



**Potential for improvement with
geosynthetics in the coastal setting:
Adaptive environmental
management consideration with
geosynthetics**

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Geosynthetics In Coastal Projects

Tubes

Mattresses

Bags

Containers



“Bags” Merriam Webster

ˈbag  *noun* \ˈbag *also* ˈbāg\


Definition of BAG

 +1  Like

1 : a usually flexible container that may be closed for holding, storing, or carrying something: as

a : PURSE; *especially* : HANDBAG

b : a bag for game

c : SUITCASE

2 : something resembling a bag: as

a (1) : a pouched or pendulous bodily part or organ; *especially* : UDDER (2) : a puffy or sagging protuberance of flabby skin

b : a puffed-out sag or bulge in cloth

c : a square white stuffed canvas bag used to mark a base in baseball


3 : the amount contained in a bag

4 a : a quantity of game taken; *also* : the maximum legal quantity of game

b : an assortment or collection especially of nonmaterial things <a *bag* of tricks>

5 : an unattractive woman

6 : something one likes or does regularly or well; *also* : one's characteristic way of doing things



“Containers” Merriam Webster

con·tain·er  *noun* \kən-ˈtā-nər\


Definition of CONTAINER



: one that **contains**: as

a : a receptacle (as a box or jar) for holding goods

b : a portable compartment in which freight is placed (as on a train or ship) for convenience of movement



“Mattresses” Merriam Webster


mat·tress  *noun* \ˈmɑ-tres\

Definition of MATTRESS



- a** : a fabric case filled with resilient material (as cotton, hair, feathers, foam rubber, or an arrangement of coiled springs) used either alone as a bed or on a bedstead
b : an inflatable airtight sack for use as a mattress
- 2** : a device (as of interwoven brush and poles) used to protect a shoreline, bank, or streambed from erosion

“Tube” Merriam Webster

tube  *noun* \ˈtūb, ˈtyūb\

Definition of TUBE

 +1

 Like

1 : any of various usually cylindrical structures or devices: as

a : a hollow elongated cylinder; *especially* : one to convey fluids

b : a soft tubular container whose contents (as toothpaste) can be removed by squeezing

c (1) : [TUNNEL](#) (2) *British* : [SUBWAY](#) **b**

d : the basically cylindrical section between the mouthpiece and bell that is the fundamental part of a wind instrument

2 a : a slender channel (as a fallopian tube or a pollen tube) within a plant or animal body : [DUCT](#)

b : the narrow basal portion of a corolla with united petals or a calyx with united sepals

3 : [INNER TUBE](#)

4 a : [ELECTRON TUBE](#); *especially* : [VACUUM TUBE](#)

b : [CATHODE-RAY TUBE](#); *especially* : a television picture tube

c : [TELEVISION](#)

5 : an article of clothing shaped like a tube <a *tube* top>
<*tube* socks>

Lets Talk Local First!

Problems

and

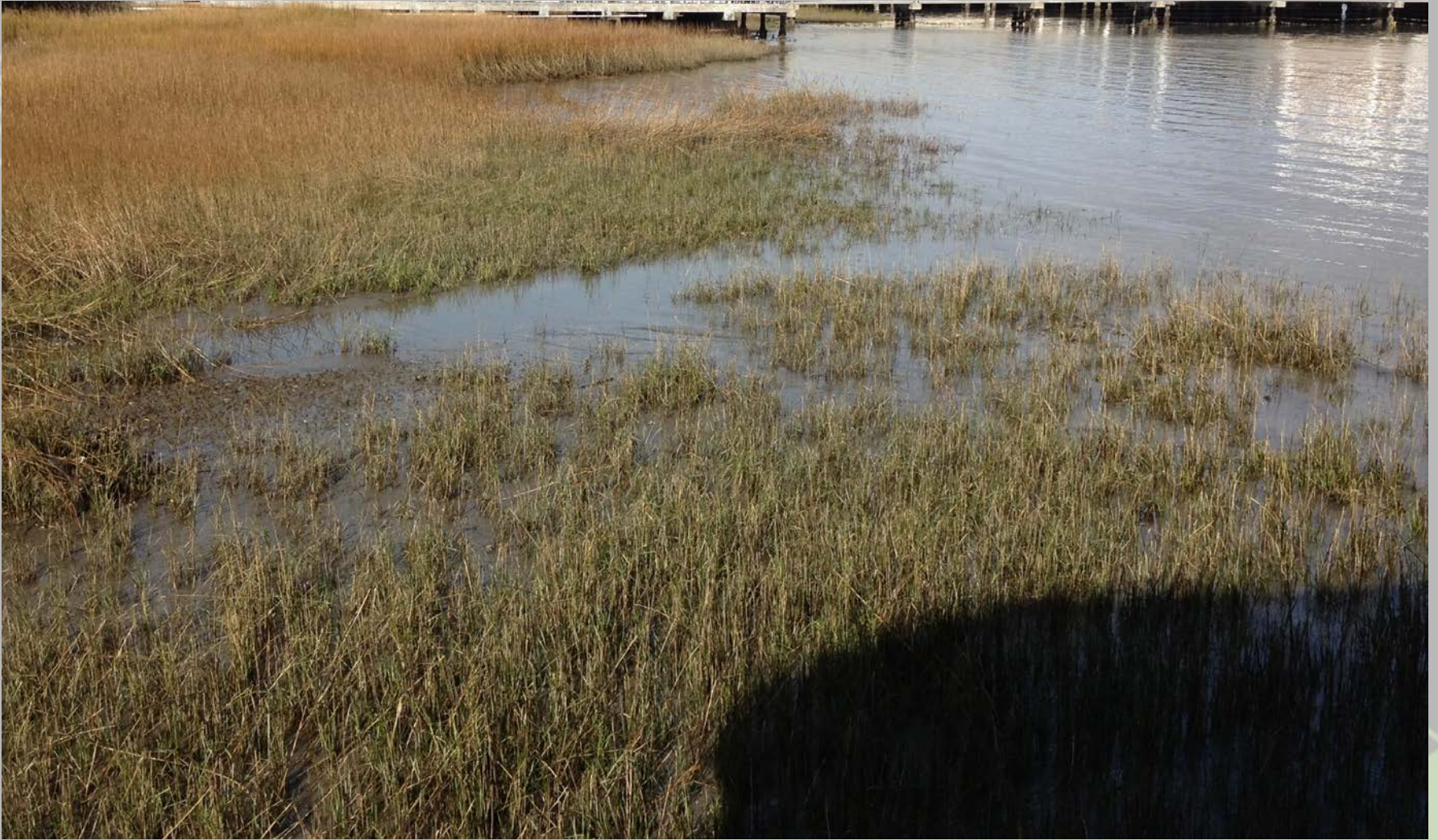
Solutions



Beach Erosion



Marsh



Dunes



Oyster Beds/Agriculture



Infrastructure



9/02/2011

Courtesy of FEMA, Rodanthe, NC

Ecological Environments



Why Are they Problems?

- Encroaching Infrastructure
- Encroaching Natural Habitats/Environmental Amenity
- Catastrophes
- Encroaching Public Lands/Private Land
- Restoration is expensive & on going
- Access to Communities
- Loosing land



Major Considerations to Address Problems

- Designing for Catastrophic event?
- Truly a natural environment or maybe a bit of a built environment?
- How long is a long time? “Design Durations”
- Let nature take its course or guiding nature?
- Cause and effect?
- Predictability of success vs. cost expenditure?

Durations

Temporary

Lifetime

Permanent

30 Days

2 Years

10 years

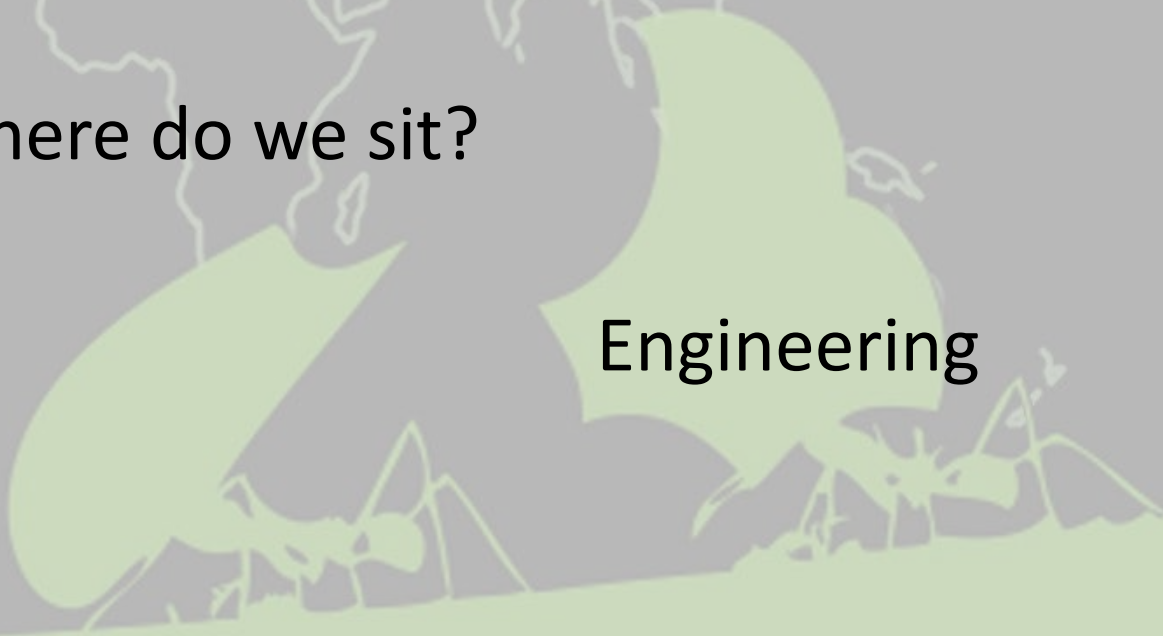
40 years

100 years

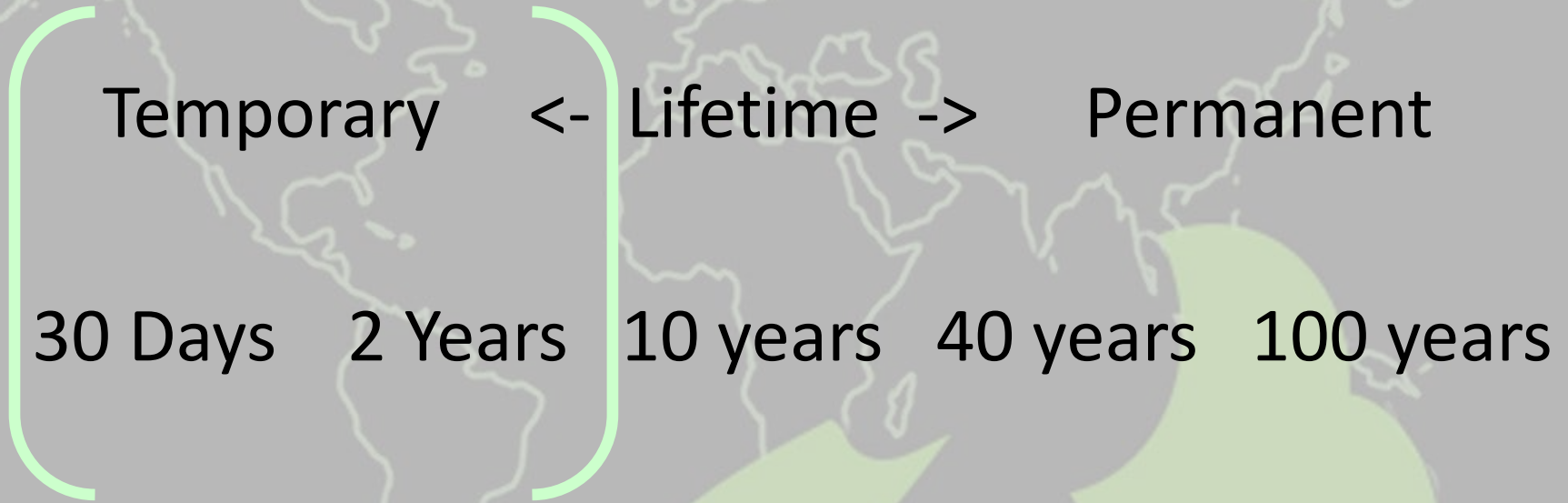
Where do we sit?

Adaptation

Engineering



Geosynthetics in Local Coastal Design



Geosynthetics in Other Fields

E.g. Roadway/Civil/ Hydraulic

Temporary <- Lifetime -> Permanent

30 Days 2 Years 10 years 40 years 100 years



Geosynthetics in Intl. Coastal Design



Short Term Solutions



Where we are NOW

Short Term Solutions



Longer Term Solutions



Maintenance



Amenity



Jupiter Beach FL



Stockton Beach, Newcastle, Australia



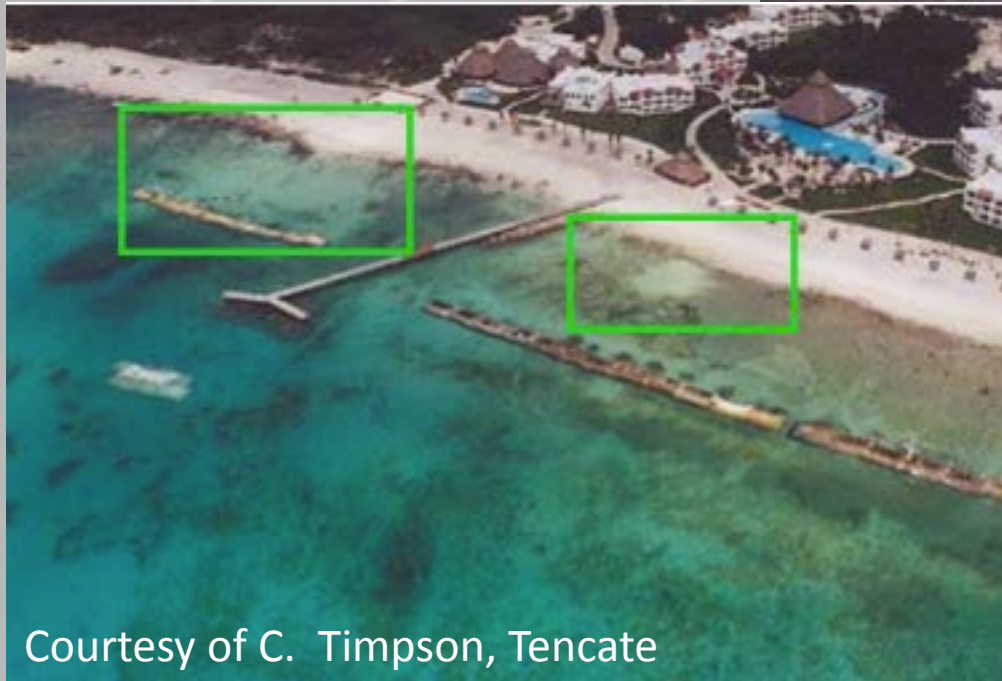
Asplendale Australia



Cronulla Esplanade



Dorado Royal, Mexico



Courtesy of C. Timpson, Tencate



Breakwater, Geelong AUS



Queensland Aus



Netherlands

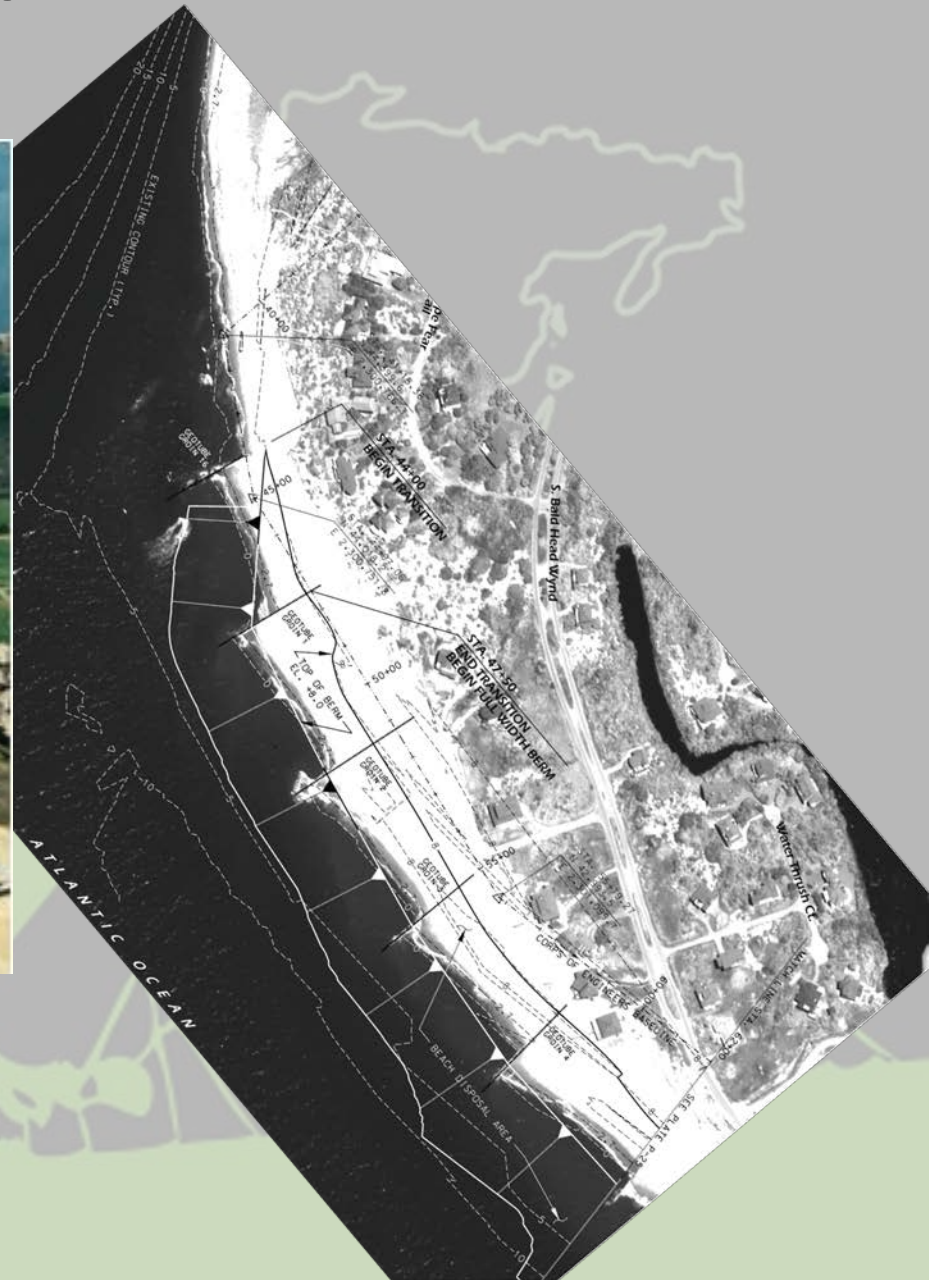


Courtesy of C. Timpson, Tencate

Baldhead Island



Courtesy of C. Timpson, Tencate



Atlantic City NJ Coring



Improving Life

- Coatings



Courtesy of C. Timpson, Tencate

Abrasion Resistance



Protection Approach



Courtesy of C. Timpson, Tencate

UV Resistance



Diffused Shorelines

- Dissipating Energy/Environmentally Friendly



Diffused Shorelines w/ Geosynthetics?





Little Environments Thanks:

The logo for ELCOROCK, featuring the word "ELCOROCK" in bold, dark blue, uppercase letters with a registered trademark symbol, and the words "GEOTEXTILE SAND CONTAINERS" in a smaller, dark blue, uppercase font below it.