Of Potash. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.32	1000	\$320.00
Phosphorus, P ₂ O ₅	73	Price per pound of P ₂ O ₅ supplied by Superphosphate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.37	1250	\$462.50
Nitrogen (N), Ammonium Nitrate	69	Price per pound of N supplied by Ammonium Nitrate. Price is not per pound of total product applied, no conversion is needed.	Pound	\$0.90	1250	\$1,125.00

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

Scenario: #11 - Establish Annual Vegetation - Drill; No Fertilization No Foregone Income

Scenario Description:

This scenario is for the establishment of annual (non-persistent) vegetation on all land uses where the targeted species has been identified as Rare and Declining. 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 habitats are utilized by species indentified as rare & declining. This practice scenario is typically used to reduce soil erosion, reduce soil quality degradation, improve water quality and develop wildlife habitat as part of a habitat management system. Often times this scenario is utilized to temporarily provide cover or forage while permanent vegetation is being established. Establishment of vegetation will require methods including light disking, herbicide applicaiton and use of seed drill for planting. Fertilization will NOT be required.

Before Situation:

A habitat assessment (using State Office approved habitat assessment method, protocol or tool) has indicated a need to establish annual (non-persistent) vegetation to bring one or more habitat limiting factors of inadequate habitat for fish and wildlife, up to planning criteria. An evaluation of the site has indicated resource concerns are present, or may become present during the implementation of the habitat management system planned. Resource concerns identified may include soil erosion with visible rills present resultging in sediment moving offsite into surface water degrading water quality. Soil quality (soil organic matter) declines over time as a result of tillage practices, low residue, and long periods of bare soil. Air quality may be impacted during field operations by the creation of particulates. The current 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 is adequately covered with annual (non-persistent) vegetation. As a result of installation soil erosion, water/sediment runoff, and/or dust emissions have been eliminated. Plants sown provide 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. Fertilization will NOT be required.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 25

Scenario Cost: \$1,575.90

Scenario Cost/Unit: \$63.04

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
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	\$23.49	8	\$187.92
Chemical, ground application	948	Chemical application performed by ground equipment. Includes equipment, power unit and labor costs.	Acre	\$5.82	25	\$145.50
Seeding Operation, No Till/Grass Drill	960	No Till drill or grass drill for seeding. Includes equipment, power unit and labor costs.	Acre	\$20.25	25	\$506.25
Labor						
Equipment Operators, Light	232	Includes: Skid Steer Loaders, Hydraulic Excavators <50 HP, Trenchers <12", Ag Equipment <150 HP, Pickup Trucks, Forklifts, Mulchers	Hour	\$23.47	8	\$187.76
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	\$19.09	8	\$152.72
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	\$15.83	25	\$395.75
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	\$50.33		\$0.00

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

Scenario: #12 - Oyster reef restoration using planted oyster shells

Scenario Description:

Containerized oyster shells with spat set are prepared and delivered to a staging area by supplier; the shells are loaded on to a boat or barge then transported/delivered to reef site where they are dropped over the side to the floor of the Chesapeake Bay. Their presence allows naturally occurring oyster spat to have appropriate medium to attach themselves to. The resources protected are the declining numbers of bivalves that process/filter sediment and nutrients out of the bay water. Their filtering improves water quality in the bay. NRCS AQUACULTURE PROGRAM Eligibility for Funding through the EQIP Chesapeake Bay Program is based upon concern for: the land-based shell preparation activities that contribute to restoration of shellfish habitat begin on the shore and continue on permanently submerged lands under lease to the state (the tidal bottoms within areas of the bays and rivers of Virginia that are capable of supporting oysters which biofilter Bay waters. Because tidal waters are considered waters of the State, almost all bottom aquaculture operations require a state lease. The participant must have control of the submerged land in the form of a lease or other documentation showing they have sufficient control to implement and manage the contracted activities).

Before Situation:

Declining numbers of reproducing native oysters results in less bilvalve filtering of the Chesapeake Bay and reduced water quality.

After Situation:

Shallow water habitat/shoreline reef, planted with oyster shells, 5,000 bushels planted per acre to a thickness of 2-5 shells thick; The resulting artificial reef functions to improve water quality as oyster spat find, attach and grow within the provided shells.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$7,433.52

Scenario Cost/Unit: \$7,433.52

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Boat, 150 HP	2407	22 foot boat with 150hp motor used to place cultch to create reef habitat.	Hour	\$159.80	8	\$1,278.40
Barge with crane and operator	2408	Barge to transport and place 1 ton bags of cultch to form oyster reef habitat.	Hour	\$365.20	8	\$2,921.60
Materials						
Cultch	2409	Cultch material (used and/or slightly crushed, cleaned, medium to large sized shells). Includes materials only.	Ton	\$59.88	54	\$3,233.52

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

Scenario: #13 - Oyster reef restoration at site with some existng cultch using planted oyster shells

Scenario Description:

Containerized oyster shells with spat set are prepared and delivered to a staging are by supplier; the shells are loaded on to a boat or barge then transported/delivered to reef site where they are dropped over the side to the floor of the Chesapeake Bay. Their presence allows naturally occurring oyster spat to have appropriate medium to attach themselves to. The resources protected are the decling numbers of bivalves that process/filter sediment and nutrients out of the bay water. Their filtering improves water quality in the bay. NRCS AQUACULTURE PROGRAM Eligibility for Funding through the EQIP Chesapeake Bay Program is based upon concern for: the land-based shell preparation activities that contribute to restoration of shellfish habitat begin on the shore and continue on permanently submerged lands under lease to the state (the tidal bottoms within areas of the bays and rivers of Virginia that are capable of supporting oysters which biofilter Bay waters. Because tidal waters are considered waters of the State, almost all bottom aquaculture operations require a state lease. The participant must have control of the submerged land in the form of a lease or other documentation showing they have sufficient control to implement and manage the contracted activities).

Before Situation:

Declining numbers of reproducing native oysters results in less bilvalve filtering of the Chesapeake Bay and reduced water quality.

After Situation:

Shallow water habitat/shoreline reef, planted with oyster shells, 2,000-3,000 bushels planted per acre to a thickness of 2-5 shells thick; The resulting artificial reef functions to improve water quality as oyster spat find, attach and grow within the provided shells.

Scenario Feature Measure: Area planted

Scenario Unit: Acre

Scenario Typical Size: 1

Scenario Cost: \$3,597.00

Scenario Cost/Unit: \$3,597.00

Cost Details (by category):

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
Equipment/Installation						
Barge with crane and operator	2408	Barge to transport and place 1 ton bags of cultch to form oyster reef habitat.	Hour	\$365.20	4	\$1,460.80
Boat, 150 HP	2407	22 foot boat with 150hp motor used to place cultch to create reef habitat.	Hour	\$159.80	4	\$639.20
Materials						
Cultch	2409	Cultch material (used and/or slightly crushed, cleaned, medium to large sized shells). Includes materials only.	Ton	\$59.88	25	\$1,497.00