Phosphorus Best Management Practices

Protecting Water Quality

Streambank and Shoreline Protection

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Definition:

Vegetative and/or structural treatment(s) used to stabilize and protect banks of streams or constructed channels and shorelines of lakes, reservoirs or estuaries.

Purposes:

- Prevent the loss of land or damage to land uses or other facilities adjacent to the banks, including the protection of known historical, archeological and traditional cultural properties
- Maintain the flow capacity of streams and constructed channels or the storage capacity of lakes, reservoirs and estuaries, while reducing off-site or downstream effects of sediment resulting from bank erosion
- Enhance the stream corridor for fish and wildlife habitat, aesthetics and recreation

How Does This Practice Work?

A variety of structural and vegetative measures are available for controlling erosion on streambanks and shorelines. The appropriate structural and vegetative measures are dictated by site-specific conditions. This practice usually performs best to reduce streambank and shoreline erosion when it is combined with other best management practices.

Where This Practice Applies and Its Limitations:

This practice applies to measures used to stabilize and protect the banks of streams, lakes, reservoirs, estuaries, excavated channels and shorelines where they are susceptible to erosion. It applies to controlling bank erosion with structural and vegetative measures that protect banks, as well as influencing stream form and sediment transport characteristics where the failure of erosion control measures will not create a hazard to life or result in serious damage to property.

Effectiveness:

Streambank and shoreline erosion control measures have been successfully used to reduce bank erosion and sediment transport for many years.

Controlling streambank and shoreline erosion decreases phosphorus delivery to streams, lakes, reservoirs and estuaries, since phosphorus is often attached to soil particles. Using streambank and shoreline erosion control measures to protect riparian areas can significantly reduce phosphorus transport by capturing runoff containing phosphorus from adjacent agricultural fields.

Cost of Establishing and Putting the Practice in Place:

Streambank and shoreline erosion control measures vary greatly in cost of implementation, due to the wide range of erosion processes that occur in these areas. Table 1 shows typical costs for implementing various streambank and shoreline erosion control measures.

Operation and Maintenance:

The anticipated life of this practice can vary greatly and is dependent on how well it is maintained. For this reason, it is important to develop an operation and maintenance plan that is consistent with the purposes of this practice, its intended life, safety requirements and the criteria for its design. Items to be considered in developing an operation and maintenance plan are as follows:

- Check all structural sections for accelerated weathering and displacement. Any damage should be repaired immediately in accordance with the original specifications.
- Maintain vigorous growth of vegetation. This includes reseeding, fertilization and weeding when necessary.
- Investigate all settlement or cracks in the soil to determine the cause and immediately repair them.
- Maintain fences to prevent unauthorized or livestock entry.
- Remove debris that may cause damage to the streambank protection measures.
- Eradicate or otherwise remove all rodents or burrowing animals and immediately repair any damage caused by their activity.
- Immediately repair any vandalism, vehicular or livestock damage to original specifications.

References:

NRCS Website:
http:///www.nrcs.usda.gov

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Table 1
Cost of Streambank Erosion Control Measures

Erosion Control Measure	Typical Unit Cost of Implementation	Units
Brush Mattresses w/Facine	$ 10.00	Lineal Feet
Clump Planting	5.00	Each Planting
Compacted Earthfill	2.00	Cubic Yard
Excavation, Common	1.25	Cubic Yard
Facines (6 In Bundles)	6.36	Feet
Rock-filled Wire Basket, Gabion	95.00	Cubic Yard
Geotextile	2.00	Square Yard
Gravel, Filter Material	20.00	Cubic Yard
Herbaceous Stock, Containerized	1.00	Each
Herbicides, including Application	10.00	Acre
Instream Rock Structures (Barbs, Rock Weirs)	45.00	Cubic Yard
Logs	10.00	Feet
Log Weirs	100.00	Each
Packing Seedbed	5.00	Acre
Partial Rock Riprap Stabilization	25.00	Cubic Yard
Rock-filled Wire Basket, Gabion	95.00	Cubic Yard
Rock Barbs	25.00	Cubic Yard
Rock Riprap	40.00	Cubic Yard
Root Wads w/Rock	15.00	Lineal Feet
Seed and Seeding	1.00	1,000 Square Feet
Seed and Seeding Preparatory Cover or Nurse Crop	8.00	Acre
Shaping Streambanks	5.00	Lineal Feet
Sodding	400.00	1,000 Square Feet
Sprigging	75.00	1,000 Square Feet
Topsoil Stockpiling and Replacing	9.00	1,000 Square Feet
Tree Browse Protection, Tubing or Netting	0.50	Each
Tree Protectors, Cares, Shelters	1.50	Each
Tree Revetments	10.00	Lineal Feet
Tree/Shrub Planting, Live Stake, 2-inch diameter, 3-4 feet long	2.00	Each
Vertical Bundles–Dormant Wood Cutting	5.00	Each

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