

Practice: 521A - Pond Sealing or Lining, Flexible Membrane

Scenario: #1 - Flexible Membrane - Uncovered without liner drainage or venting

Scenario Description: Installation of a flexible geosynthetic membrane liner, uncovered, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes a geotextile or soil cushion to protect the liner from subgrade damage. Associated practices include PS378 Pond, PS313 Waste Storage Facility.

Before Situation: In-place soils at site exhibit seepage rates in excess of acceptable limits.

After Situation: Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

Scenario Feature Measure: Surface area of Liner Material (including anchorage)

Scenario Unit: Square Yard

Scenario Typical Size: 2420

Total Scenario Cost: \$25,073.21

Scenario Cost/Unit: \$10.36

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Equipment Installation

Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.31	2420	\$5,587.96
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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	\$28.86	40	\$1,154.35
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	\$110.24	32	\$3,527.59

Materials

Synthetic Liner, 40 mil	1387	Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only.	Square Yard	\$6.12	2420	\$14,803.30
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Scenario: #2 - Flexible Membrane - Uncovered with liner drainage or venting

Scenario Description: Installation of a flexible geosynthetic membrane liner, uncovered, to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes a geotextile or soil cushion to protect the liner from subgrade damage, and liner drainage or venting. Associated practices include PS378 Pond, PS313 Waste Storage Facility.

Before Situation: In-place soils at site exhibit seepage rates in excess of acceptable limits.

After Situation: Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

Scenario Feature Measure: Surface area of Liner Material (including anchorage)

Scenario Unit: Square Yard

Scenario Typical Size: 2420

Total Scenario Cost: \$32,646.75

Scenario Cost/Unit: \$13.49

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Equipment Installation

Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.31	2420	\$5,587.96
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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	\$28.86	40	\$1,154.35
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	\$110.24	32	\$3,527.59

Materials

Geonet	1778	Geosynthetic drainage liner, typically HDPE of 300 mil thickness. Includes materials and shipping only.	Square Yard	\$3.13	2420	\$7,573.54
Synthetic Liner, 40 mil	1387	Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only.	Square Yard	\$6.12	2420	\$14,803.30

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Scenario: #3 - Flexible Membrane - Covered without liner drainage or venting

Scenario Description: Installation of a flexible geosynthetic membrane liner to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes 1 foot of soil cover for liner protection, and a geotextile or soil cushion to protect liner from subgrade damage. Associated practices include PS378 Pond, PS313 Waste Storage Facility.

Before Situation: In-place soils at site exhibit seepage rates in excess of acceptable limits.

After Situation: Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

Scenario Feature Measure: Surface area of Liner Material (including anchorage)

Scenario Unit: Square Yard

Scenario Typical Size: 2420

Total Scenario Cost: \$28,071.67

Scenario Cost/Unit: \$11.60

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Equipment Installation

Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yard	\$3.72	807	\$2,998.46
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.31	2420	\$5,587.96

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	\$28.86	40	\$1,154.35
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	\$110.24	32	\$3,527.59

Materials

Synthetic Liner, 40 mil	1387	Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only.	Square Yard	\$6.12	2420	\$14,803.30
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Scenario: #4 - Flexible Membrane - Covered with liner drainage or venting

Scenario Description: Installation of a flexible geosynthetic membrane liner to reduce seepage from ponds or waste storage impoundment structures. Practice implementation includes 1 foot of soil cover for liner protection, a geotextile or soil cushion to protect liner from subgrade damage, and liner drainage or venting. Associated practices include PS378 Pond, PS313 Waste Storage Facility.

Before Situation: In-place soils at site exhibit seepage rates in excess of acceptable limits.

After Situation: Water conservation and environmental protection provided by limiting seepage losses from ponds or waste storage impoundments.

Scenario Feature Measure: Surface area of Liner Material (including anchorage)

Scenario Unit: Square Yard

Scenario Typical Size: 2420

Total Scenario Cost: \$35,645.21

Scenario Cost/Unit: \$14.73

Cost Details

Component Name	Id	Description	Unit	Cost	Qty	Total
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Equipment Installation

Earthfill, Roller Compacted	49	Earthfill, roller or machine compacted, includes equipment and labor	Cubic Yard	\$3.72	807	\$2,998.46
Geotextile, woven	42	Woven Geotextile Fabric. Includes materials, equipment and labor	Square Yard	\$2.31	2420	\$5,587.96

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	\$28.86	40	\$1,154.35
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	\$110.24	32	\$3,527.59

Materials

Geonet	1778	Geosynthetic drainage liner, typically HDPE of 300 mil thickness. Includes materials and shipping only.	Square Yard	\$3.13	2420	\$7,573.54
Synthetic Liner, 40 mil	1387	Synthetic 40 mil HDPE, LLDPE, EPDM, etc membrane liner material. Includes materials and shipping only.	Square Yard	\$6.12	2420	\$14,803.30