



Muscle Wall

resilient stormwater and erosion control management

ENGEO CASE STUDY

ENGEO performed a case study into the use of Muscle Wall (MW) on steep slopes for a project site in Northern California.

Nine temporary Muscle Wall basins were placed along a steep unvegetated hillside with grades up to 50%.

The goal was to detain as much rainfall runoff as possible to reduce the volume of stormwater leaving the project site.

DEPLOYMENT

4,000 linear feet of 4' tall MW was ordered for the project, which arrived on 7 truck trailers (95 pieces per trailer).

Each 8'x6' pallet contained 12 pieces.

Time to deploy 500' of MW:

- 9 hours (if grading was needed to level the surface)
- 5 hours (without grading)



RESULTS

MW basins were successful at detaining large volumes of stormwater and sediment while remaining stable for varying slope steepnesses, surface types, and barrier configurations.

Water would eventually overtop or seep under the barrier pieces, but at a low discharge rate that could be managed downstream.

Muscle Wall proven resilient

DISCUSSION

Barrier pieces can be left unfilled when placed across a haul road to allow contractor access during dry weather.

The ratio of water filled to unfilled barrier pieces should increase as slope steepness increases.

Combining a MW barrier with an excavated sediment basin and lining with plastic held back large volumes of water without seepage occurring.

A discharge port can be used to control outflow. A hose can be connected and fitted with a bag filter system to reduce turbidity before discharge offsite.

MW was also used as a robust perimeter control, stockpile berm, retaining wall, and diversion channel.

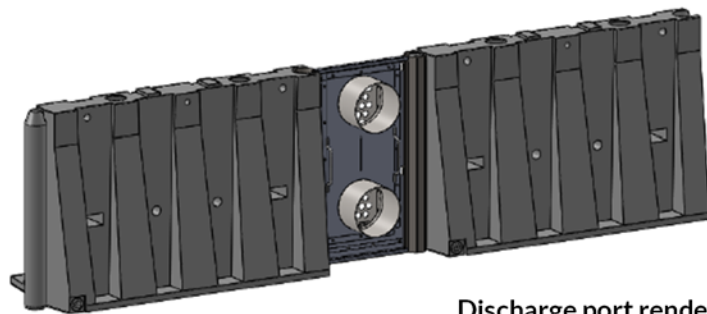
CONCLUSION

MW proved to be a resilient stormwater and erosion control management option.

MW is expected to withstand multiple storm seasons of continued use due to its durable polyethylene material. It can be used year after year for longer duration projects. For shorter duration projects, it can be moved from one project site to the next.



MW placed across haul road



Discharge port rendering

MUSCLE WALL EXCELS FOR SITES WITH THE FOLLOWING CONDITIONS

- ✓ Earthwork occurring throughout rainy season
- ✓ Highly erodible soils
- ✓ Consequences for offsite sediment discharge
- ✓ Steep terrain

MW used as a robust perimeter control and retaining wall



MW used as a diversion channel



Bowman
Construction
Supply Inc.



Quick
Supply Co.



Cascade
GEOSYNTHETICS

LOCATIONS & CONTACT INFO

ASP ENTERPRISES

aspent.com
salesasp@aspent.com

BOWMAN CONSTRUCTION SUPPLY

bowmanconstructionsupply.com
salesbcs@bowmanconstructionsupply.com

QUICK SUPPLY CO.

quicksupplyco.com
salesquick@quicksupplyco.com

CASCADE GEOSYNTHETICS

cascadegeos.com
salescascade@cascadegeos.com

St. Louis, MO 636.343.4357
Omaha, NE 402.861.8579
Kansas City, MO 816.554.1191
Wichita, KS 316.393.1554

Denver, CO 303.696.8960
Colorado Springs, CO 719.257.7840
Loveland, CO 970.535.0863

Des Moines, IA
515.289.1271

Portland, OR
971.339.1020

SOLUTIONS WE SUPPLY

GEOSYNTHETICS

Filter Fabrics

Stabilization Fabrics

Geogrids

- Road Grids
- Wall Grids
- Slope Stabilization

Specialty Fabrics

Composite Geomembranes

- GCLs, PVC, HDPE, LLDPE, EPDM, Granular Bentonite

SEDIMENT CONTROL

Inlet Protection

- Grated Inlet, Curb Inlet, Area Inlet Protection

Ditch Checks

- Triangle Silt Dike
- GeoRidge

Perimeter Protection

- High and Low-Porosity Silt Fence, Straw Wattles, Silt Socks
- Safety Fence

Flocculants & Water Treatment

- Polymer-Based & Natural Flocculants

Sediment Basin Skimmers

Dewatering Bags

Trackout Control

- FODS
- Rumble Grates

Turbidity Curtains

EROSION CONTROL

Basic Hydraulically Applied Mulches

- Wood
- Paper
- Blends
- Straw

High-Performance Hydraulically

Applied Products

- BFM
- FGM
- Additives & Tackifiers

Temporary Erosion Control Blankets

- Coir & Jute Mat/Nettings
- Short-Term ECBs
- Extended-Term ECBs

Permanent Erosion Control Blankets

- Turf Reinforcement Mats
- HP-TRMs
- Anchor Reinforced Vegetation System

Structural BMPs

- Transition Mats
- Geoweb Cellular Confinement
- Composite Vegetated Armor System
- Flex MSE Vegetated Wall System
- Articulated Concrete Block
- Gabions
- Grout-Filled Geotextile Mats

Vegetation Establishment

- Native Seed & Turf Seed
- Fertilizers
- Organic Soil Additives
- Stratavault Soil Cells

STORMWATER MANAGEMENT

Water Quality

- Inlet Filter Boxes
- Pre-Treatment Chamber
- Nutrient Separating Baffle Boxes
- High-Flow Biofiltration Media
- Hydrodynamic Separators
- Stratavault

Water Quantity

- Modular Underground Storage Systems
- Chamber Detention Systems

Drainage

- HDPE Swale Liner
- Pipe & Fittings
- Drainage Composites
- Strip Drain

Inlet Structures

- PVC
- Drain Basins, In-Line Drains
- Landscape

Permeable Pavers

- Permeable Articulating Concrete Block
- Grass Pavers
- Gravel Pavers
- Concrete Pavers

SPECIALTY

Natural & Synthetic Coir Fiber Logs

Vegetated Reinforced Soil Slopes

Soil Anchors

Root Barrier System

AquaBlok

Muscle Wall

We are full line distributors of construction materials for all project types. Contact us for assistance with a project. From specification and development to installation and completion, we're here to help with all of your site solution needs.

GEOSYNTHETICS | EROSION CONTROL | STORMWATER MANAGEMENT
SEDIMENT CONTROL | REVEGETATION & SOIL AMENDMENTS