Coastwide DEMONSTRATION PROJECTS

Project Number	Project Name	Presenter
Demo-01	EcoSystems Wave Attenuator Demo Project (presented in Region 4, 3, 2, & 1)	David Walter, Walter Marine; Orange Beach, Alabama
Demo-02	BioRock Reef Demo Project	John Foret, NOAA
Demo-03	Bayou Backer Demo Project (presented in Region 3 & 1)	John Foret, NOAA and Joe Lazaro, Grastic International
Demo-04	Evaluation of Viper Wall System Demo Project (presented in Region 3, 2, &1)	Vincent Liner, Viper Services
Demo-05	Non-Rock Alternatives to Shoreline Protection Demo Project	Loland Broussard, NRCS
Demo-06	Pump Vacuum Systems Patented Jetpump Powered by Water Pressure-Air Demo Project	Ricky Dawson, Pump Vacuum Systems, Inc.; Clinton, LA
Demo-07	Submersible Concrete Barge Breakwater for the South Lafourche Parish, LA Demo Project	Windell Curole, Lafourche Parish CZM Administrator
Demo-08	Benefits of Limited Design/Unconfined Beach Fill for Restoration of Louisiana Barrier Islands Demo Project	Kenneth Teague, EPA

EcoSystems

WAVE ATTENUATOR
FOR
SHORELINE PROTECTION

Designed by Walter Marine

Over 22 years experience in manufactured structures for ocean environments

EcoSystems started with an outside-the-box design

Limestone Rock

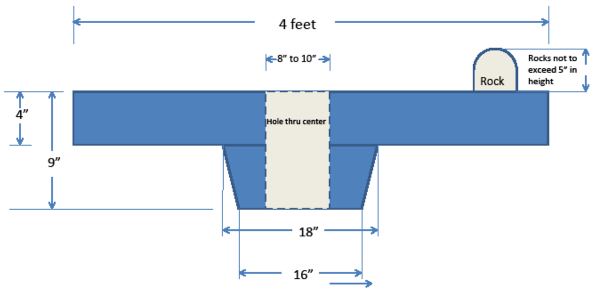
Environmentally friendly, perfectly matches seawater's PH and durable to withstand the worst of sea conditions

Discs

Limestone rocks are imbedded in a molded concrete disc

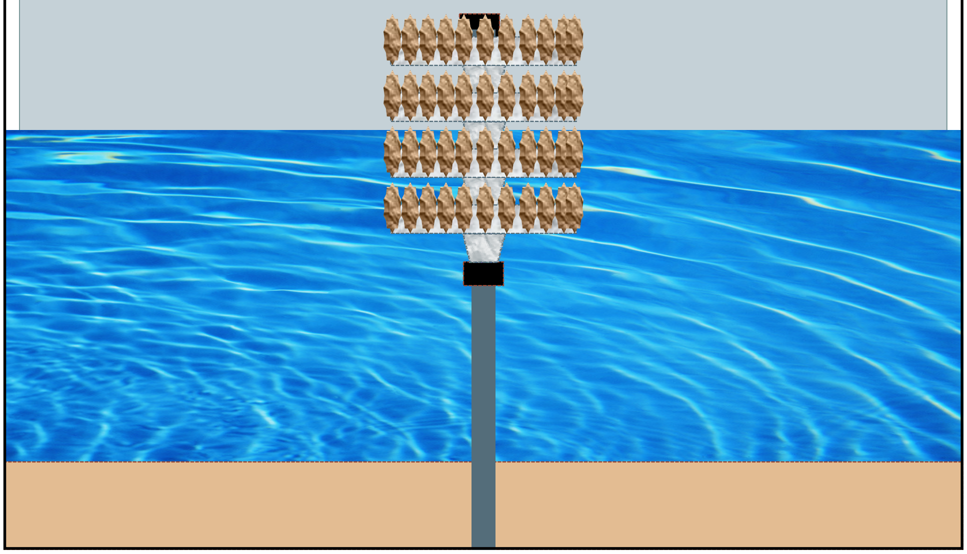
Concrete Disc Specifications

4,000 concrete mix with limestone aggregate
Weight 600 lbs

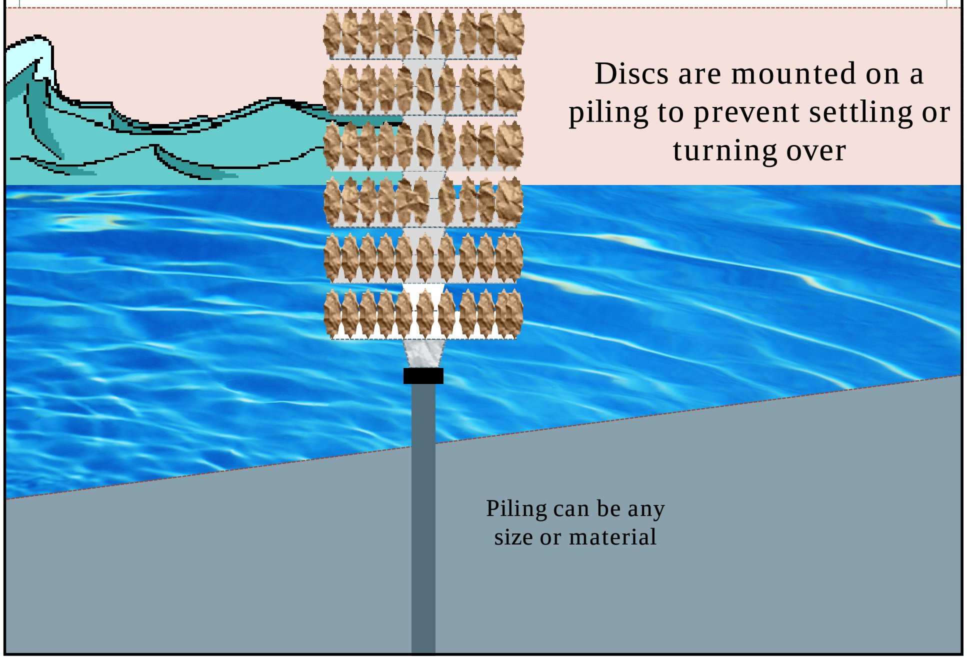


EcoSystem Disc

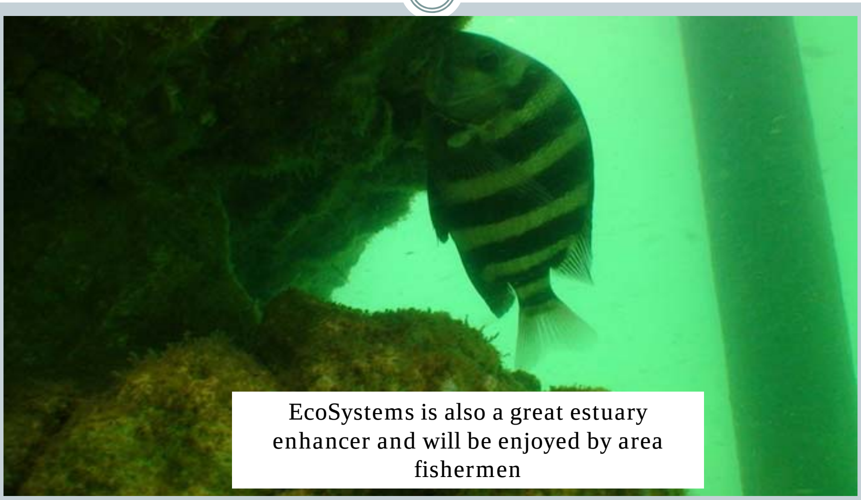
Installing EcoSystems

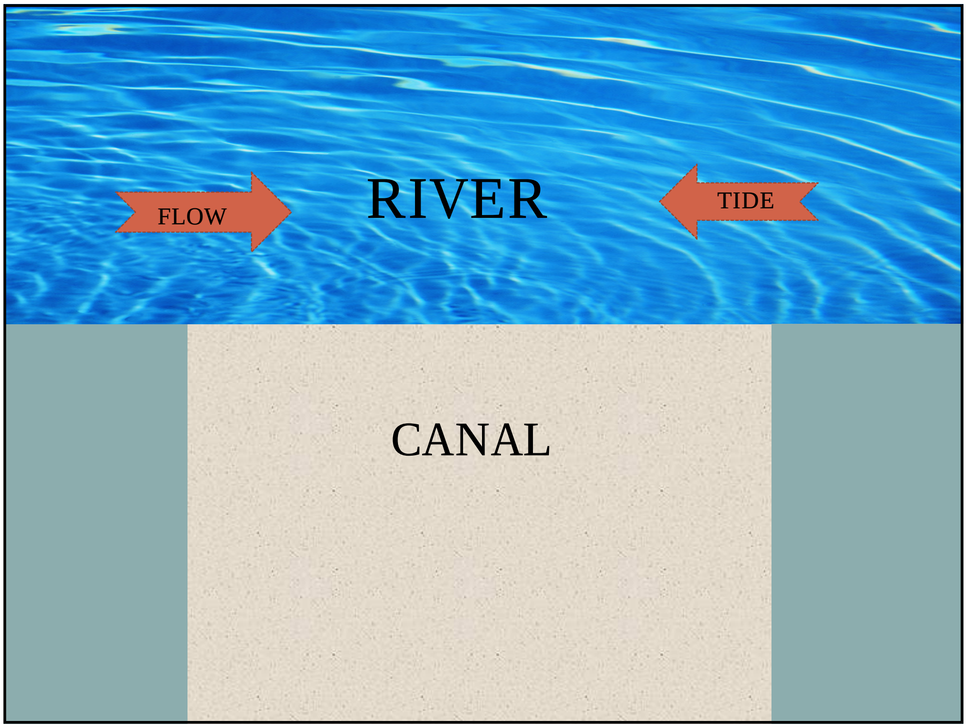


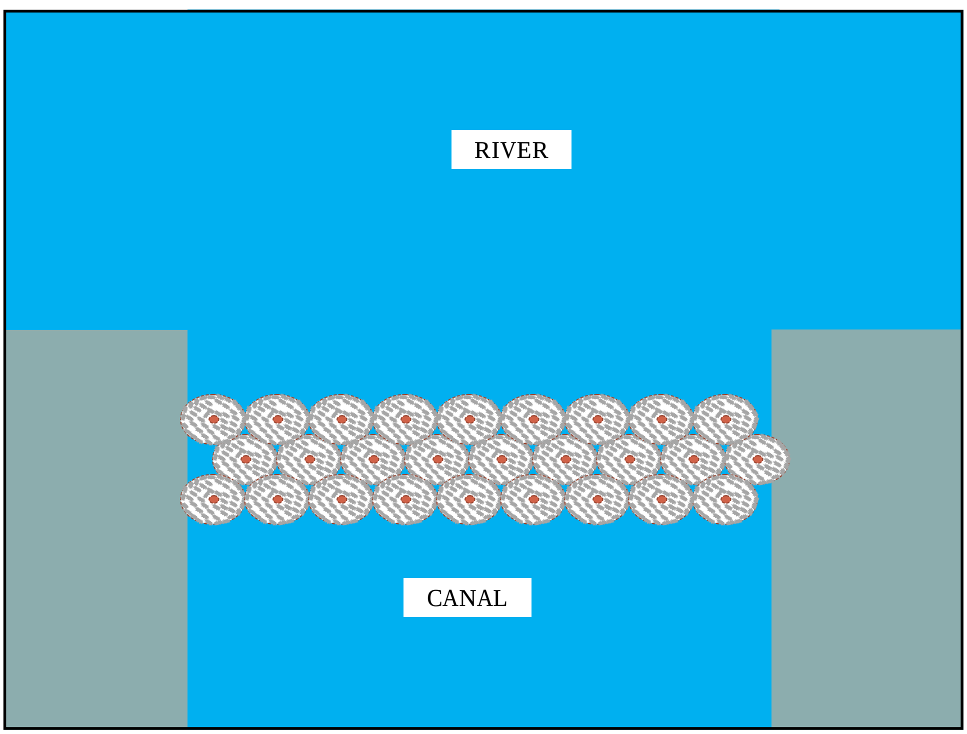
Innovative Anchoring System

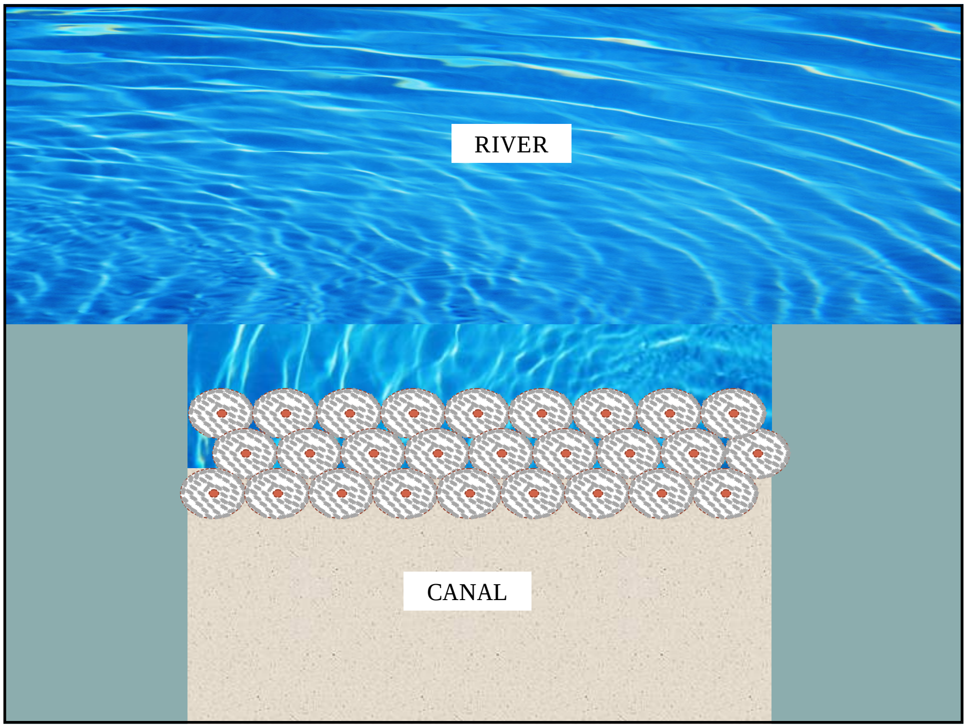


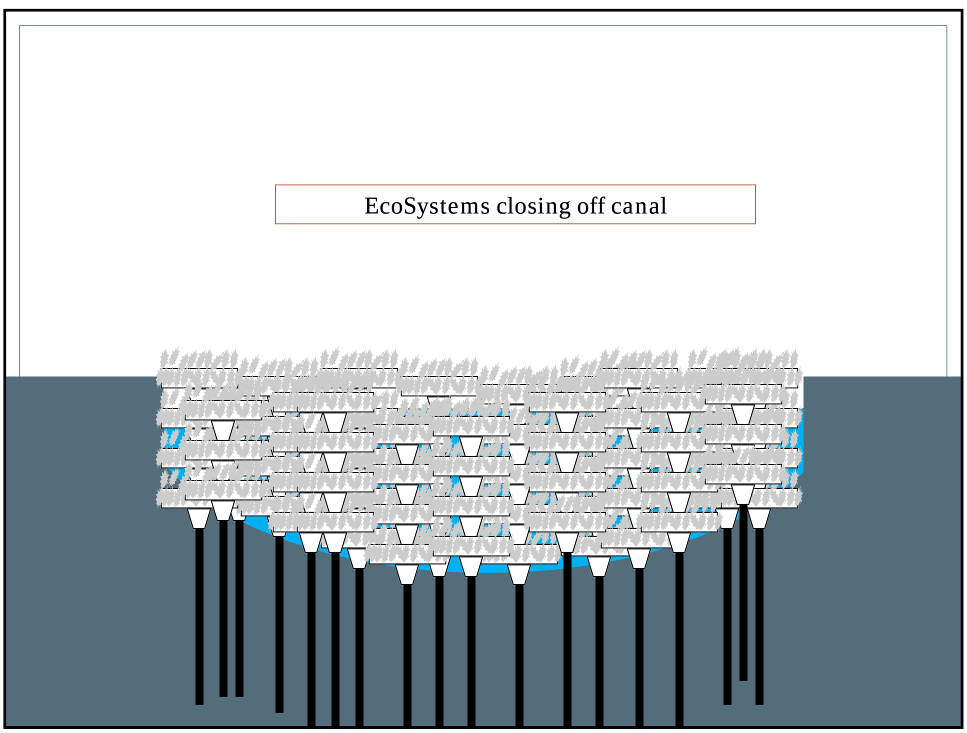
Added Benefit

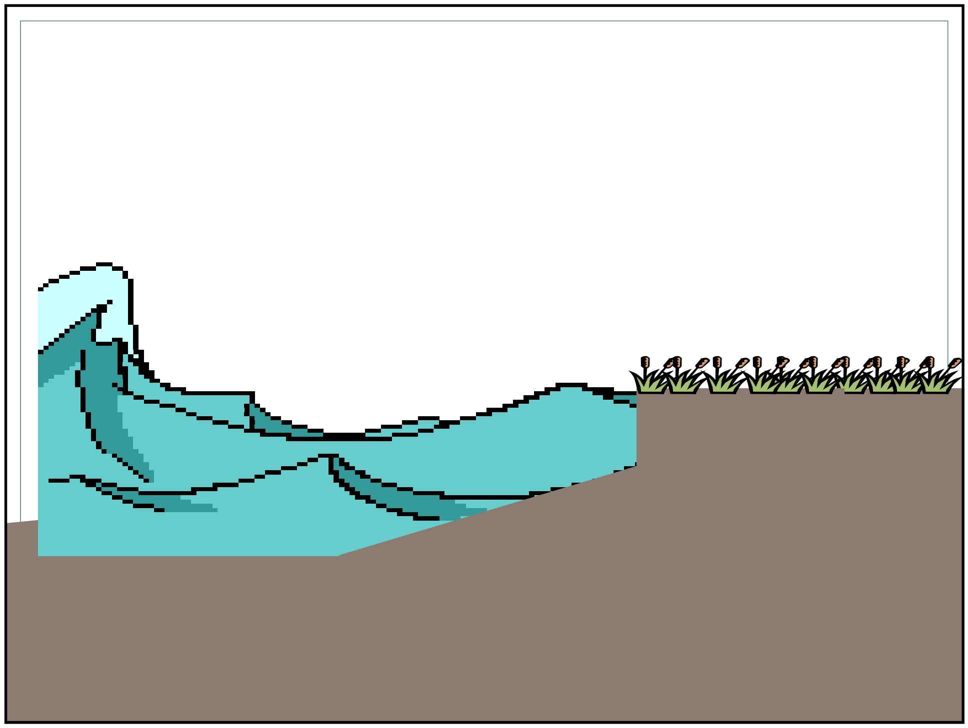


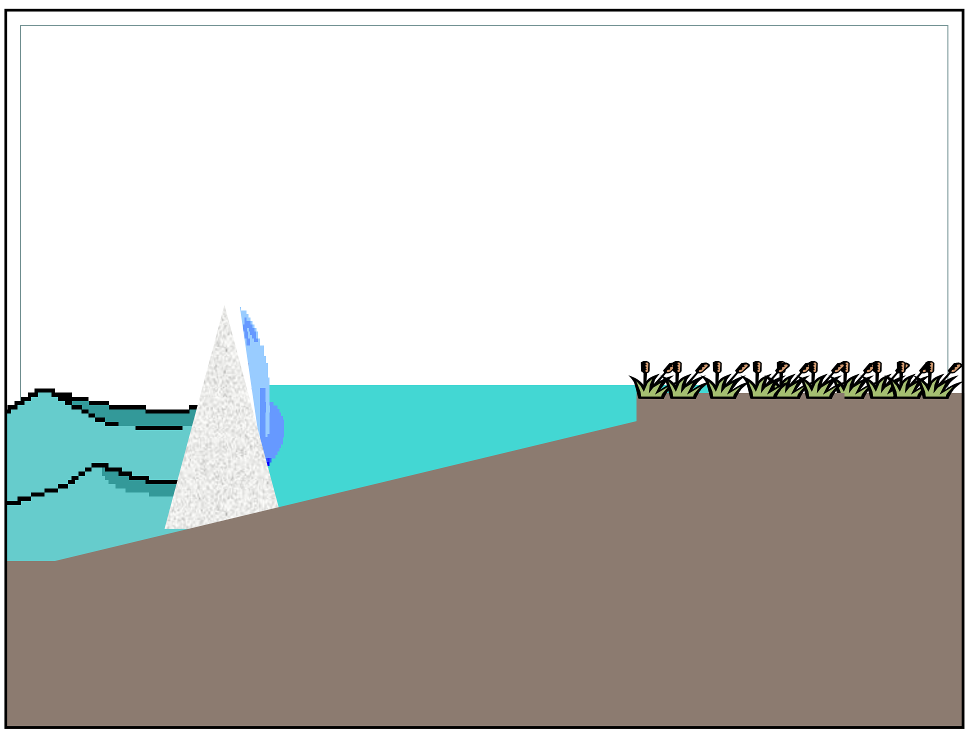

FLOW
RIVER
TIDE
CANAL

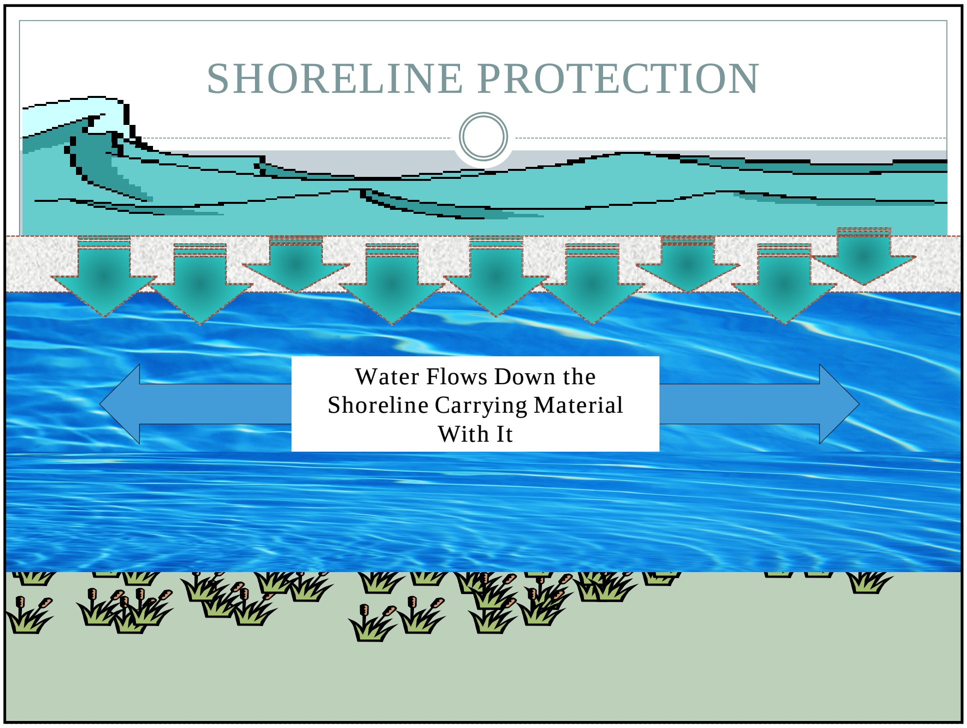

RIVER
CANAL

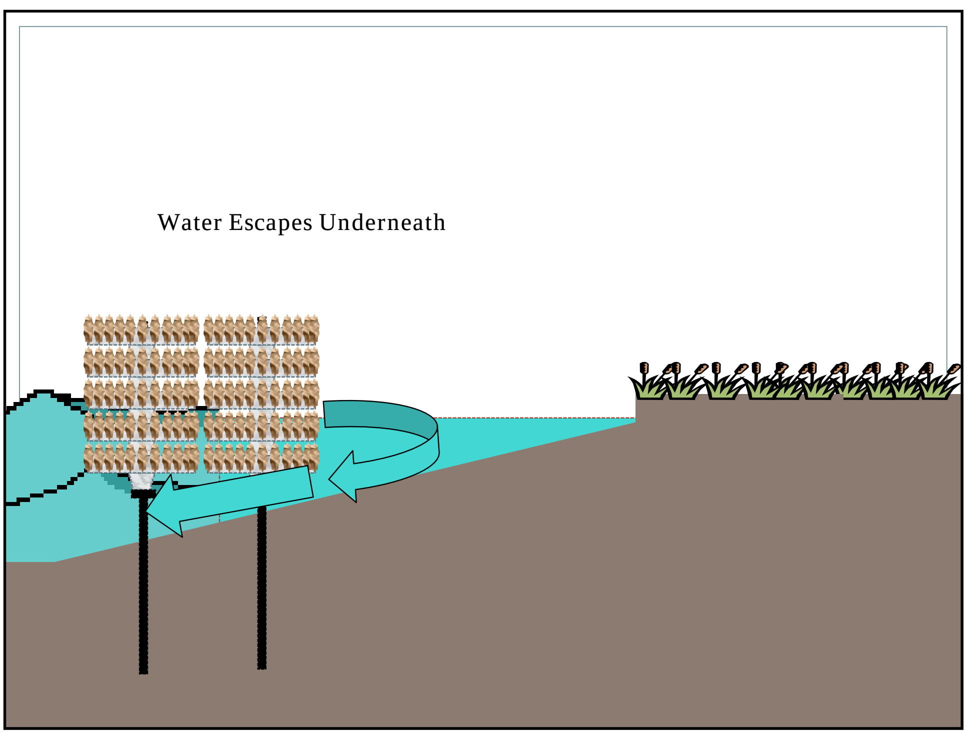

RIVER
CANAL

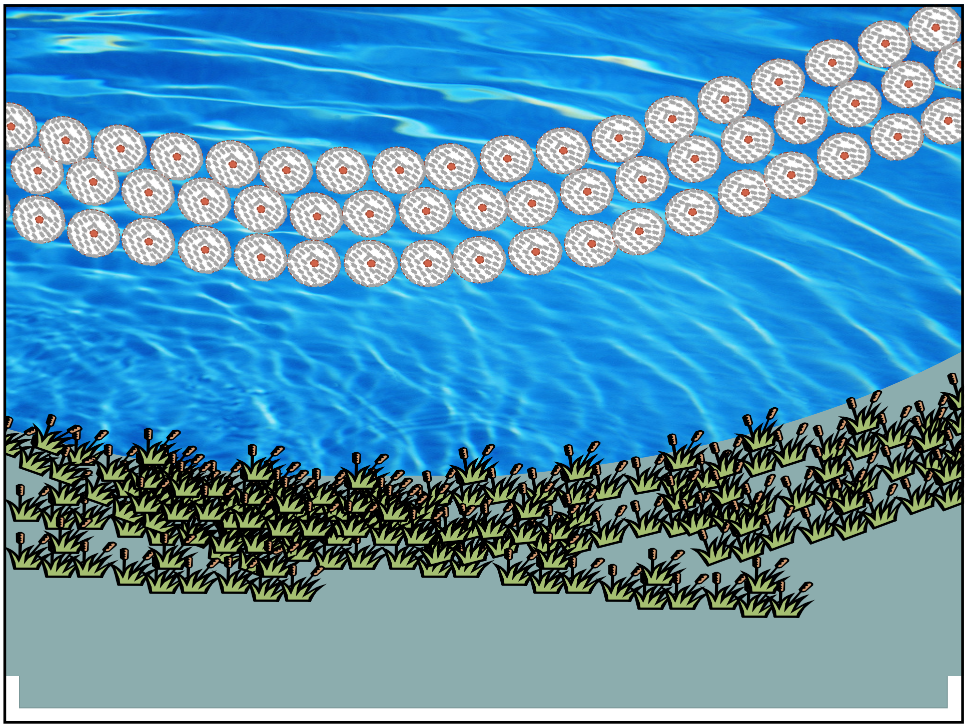

EcoSystems closing off canal






SHORELINE PROTECTION
Water Flows Down the
Shoreline Carrying Material
With It


Water Escapes Underneath



PILING

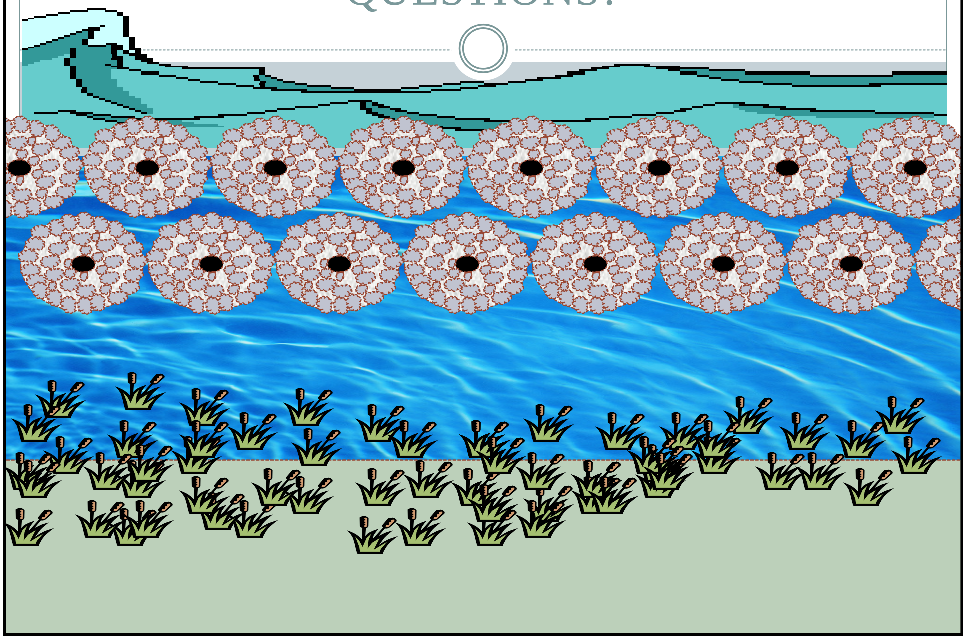
Piling recommendation

Piling Stop Mechanism

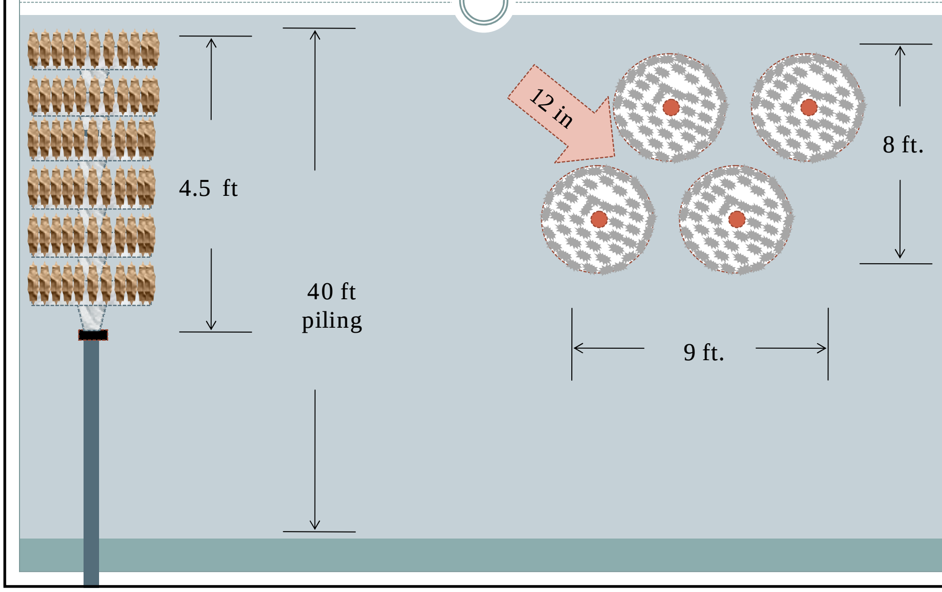
Typical Installation

EcoSystems Stopping Bank Erosion

QUESTIONS?



Specifications



COST?

1000 feet of shoreline

1. Two (2) rows of EcoSystems units
2. Six (6) EcoSystems Discs per pile
3. Forty (40) Foot long ten (10) inch Fiberglass piling

400 piling

2,400 EcoSystems Discs

Total Cost $996,600 ($996.60 per Ft.)

Cost Breakdown

1. Piling w/stop 400@ $1029 ea = $411,600
2. EcoSystems Discs 2,400 @ $150 ea = $360,000
3. Installation cost 45 days @ $5,000 = $225,000

TOTAL COST $996,600

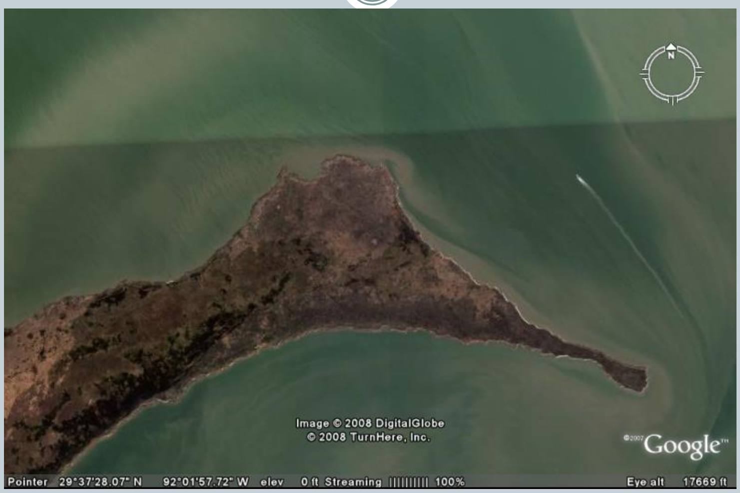


Image © 2008 DigitalGlobe
© 2008 TurnHere, Inc.
©2007 Google
Pointer 29°37'28.07" N 92°01'57.72" W elev 0 ft Streaming |||||||||| 100%
Eye alt 17669 ft

BioRock Demo

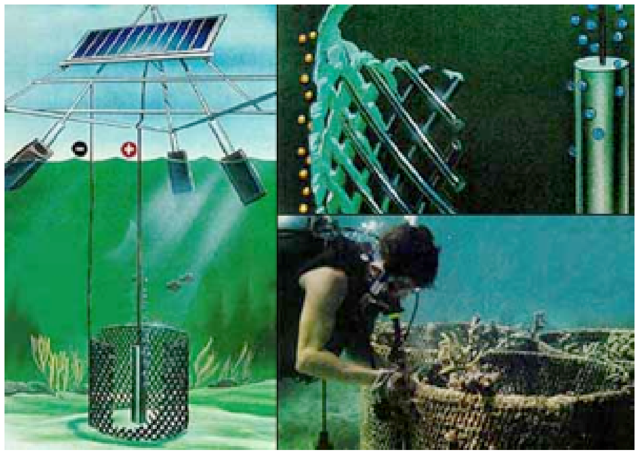
GOAL: install 20 10x20 foot mats

COST: $665,000 …could be cheaper is other energy source is identified.

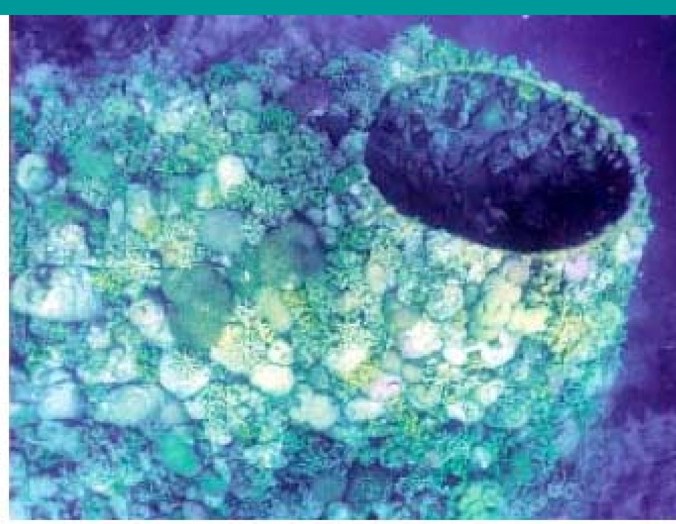
product

product

"A METHOD OF ENHANCING THE GROWTH OF AQUATIC ORGANISMS, AND STRUCTURES CREATED THEREBY"



product



"Maldive Barnacle" Biorock Reef Structure
April 1999

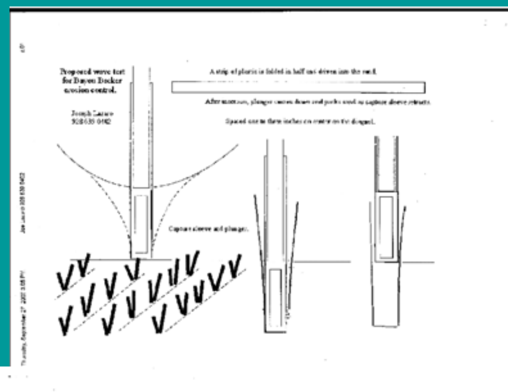
Bayou Backer Demo

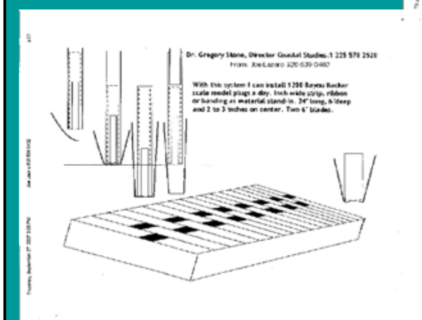
GOAL: 750’ installation at a depth of 16’

COST: $384,000

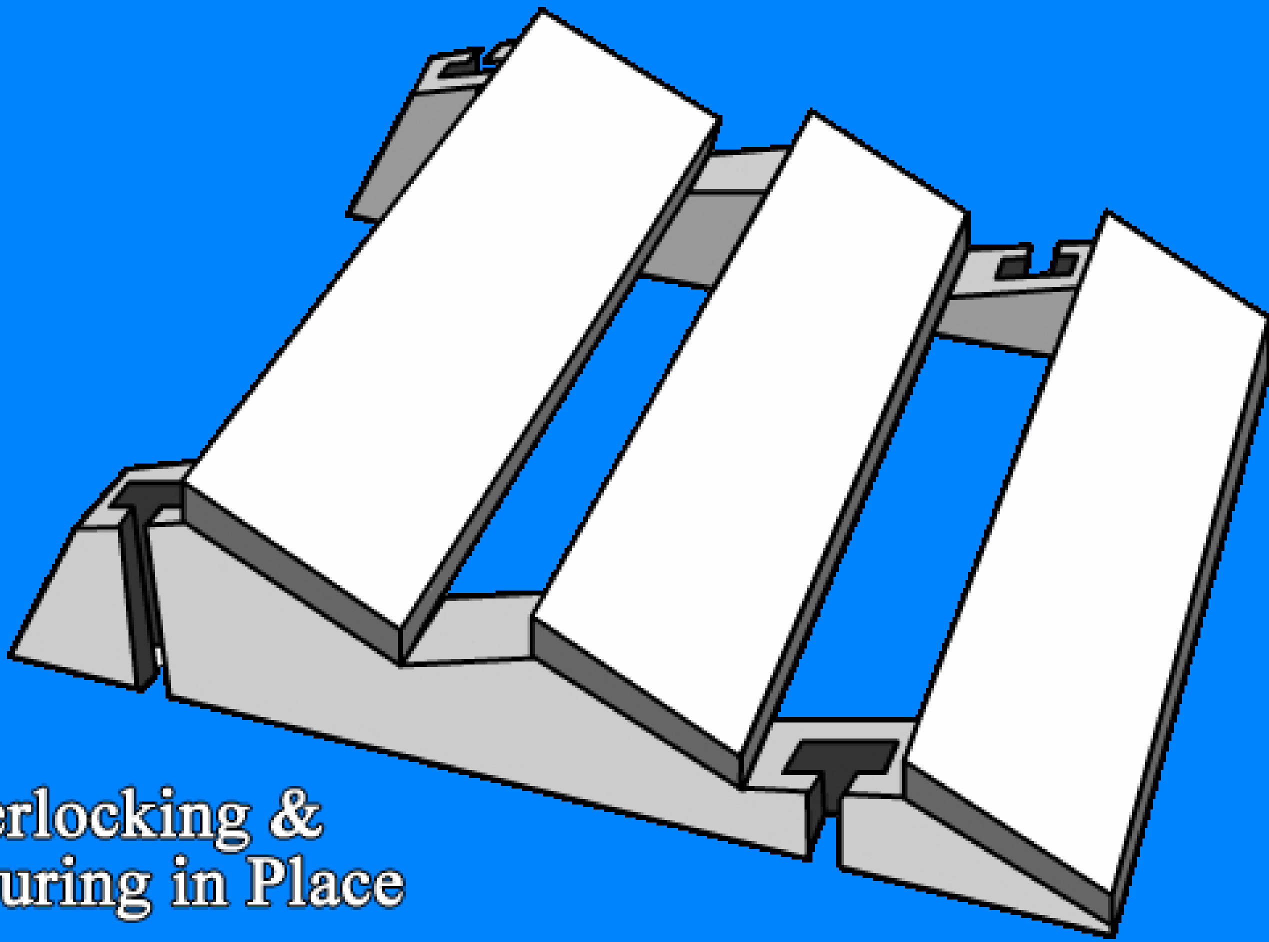
Product

Product


Capture sleeve and plunger.


With this system I can install 1200 Bayou Backer scale model plugs a day. Inch wide strip, ribbon or banding as material stand-in. 24" long, 6"deep and 2 to 3 inches on center. Two 6' blades.

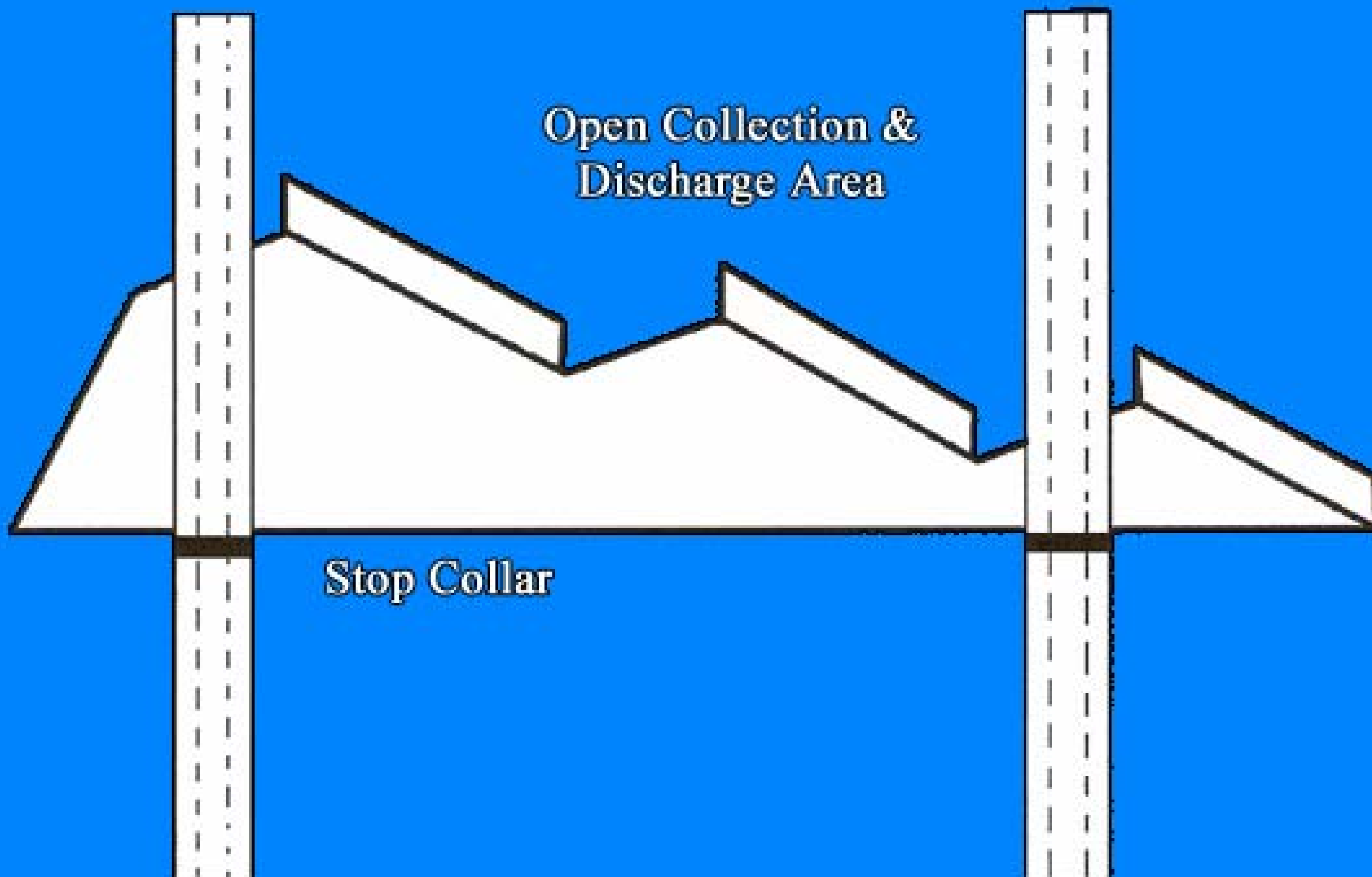
Module Unit



Interlocking &
Securing in Place

Module Unit

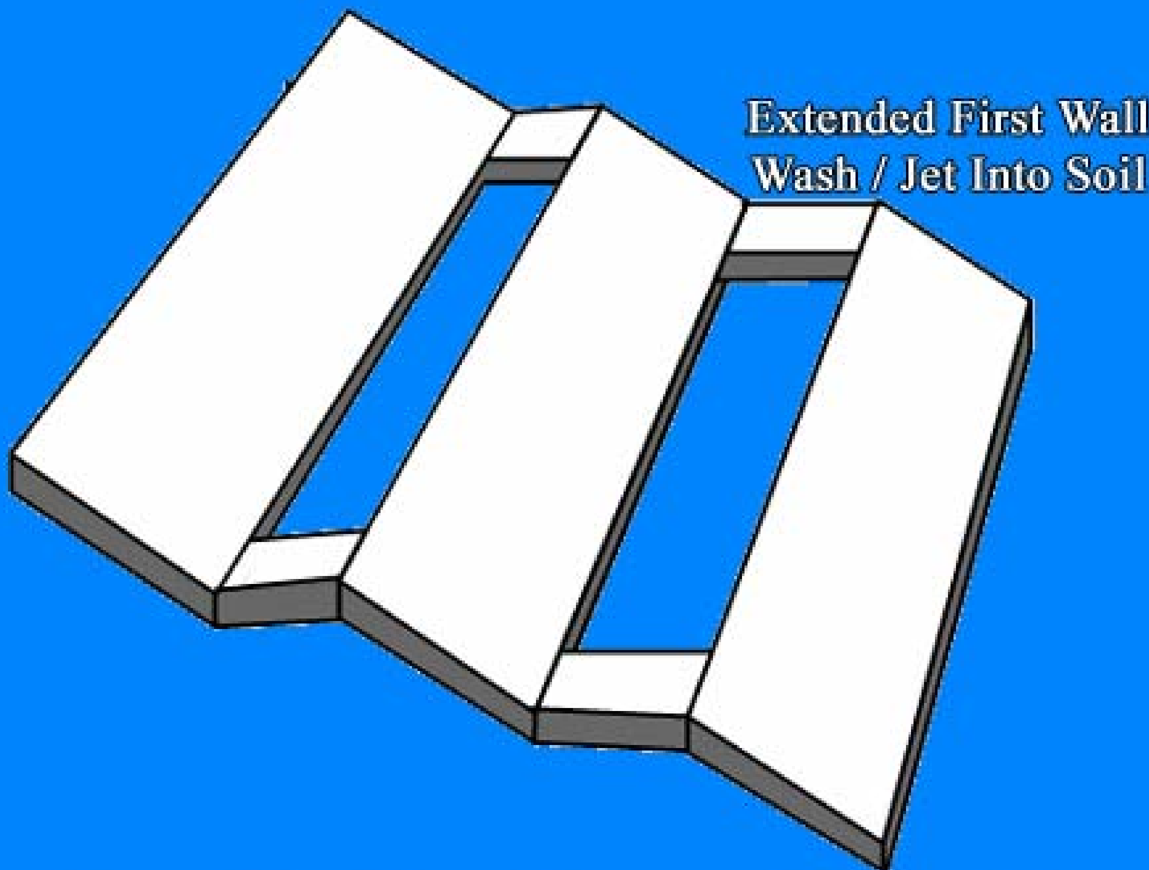
Secured & Interlocking With H Pilings



Module Unit

Secured Screw Pilings

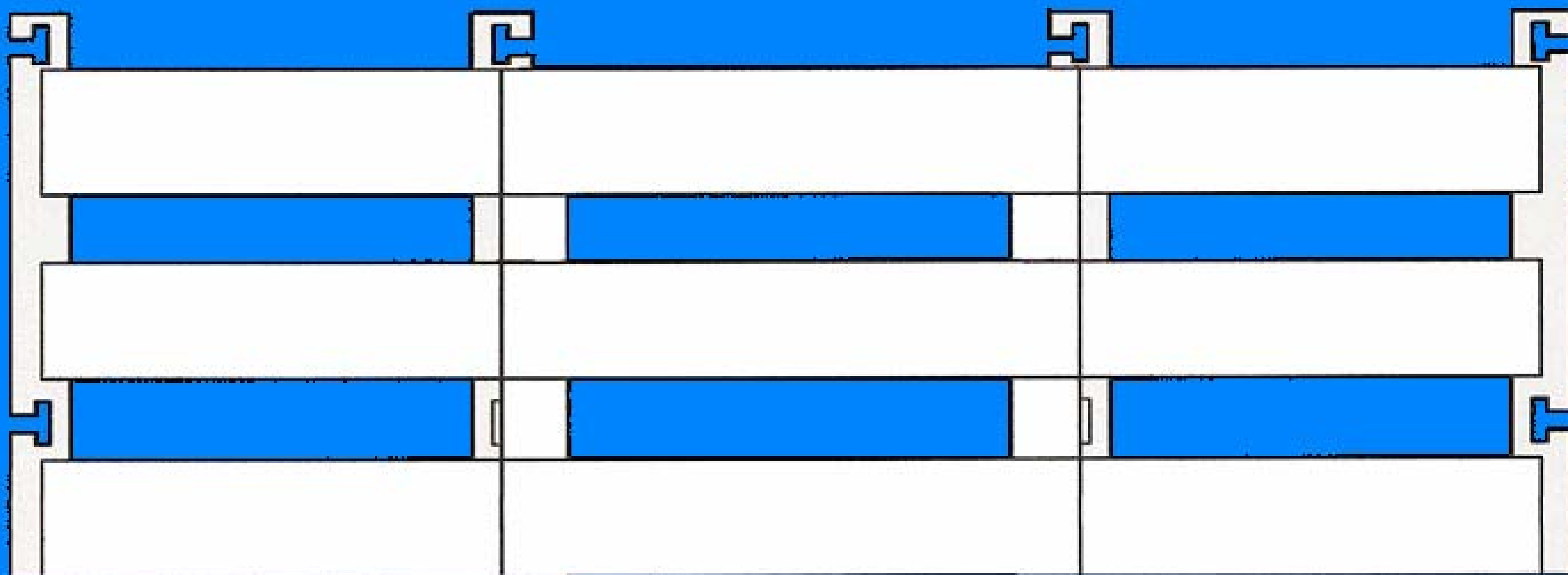
Stackable Wall Section For Modular Units



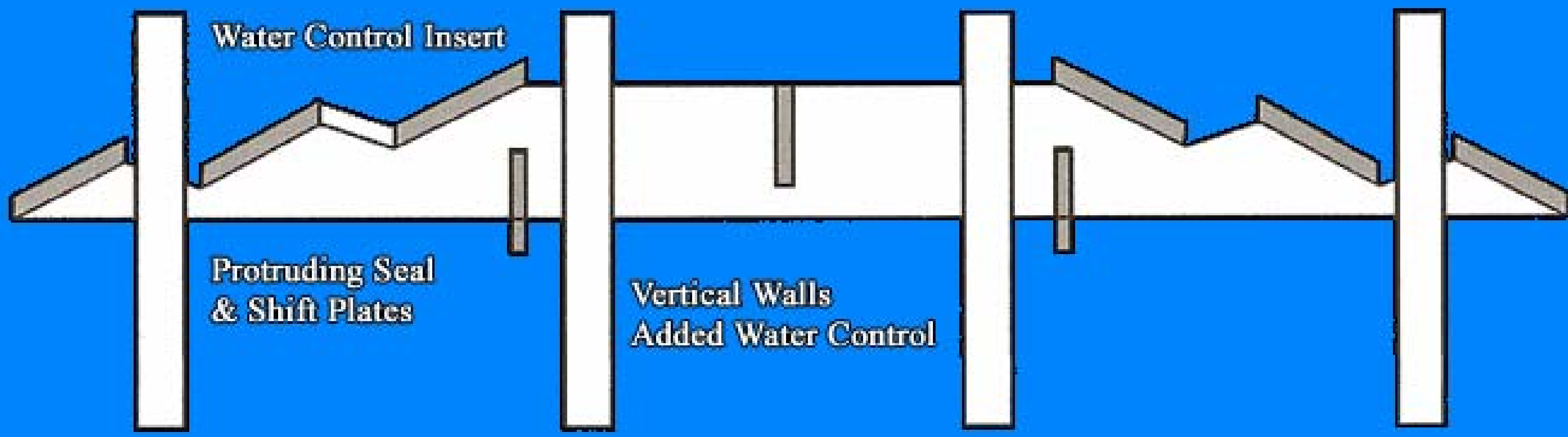
Allows For Shape Shanges (Curves)

Provides For Pre Engineered Breaking Point To Relieve Stress On Modular Units In Worse Case Scenario

Modular Units With Stackable Wall Units

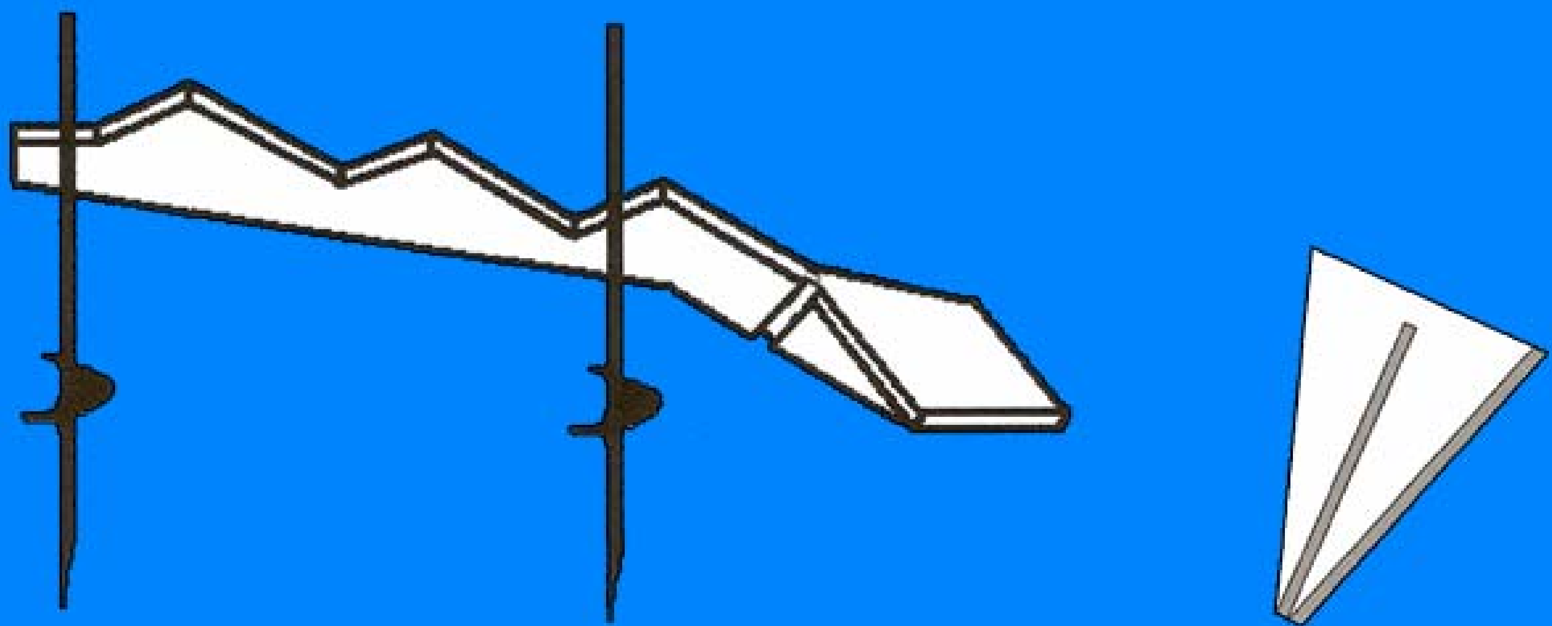


Open Water
Wave Absorber / Sediment Collector



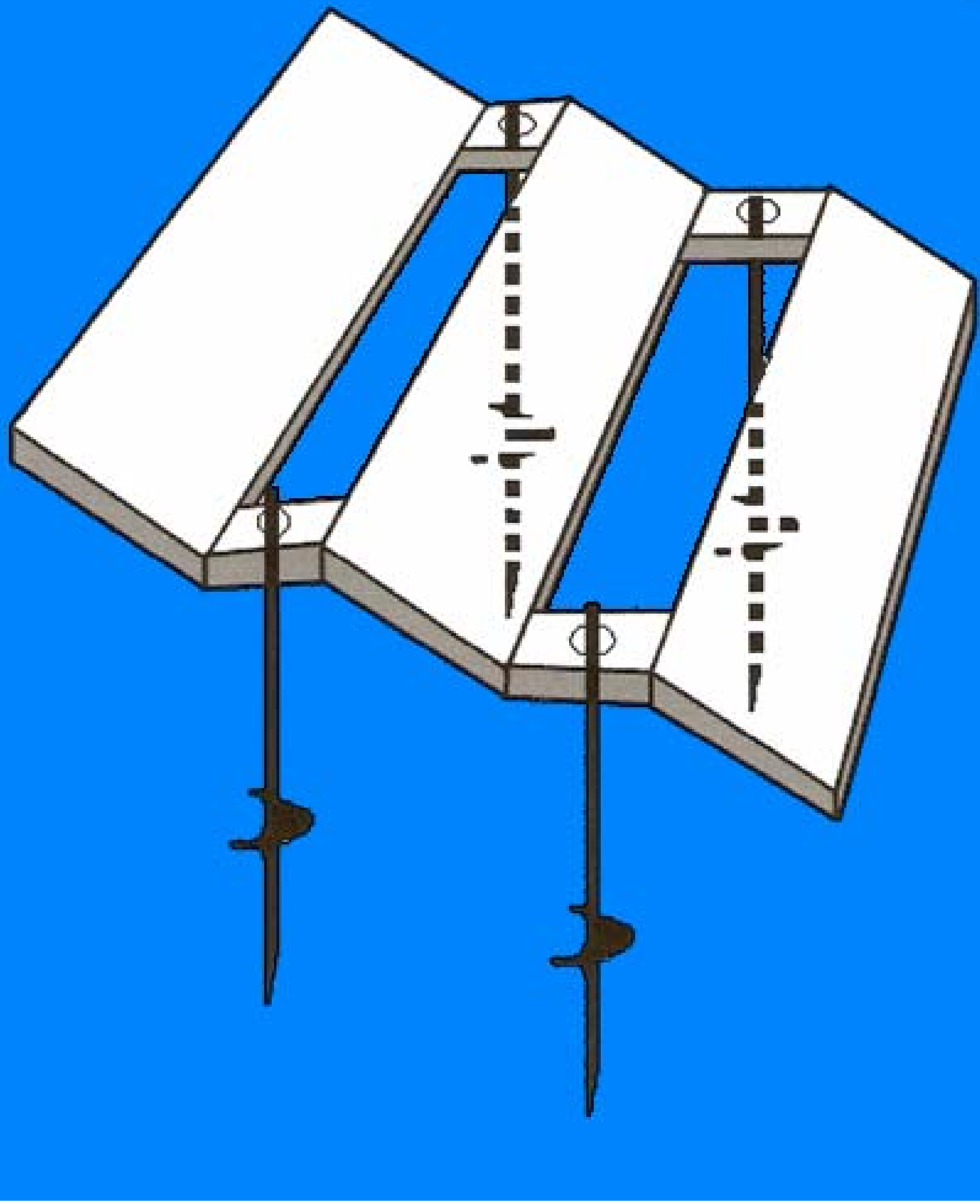
Main Frames Csn Be Built Hollow Providing A Pontoon Effect Allowing Stucture To Float In Position, Open Valves And Sunk

Unversal Main Support Frame
Mainly Marsh Area

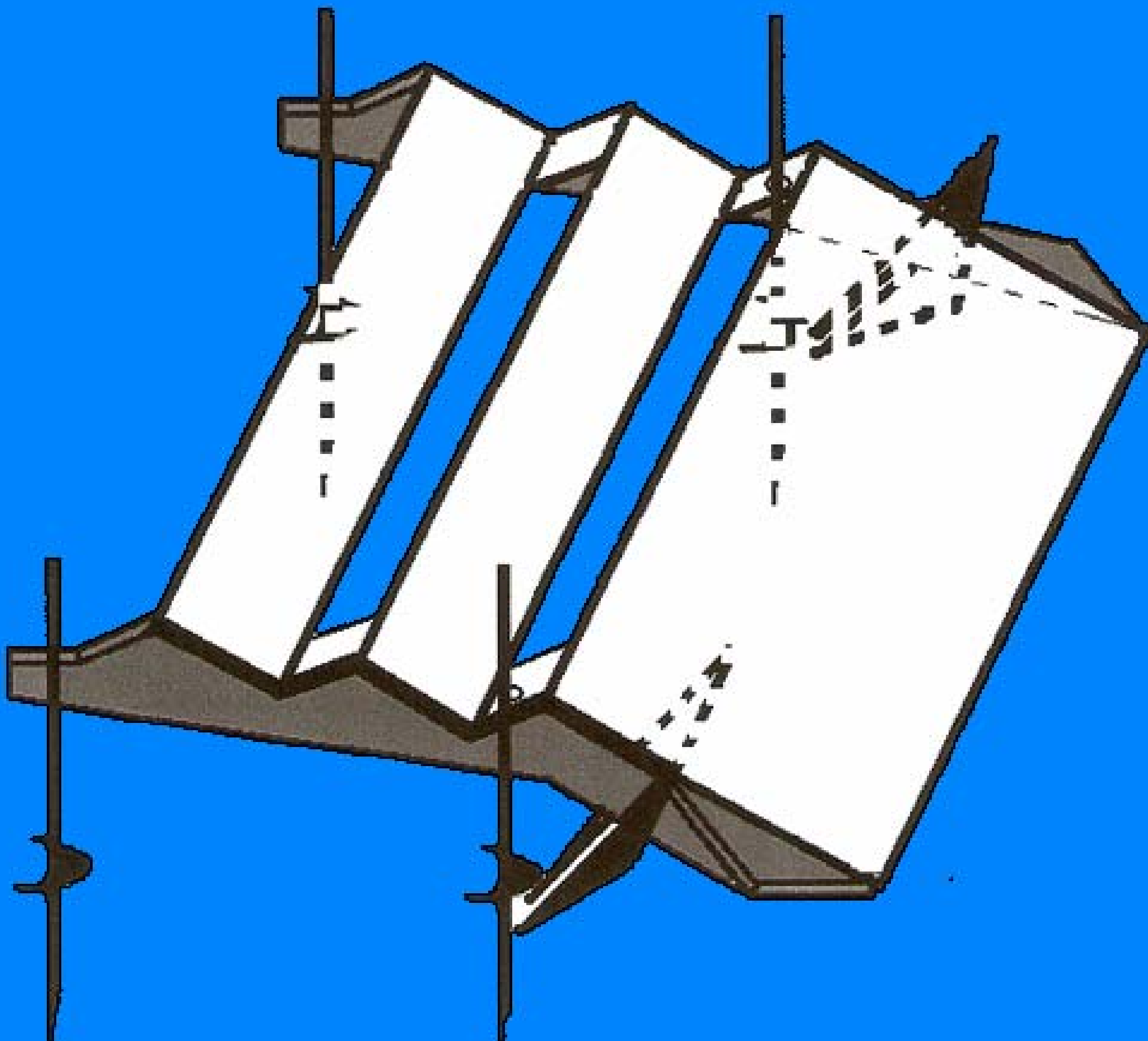


Drive In Add Anchor Chip And Install Stackable Wall Section

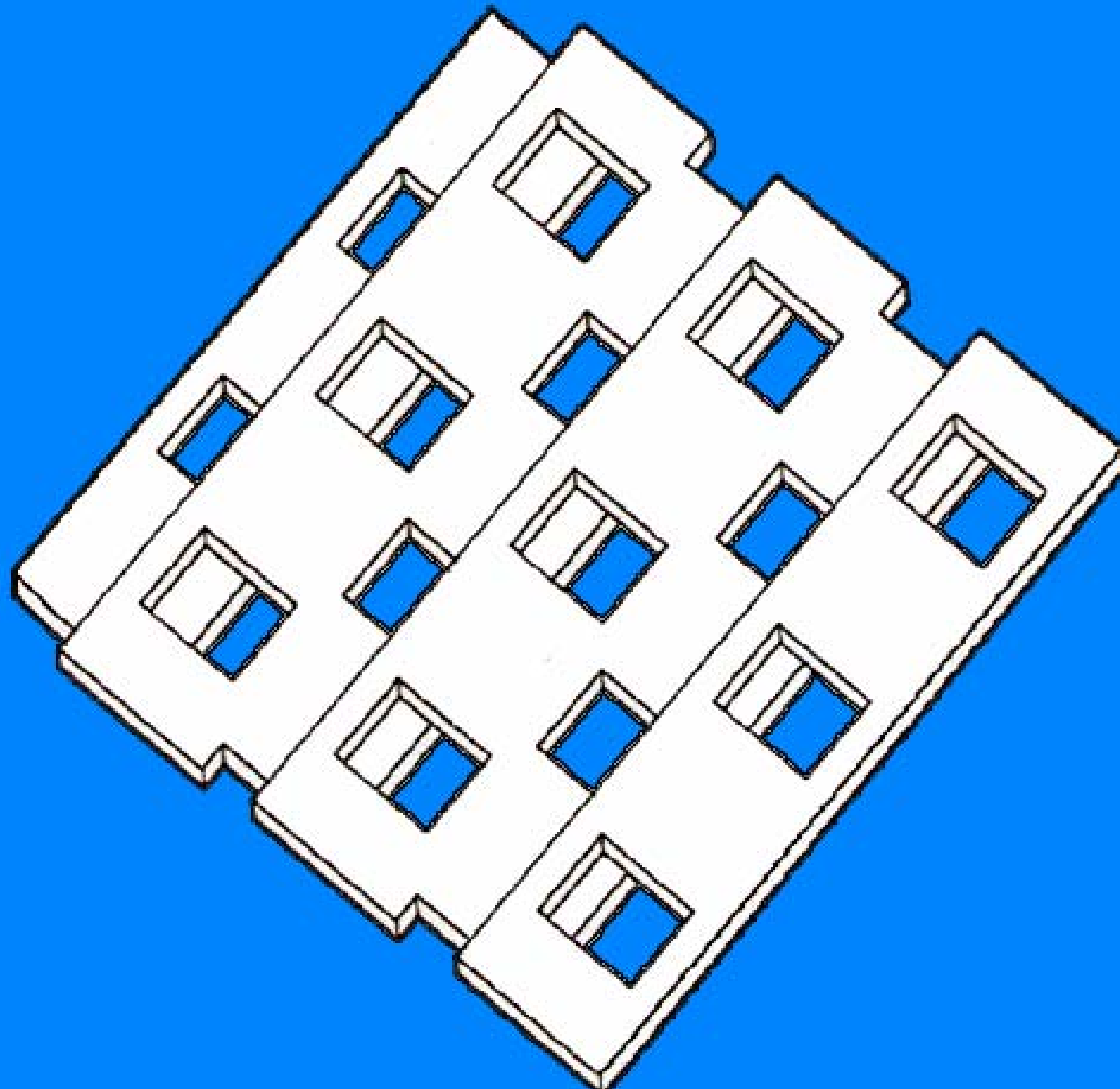
Stackable Wall Section
Secured With Just Screw Pilings



Stackable Wall Secions Extended First Wall Installed With Universal Main Support Frame



Fish Exclusion Device
FED



PPL18 PROJECT NOMINEE FACT SHEET
February 20, 2008

Project Name:
Non-Rock Alternatives to Shoreline Protection Demo

Coast 2050 Strategy:
Coastwide: Maintenance of Gulf, Bay and Lake Shoreline Integrity

Project Location:
To Be Determined

Problem:
Several shoreline areas within coastal Louisiana consist of unstable soil conditions, subsurface obstructions, accessibility problems, etc., which severely limit the alternatives of shoreline protection. The adopted standard across the state, where conditions allow, is the use of rock aggregate in either a revetment or foreshore installation. The major advantages of using rock are durability, longevity, and effectiveness. However, in areas where rock is not conducive for use and site limitations exist, current "proven" alternatives that provide equivalent advantages are few to none.

Goals:
The goal of this demonstration project is to come up with an alternative method(s) of shoreline protection that can be used in areas facing one or more limitation factors which preclude the use of currently adopted standards (i.e. rock, concrete panels, bulkheads, etc.).

Proposed Solutions:
Several "new" concepts of providing shoreline protection have surfaced in the last couple of years. These concepts however, have not been researched or installed due mainly to budget limitations or the apprehension of industry, landowners, and others to "try" an unproven product. The intent of this demonstration project is to provide a funding mechanism to research, install, and monitor various shoreline protection alternatives in an area(s) of the state where physical, logistical and environmental limitations preclude the use of current adopted methods.

Preliminary Project Benefits:
The primary benefit expected from this project is the finding of a product(s) that effectively reduces or eliminates shoreline erosion in site conditions with severe limitations where current standards are either non-acceptable or not economically justified.

Identification of Potential Issues:
One of the criterions to be used in the selection of a viable product(s) is its ability to circumvent or avoid potential issues.

Preliminary Construction Costs:
$1,000,000

Preparer(s) of Fact Sheet:
Loland Broussard, USDA-NRCS, (337) 291-3060, loland.broussard@la.usda.gov

HESCO Baskets

SUBMAR Matting

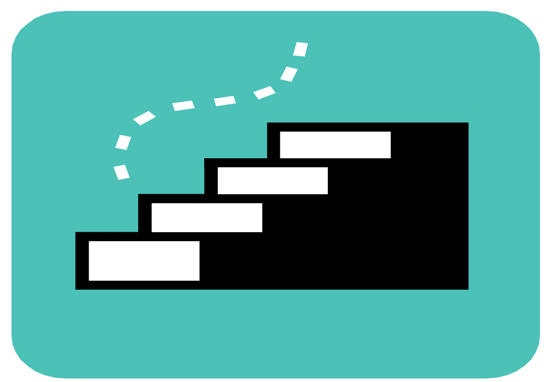
WADS

Non-Rock Alternatives To Shoreline Protection

PPL18 Demonstration Project

A-Jacks

WhisprWave

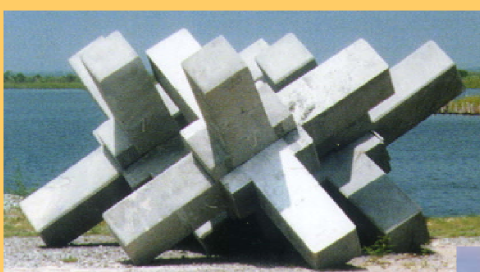


Viper-Wall

SUBMERSIBLE CONCRETE BARGE BREAKWATERS

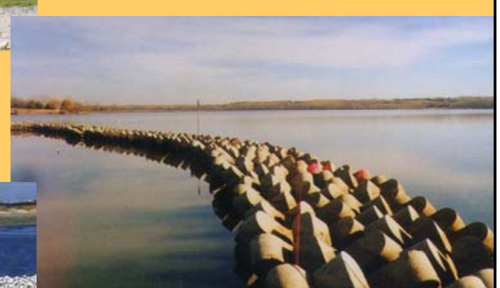
FOR SOUTH LAFOURCHE PARISH, LOUISIANA:

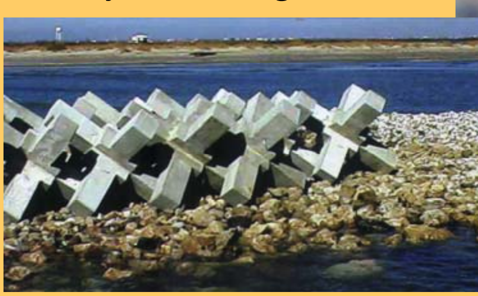
A Proposed CWPPRA Demonstration Project



SUBMERSIBLE CONCRETE BARGES VS MASSIVE STONE OR CONCRETE

Massive concrete or stone rip-rap breakwaters may reduce surge…

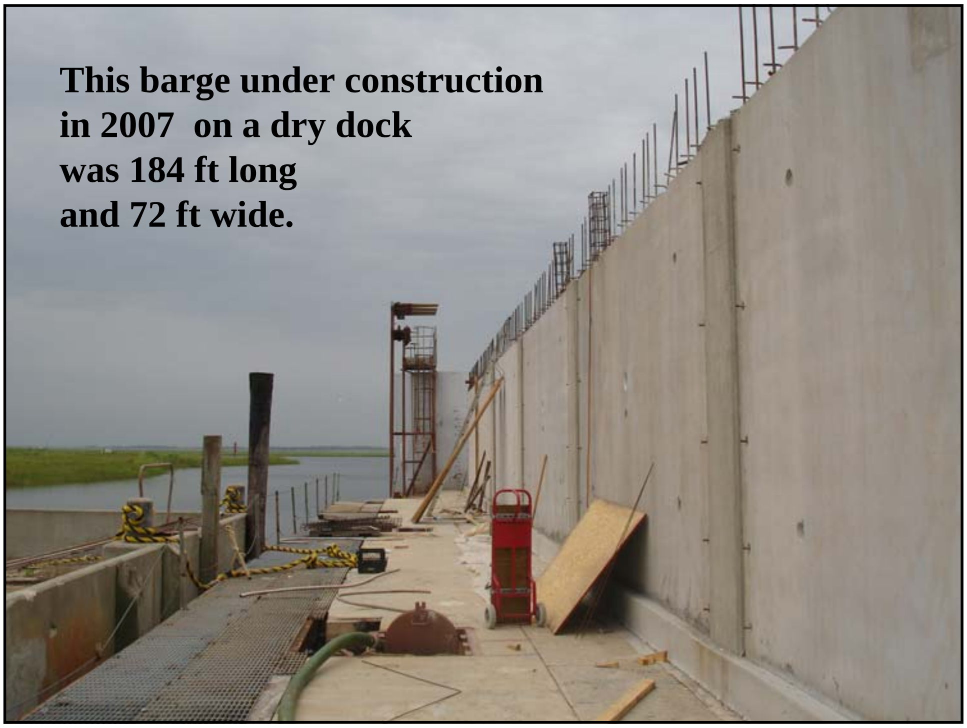




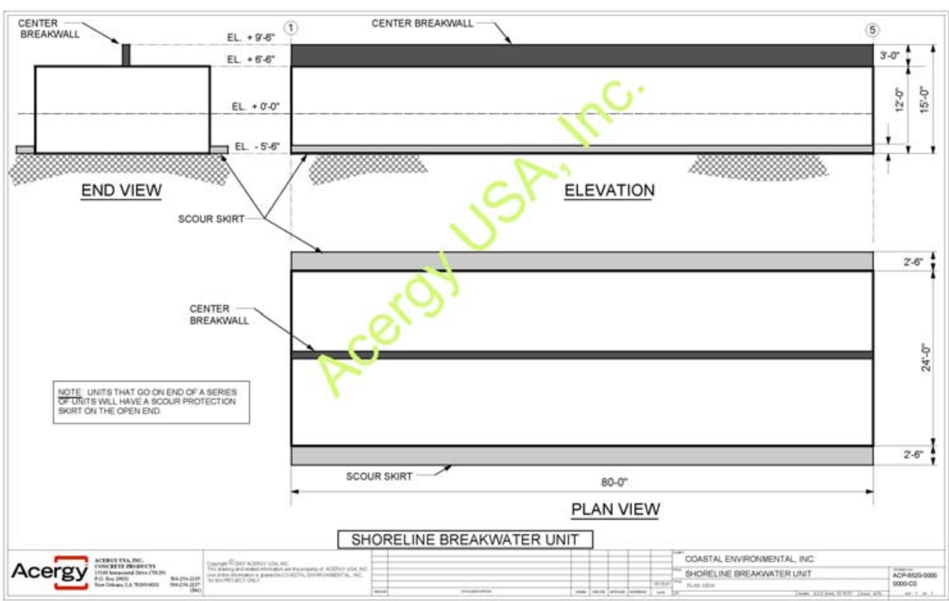
…but will sink into the soft water bottoms of the area.

PREFABRICATED CONCRETE SURGE BREAKERS

Surge breaker and breakwater units can be built on land, floated into position in shallow water bottoms, and sunk. Concrete barges under construction at Acergy Michoud Canal plant, Orleans Parish, La.


This barge under construction
in 2007 on a dry dock
was 184 ft long
and 72 ft wide.


Acergy and its
predecessor has
built submersible
concrete barges for
the oil industry
for 40 years.
The barges are
often re-floated,
re-furbished,
and re-deployed
after decades of use.



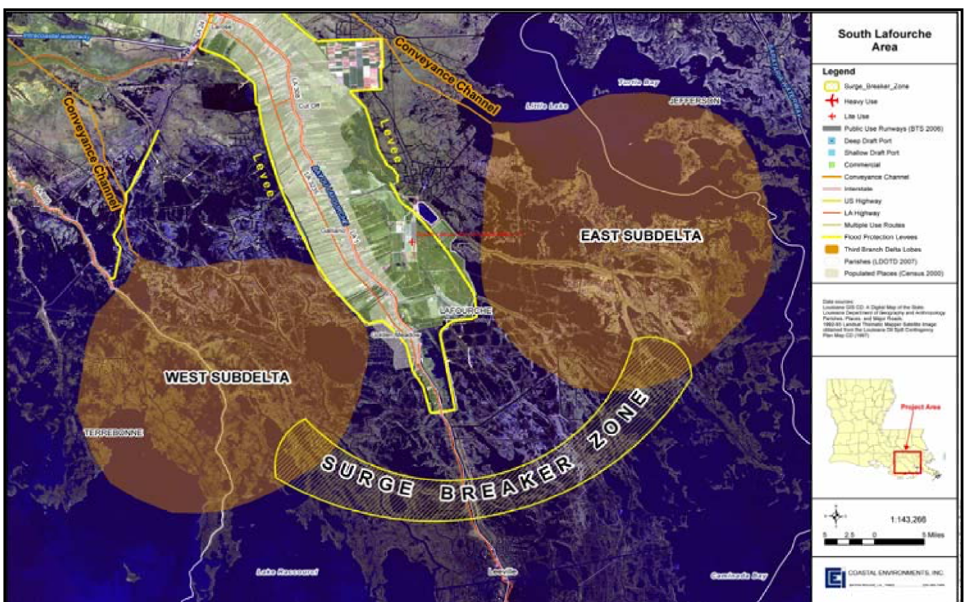
Drawings of concrete shoreline breakwater unit

BREAKWATER UNIT SPECIFICATIONS

15- foot high breaker unit
Hull length 80 feet
Hull width 24 feet
Hull depth 12 feet
Draft 5 ½ feet
Base perimeter skirt 2 ½ feet

Breakwater units can be placed in vicinity of surge breaker zones.
Specific locations will be selected as part of project planning and design.

Surge breakers would be consistent with multiple lines of defense and would provide additional protection to the South Lafourche Hurricane Protection Levee System.



In addition to added levee protection, strategically placed surge breakers would be consistent with proposed sub-delta building through controlled diversions.

ESTIMATED PROJECT COST AND TIME

Estimated Costs

Manufactured cost 80 x 24 x 15-ft breakwater unit	= $260,000
Placement cost/unit (site preparation not included)	= $ 15,000
In place cost/unit	= $275,000
In place cost/mile (66 units)	= $18,150,000

Estimated CWPPRA Project Time and Costs

Primary costs

6 units in place @ $275000	= $1,650,000
(480 ft or with 50 ft gaps between units 750 ft)	
Deployment contingencies	= 150,000
Site planning and permitting	= 200,000
Total	= $2,000.000

Other Costs

Land acquisition

Monitoring

Estimated Time

The 6 breakwater units can be built in 10 to 12 weeks

The units can be delivered via tug in 2 to 3 weeks

COMPARISON OF CONCRETE BREAKWATER AND ROCK BREAKWATER

Concrete Barge Breakwater Units (80 ft x 24 ft x 15 ft units)				Rock Breakwater	
Manufacture cost/unit	**Placement cost/unit***	**In place cost/unit**	**Cost/mi. (66 units/mi)**	**Cost/mi. 12 ft. 3:1 slope**	**Cost/mi. 15 ft. 3:1 slope**
$260,000	$15,000	$275,000	**$18,150,000**	$19,426,176	$29,044,224

* Site preparation not included.

All estimates based on contiguous alignment with no gaps

Concrete breakwater units are cost effective. For comparable 15 ft vertical protection, the concrete units would cost approximately $10.9 million less per mile.

DISCLAIMERS and COPYRIGHT

The interpretations, findings and recommendations presented in this preliminary report are those of the authors and are subject to revision upon completion of further evaluation.

DEMO-08

PPL18 PROJECT NOMINEE FACT SHEET
February 13, 2008

Project Name: Benefits of Limited Design/Unconfined Beach Fill for Restoration of Louisiana Barrier Islands-Demonstration

Coast 2050 Strategy:
Region 2 Ecosystem Strategies: Restore/maintain barrier headlands, islands and shorelines
21. Extend and maintain barrier headlands, islands, and shorelines
22. Extend and maintain barrier shoreline from Sandy Point to Southwest Pass
Region 2 Mapping Unit Strategies
Barataria Barrier Islands- 19. Beneficial use of dredged material (e.g. Dredging offshore to build barrier island back marshes)
Barataria Barrier Shorelines- 23. Restore Barrier Islands
Region 3 Ecosystem Strategies: Restore Barrier Islands and Gulf Shorelines
14. Restore and maintain the barrier islands and gulf shoreline such as Isles Dernieres, Timbalier barrier island chains, Marsh Island, Point au Fer and Cheniere au Tigre .
Region 3 Mapping Unit Strategies
Isles Dernieres Shorelines- 33. Protect Bay/Gulf shorelines

Project Location: To be determined, but probably Isles Dernieres or Timbalier island chain.

Problem: Louisiana's barrier islands are critical for as basic physical determinants of the seaward boundaries of the coastal basins. They also reduce energies in the estuaries and coastal basins, and help limit the tidal prism. Without massive-scale restoration of the Delta cycle, artificial nourishment of the barrier islands is necessary to prevent their complete disappearance within years to decades. However, nourishment of the barrier islands with offshore sand is expensive, particularly when detailed engineering plans and specifications, and precise sculpting of dune and supratidal habitats, is required, as is the case now.

Goals : Demonstrate and quantify specific benefits of limited-design, unconfined beach/subtidal Gulf sand nourishment of Louisiana barrier islands.

Proposed Solutions: The "ideal" demonstration approach to this problem would be to simply deposit unconfined fill sufficient to expect a detectable habitat change, and then monitor it. However, given the high cost of dredging and transporting sand from a borrow area to a barrier island, the CWPPRA ceiling on costs of Demonstration Projects ($2 million) would seem to be an insurmountable obstacle to that approach. It seems very unlikely that for under $2 million, sufficient sand could be dredged, transported, and placed unconfined, that we would expect to be able to detect associated habitat changes. Basically, this is either a funding problem, a detection problem, or both. An alternate approach is to use sediment "tracers" and modeling to estimate benefits. A small quantity of representative beach (or subtidal Gulf) fill (sand) will be "labeled" using an appropriate tracer. The sand will be deposited on the beach and/or in the subtidal Gulf in front of a barrier island. Measurements will be made to estimate the fate of the "labeled" sand. Specifically, estimates will be made of the percent of sand initially placed on the beach/subtidal Gulf, that is ultimately deposited on the beach, dune, supratidal, and intertidal habitats, over relatively short time frames (1-3 years?). In addition, an appropriate simulation model of barrier island dynamics will be run using the data obtained in the tracer studies, to estimate changes in barrier island habitats, with and without one or more hypothetical restoration projects involving unconfined beach/gulf fill.

Preliminary Project Benefits: Estimates of potential benefits (wva) of unconfined beach/gulf fill on Louisiana barrier islands.

Identification of Potential Issues: Scientific/modeling challenges

Preliminary Construction Costs: $1.5 million (experimental design, beach fill, tracer experiments, modeling, reporting, S&A)

Preparer(s) of Fact Sheet: Kenneth Teague, EPA (214) 665-6687
Brad Crawford, EPA (214) 665-7255