

**Practice: 391 - Riparian Forest Buffer**

**Scenario: #1 - Bare Root, All Shelters**

**Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. Typically used to plant bare-root trees and/or shrubs according to state specifications. Assumes all hardwood trees have shelters/protectors. Does not include weed barrier - use Mulching (484).

**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:** 1

**Scenario Cost:** \$2,600.50

**Scenario Cost/Unit:** \$2,600.50

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$38.19	8	\$305.52
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$31.47	8	\$251.76
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$3.88	8	\$31.04
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	\$11.62	24	\$278.88
<b>Labor</b>						
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	\$24.48	24	\$587.52
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	\$40.82	4	\$163.28
<b>Materials</b>						
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.82	250	\$205.00
Shrub, seedling or transplant, bare root, 18"-36"	1507	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.58	100	\$58.00
Tree shelter, solid tube type, 3-1/4" x 36"	1561	3-1/4" x 36" tree tube for protection from animal damage. Materials only.	Each	\$2.60	250	\$650.00
Stake, bamboo, 3/8" x 36"	1584	3/8" x 36" bamboo stakes to anchor items in place. Includes materials and shipping only.	Each	\$0.11	250	\$27.50
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	100	\$42.00

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**Scenario: #2 - Bare Root, Half Shelters**

**Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. Typically used to plant bare-root trees and/or shrubs according to state specifications. Assumes half of the hardwood trees have shelters/protectors. Does not include weed barrier - use Mulching (484).

**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:** 1

**Scenario Cost:** \$2,275.50

**Scenario Cost/Unit:** \$2,275.50

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$38.19	8	\$305.52
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	\$11.62	24	\$278.88
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$3.88	8	\$31.04
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$31.47	8	\$251.76
<b>Labor</b>						
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	\$40.82	4	\$163.28
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	\$24.48	24	\$587.52
<b>Materials</b>						
Tree shelter, solid tube type, 3-1/4" x 36"	1561	3-1/4" x 36" tree tube for protection from animal damage. Materials only.	Each	\$2.60	125	\$325.00
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.82	250	\$205.00
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	100	\$42.00
Stake, bamboo, 3/8" x 36"	1584	3/8" x 36" bamboo stakes to anchor items in place. Includes materials and shipping only.	Each	\$0.11	250	\$27.50
Shrub, seedling or transplant, bare root, 18"-36"	1507	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.58	100	\$58.00

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**Scenario: #3 - Bare Root, No Shelters**

**Scenario Description:**

Establish a buffer of trees and/or shrubs into a suitably prepared site to restore riparian plant communities and associated benefits. Typically used to plant bare-root trees and/or shrubs according to state specifications. Assumes none of the hardwood trees have shelters/protectors. Does not include weed barrier - use Mulching (484).

**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:** 1

**Scenario Cost:** \$1,950.50

**Scenario Cost/Unit:** \$1,950.50

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
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	\$11.62	24	\$278.88
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$38.19	8	\$305.52
Trailer, enclosed, small	1503	Small enclosed trailer (typically less than 30' in length) pulled by a pickup to transport materials and equipment. Truck not included.	Hour	\$3.88	8	\$31.04
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$31.47	8	\$251.76
<b>Labor</b>						
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	\$40.82	4	\$163.28
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	\$24.48	24	\$587.52
<b>Materials</b>						
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	100	\$42.00
Shrub, seedling or transplant, bare root, 18"-36"	1507	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.58	100	\$58.00
Tree, hardwood, seedling or transplant, bare root, 16-36"	1510	Bare root hardwood trees 18-36" tall. Includes materials and shipping only.	Each	\$0.82	250	\$205.00
Stake, bamboo, 3/8" x 36"	1584	3/8" x 36" bamboo stakes to anchor items in place. Includes materials and shipping only.	Each	\$0.11	250	\$27.50

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**Scenario: #4 - Small Container**

**Scenario Description:**

Plant small containerized trees and/or shrubs to restore riparian plant communities and associated benefits. Does not include weed barrier - use Mulching (484)

**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:** 1

**Scenario Cost:** \$6,337.20

**Scenario Cost/Unit:** \$6,337.20

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$38.19	32	\$1,222.08
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	\$11.62	48	\$557.76
Trailer, enclosed, large	1502	Large enclosed trailer (30' to 50' in length)pulled by a semi truck to transport materials and equipment. Truck not included.	Hour	\$5.81	16	\$92.96
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$31.47	16	\$503.52
<b>Foregone Income</b>						
Fl, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$334.10	1	\$334.10
<b>Labor</b>						
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	\$40.82	16	\$653.12
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	\$24.48	48	\$1,175.04
<b>Materials</b>						
Stakes, wood, 1" x 1" x 48"	1578	1" x 1" x 48" wood stakes to fasten items in place. Includes materials only.	Each	\$2.02	122	\$246.44
Tree shelter, solid tube type, 4" x 48"	1566	4" x 48" tree tube for protection from animal damage. Materials only.	Each	\$4.10	122	\$500.20
Tree, conifer, seedling or transplant, potted, 1/2 to 1 gal.	1536	Potted conifer, 1/2 to 1 gal. Includes materials and shipping only.	Each	\$4.42	50	\$221.00
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	\$4.84	122	\$590.48
Shrub, seedling or transplant, potted, 1/2 to 1 gal.	1526	Potted shrub, 1/2 to 1 gal. Includes materials and shipping only.	Each	\$4.81	50	\$240.50

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**Scenario: #5 - High Risk Areas**

**Scenario Description:**

Installation of a riparian buffer on annually tilled cropland which lacks a native seed source of woody plants. In addition, ice scour, droughty soils, undercut banks, and shorter growing seasons create a situation where increasing the planting density improves the success of the buffer in difficult conditions by allowing for mortality.

**Before Situation:**

The riverbank lacks woody vegetation and is in sod or corn which creates a situation where topple along the river bank is common on an annual basis at a rate of up-to 10 feet per year or more. The riverbank is vertical or undercut. Impacts to water quality and wildlife habitat result from a lack of woody riparian vegetation, due to higher water temperatures, siltation, excess nutrients and a lack of escape or nesting cover.

**After Situation:**

Planted woody vegetation begins to shade competing herbaceous vegetation, allowing native regeneration, and developing a faster response to reducing bank erosion. As larger deeply rooted trees and shrubs slide into the river, the riverbank returns to a more normal angle of repose. Bank erosion isn't stopped on outside bends of the river, but the erosion is slowed to a more normal rate.

**Scenario Feature Measure: Area of Planting**

**Scenario Unit:** Acre

**Scenario Typical Size:** 1

**Scenario Cost:** \$7,437.10

**Scenario Cost/Unit:** \$7,437.10

**Cost Details (by category):**

Component Name	ID	Component Description	Unit	Price (\$/unit)	Quantity	Cost
<b>Equipment/Installation</b>						
Truck, Pickup	939	Equipment and power unit costs. Labor not included.	Hour	\$38.19	16	\$611.04
All terrain vehicles, ATV	965	Includes equipment, power unit and labor costs.	Hour	\$31.47	16	\$503.52
Trailer, enclosed, large	1502	Large enclosed trailer (30' to 50' in length)pulled by a semi truck to transport materials and equipment. Truck not included.	Hour	\$5.81	16	\$92.96
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	\$11.62	48	\$557.76
<b>Foregone Income</b>						
FI, Corn Dryland	1959	Dryland Corn is Primary Crop	Acre	\$334.10	1	\$334.10
<b>Labor</b>						
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	\$24.48	48	\$1,175.04
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	\$40.82	16	\$653.12
<b>Materials</b>						
Tree, conifer, seedling or transplant, potted, 1/2 to 1 gal.	1536	Potted conifer, 1/2 to 1 gal. Includes materials and shipping only.	Each	\$4.42	100	\$442.00
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	\$4.84	236	\$1,142.24
Tree shelter, solid tube type, 4" x 48"	1566	4" x 48" tree tube for protection from animal damage. Materials only.	Each	\$4.10	236	\$967.60
Stakes, wood, 1" x 1" x 48"	1578	1" x 1" x 48" wood stakes to fasten items in place. Includes materials only.	Each	\$2.02	236	\$476.72
Shrub, seedling or transplant, potted, 1/2 to 1 gal.	1526	Potted shrub, 1/2 to 1 gal. Includes materials and shipping only.	Each	\$4.81	100	\$481.00