“Setting the stage for a natural shoreline healing”
Lake Rip Rap, Inc.

2010 Illinois Lake Management Convention

“Erosion Control for Residential Shorelines”
“Erosion Control for Residential Shorelines”

Seawall Maintenance
An Alternative to Seawalls
Unusual Methods
Shoreline Patios
Soil Filled Revetment with Native Seeding
Lean Revetments
Mechanical Riprap Boats
Steel Seawall Maintenance
All structural sea-walls (bulkheads) are susceptible to toe erosion, regardless of the material used to build them.
Anchor holds the top of this steel seawall in place.

Soil mass holds the toe in place.
Steel Seawall Maintenance

As the soil mass is lost to erosion, the toe starts to move.
As soil continues to erode, stability is lost and the toe kicks out.
This repair would be much less expensive than replacing the seawall & would include all of the beneficial characteristics of energy dissipating riprap.
A small amount of riprap on fabric could have prevented the failure.
A steel seawall failure due to toe erosion & kick-out.
The adjacent sections of the wall are temporarily holding the failure in place.
Mid-America Dredging Crew

using a Macoupin Boat

An affordable repair with no damage to the trees or lawn.
Preventative Maintenance at Lake Wildwood
This owner was concerned with toe protection, energy dissipation & safety for the grandchildren.

The water at this location was over 6 feet in depth.
Failing steel seawall under a boat house.
Soil loss behind the seawall
Rusted steel seawalls can be restored by an application of riprap in front of the wall.
Toe Protection for wooden seawalls

Not to exceed 27 cubic feet per lineal foot

Filter fabric

Small gap

First sign of failure

Wave energy
Wooden seawalls lose their effectiveness with very little toe erosion.
A properly designed and well built wooden seawall can be effective.

1. Well anchored, pressure treated lumber, certified for “ground contact.”
2. Filter fabric with free draining stone behind the wall.
Failed Wooden Seawall
This wall was built, failed, re-faced with new wood then failed a second time.
This wall was also failing for a second time… when it was stabilized.
This wall was also failing for a second time... when it was stabilized.

Restored Wooden Seawall
This wall was also failing for a second time… when it was stabilized.

Restored Wooden Seawall
However…

This seawall needs toe protection soon, but it’s not too late.

Weep holes relieve hydrostatic pressure behind this concrete seawall.
All seawalls (bulkheads) need flexible toe protection.

A riprap apron on filter fabric provides very economical toe protection for seawalls.
Unusual Attempts to Control Shoreline Erosion
Recycled Highway Guard Rail
Typical results with a paved shoreline.
Typical results with a paved shoreline.
Riprap toe protection improves the effectiveness of this paved shoreline.
Well…
part of it survived
1989 - This property owner put a lot of time, effort & money into this shoreline, unfortunately, it was not effective.
1989 - This property owner put a lot of time, effort & money into this shoreline, unfortunately, it was not effective.
20 years after riprap application

Same location at low pool - 2009
An Improved Alternative to seawalls.
A Seawall Alternative

Typical Section
After
Mid-America Dredging, Inc.
www.MacoupinBoats.com
Placing the rock base on filter fabric
Actually the “Retaining Wall” is more of an edging with riprap on one side and soil on the other.

Treated Timber Retaining Wall with Anchors

Note: Pressure Treatment should be Certified for “Ground Contact” with a Manufacturer’s Guarantee
Additional Stone Added to Secure Anchors
Fabric Inside the Retaining Wall prevents soil loss
Securing Filter Fabric to Outside of the Retaining Wall
Riprap on 2h:1v slope...

1. Dissipates wave energy
2. Provides safety for small children, pets and non-swimmers
3. Reinforces the Retaining Wall
4. Provides Interstitial Habitat
Ready for Seeding

Note: Total fill below OHM
0.95 cubic yards/ lineal foot
Shoreline Patios
Base compaction is critical with this design. Built in 4” layers with repeated wetting and compacting.
A stairway was added later.

Lake Wildwood
To reduce the overall cost, ordinary stone riprap was used with only a single layer of the more expensive boulders.
Lean Riprap Revetment with Natural Plant Colonization
Before Natural Plant Colonization After 10 years

Lake Rip Rap, Inc.
Newly Built

Natural Plant Colonization After 10 years
Sunset Lake
Lean Revetment
after 15 years

This Lean Revetment has simply dissipated the wave energy and …
“Set the stage for a natural shoreline healing”.

Lake Rip Rap, Inc.

Built: 1994
Photographed: 2009
Before

Natural Plant Colonization
After 5 years
Before treatment, huge quantities of soil were entering the lake annually.

Natural Plant Colonization - after 7 years.
Can you tell which photo shows the natural shoreline

A lean application of riprap is completely effective and has a very pleasing natural appearance.
Natural Shoreline

Kinkaid Lake, Murphysboro, Illinois

Constructed revetment.

Gillespie New Lake, Gillespie, Illinois
Properly applied and maintained, riprap on filter fabric:

1. *positively* stops wave induced shoreline erosion & bank retreat
2. reduces sedimentation & improves water quality
3. provides interstitial habitat
4. does not reflect wave energy
5. does not impede wildlife access
6. is not compromised by fluctuations of the water level
7. is the least expensive method of shoreline erosion control
8. provides stable conditions for a natural healing and re-vegetation of the shoreline

With no excavation, no environmental damage and no heavy equipment on the bank.
It appears as though this shoreline was never eroded…

But in fact, it had a 6 ft. high bank at the time of construction.

The bank has healed by natural slope reduction and natural plant colonization.
Unprotected Shoreline
This area was not treated because at the time of construction (1999), the erosion was very slight, in this section.

Lean Revetment
After 10 years

Remarkable Success at less than $40 per foot.
The Lake Rip Rap Lean Revetment is quick and easy to build using Macoupin Mechanical Boats
Natural Plant Colonization

Before

After 7 years

Lake Rip Rap, Inc.
www.LakeRiprap.com
217-899-9706
Soil Filled Revetment with Native Seeding
Volunteers at Sunset Lake

Seven tons of riprap…
three tons of volunteers.
What’s new at Macoupin Boats
Macoupin Mechanical Boats

Proven by performance at Otter Lake…
Auto-feeder dispenses a full load of riprap in 3 minutes

Prototype for the next generation of Macoupin Mechanical Boats
Introducing the:

Macoupin 310

A smaller version, with a payload of 10 tons, built for residential work.

Nearing completion and will be ready for launch this spring.
Thanks for your interest in Natural Shoreline Healing.
Questions?

Macoupin Boats a division of Lake Rip Rap, Inc.

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