



Living Shorelines





What is a living shoreline?

- **A living shoreline refers to a variety of restoration techniques that use natural materials to stabilize shorelines and prevent erosion.**



What is a hybrid living shoreline?

- **A hybrid living shoreline incorporates hardened structures such as a bulkhead, rip rap revetment, etc., in addition to the natural materials for areas that are exposed to winds and larger wave energy.**



Authorizations



Authorizations

- **Exemption 62-330.051(12)(e), F.A.C. – Living Shoreline**
- **General Permits -**
 - **62-330.600, F.A.C. - Artificial Reef**
 - **62-330.632, F.A.C. - Low Profile Oyster Reef**
- **Individual Permit – Large scale, >10 ft. waterward of the Mean High Water Line (MHWL), etc.**



Proprietary

- **Letter of Consent (LOC) 18-21.005 (1)(c), F.A.C.**
 - **If project is exempt, it will need an LOC if on State Lands.**
- **Easement 18-21.005(1)(e), F.A.C.**



Federal – State Programmatic General Permit

- **SPGP-V R1**
- **Department can review for Federal Authorization**
- **Materials, placement, and design**



Materials and Placement



Living Shoreline Materials





Living Shoreline Materials





Living Shoreline Materials





Designs

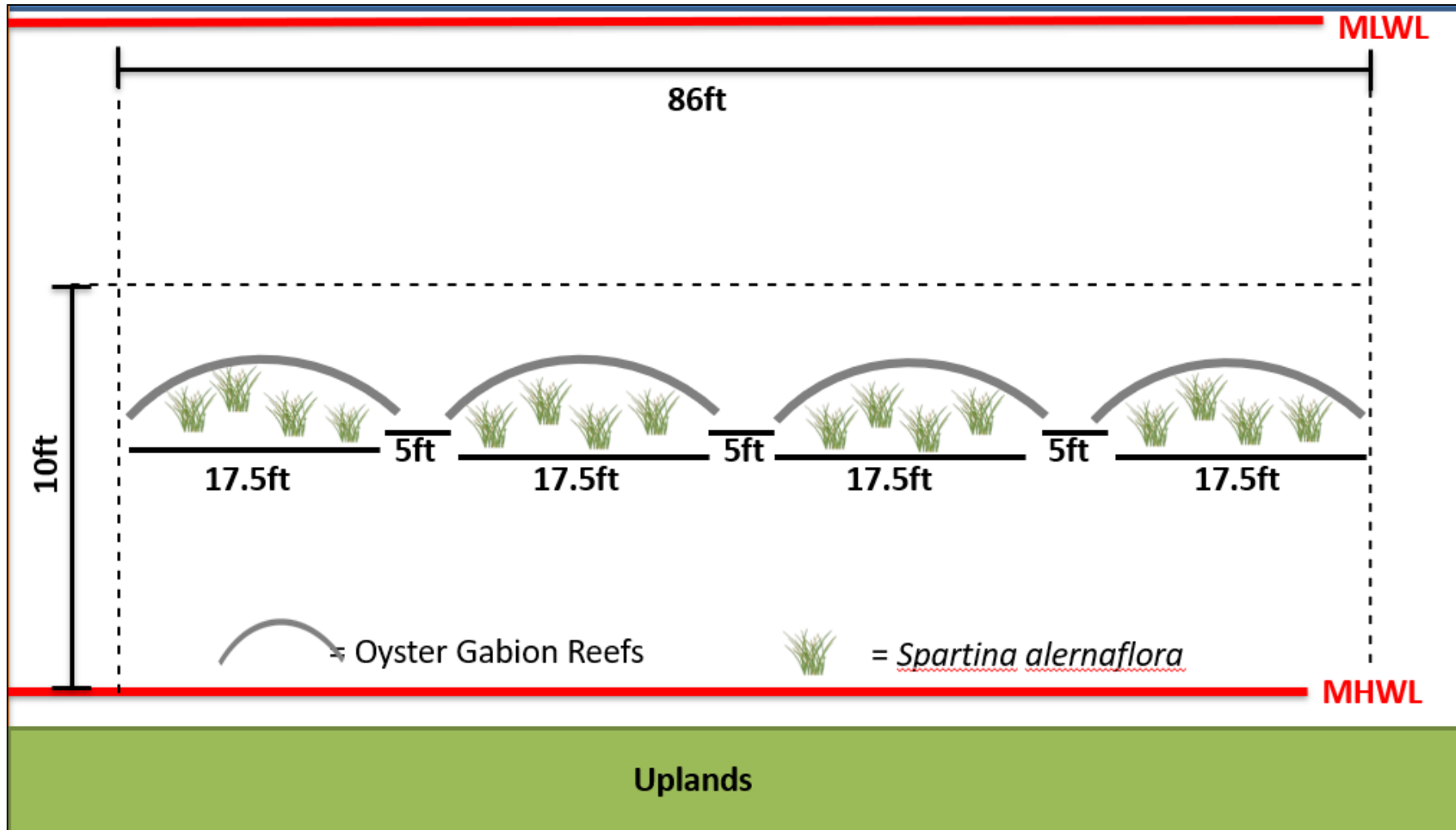


Designs

- **Location**
 - **Design**
 - **Grading**
 - **Spacing**
- **Goal – Wave attenuation, habitat creation, aesthetics**

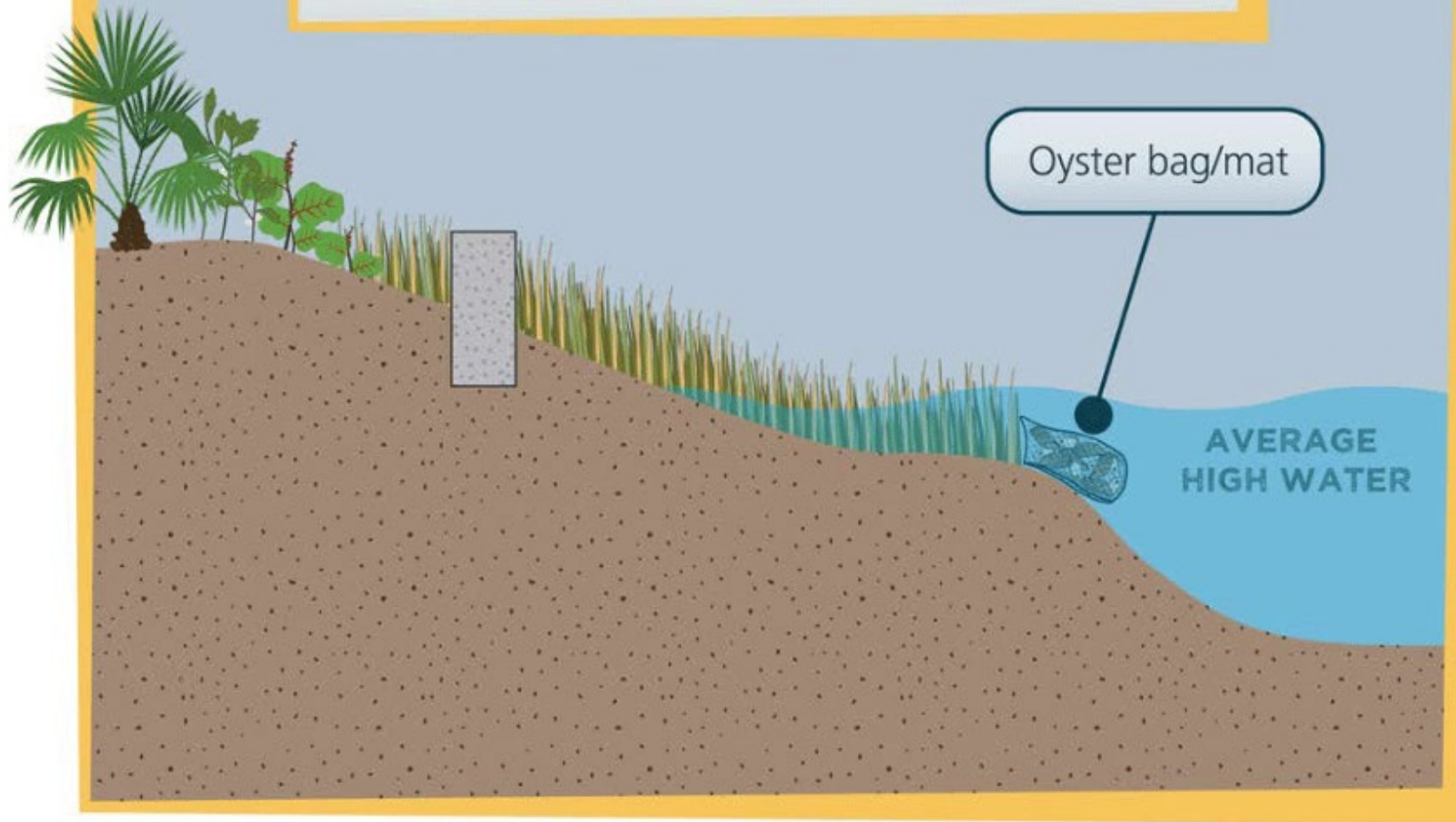


Example Living Shoreline



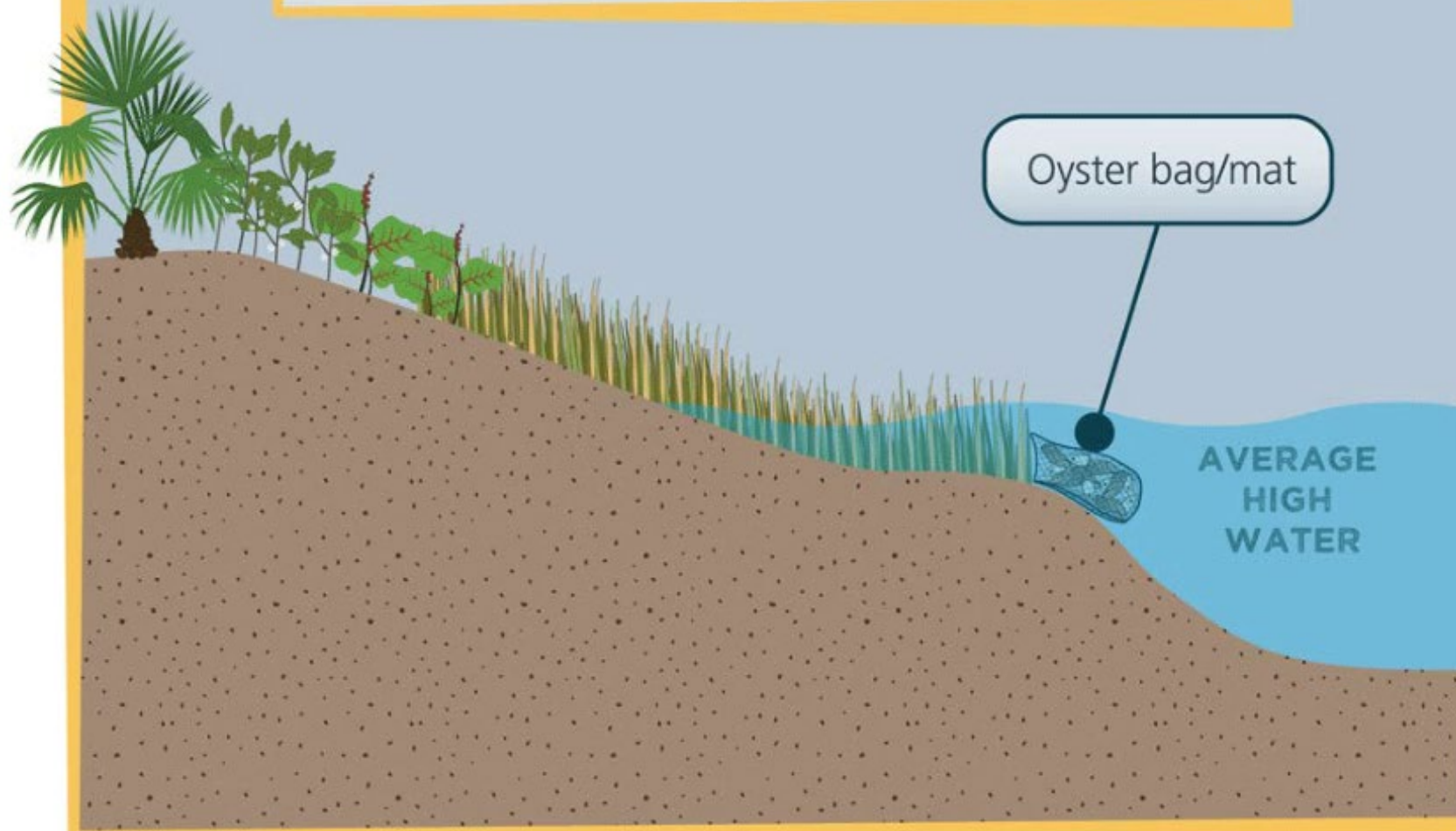


TYPICAL CROSS SECTION VIEW RETAINING WALL AND PLANTS



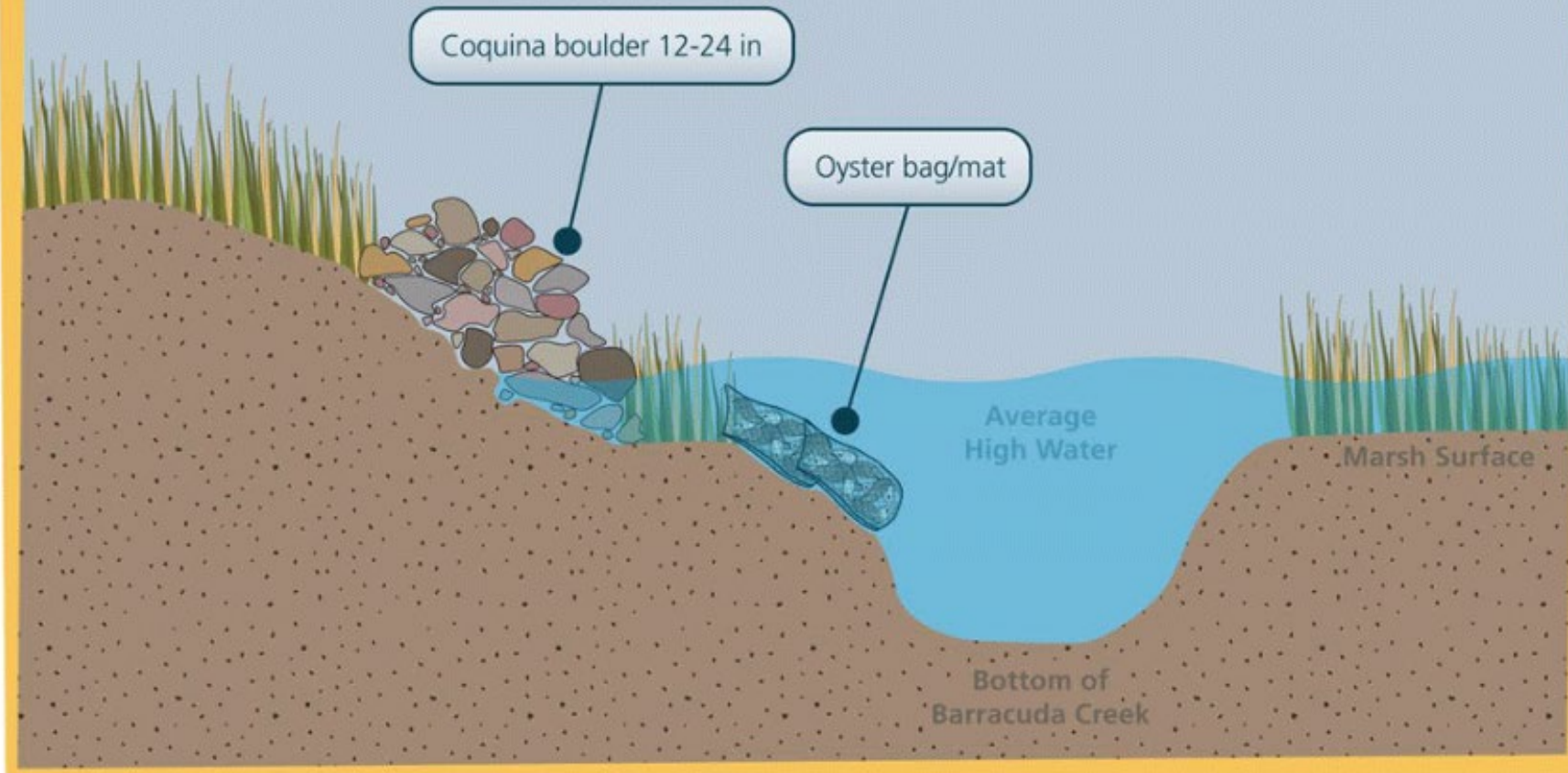


TYPICAL CROSS SECTION VIEW SLOPE AND PLANTS



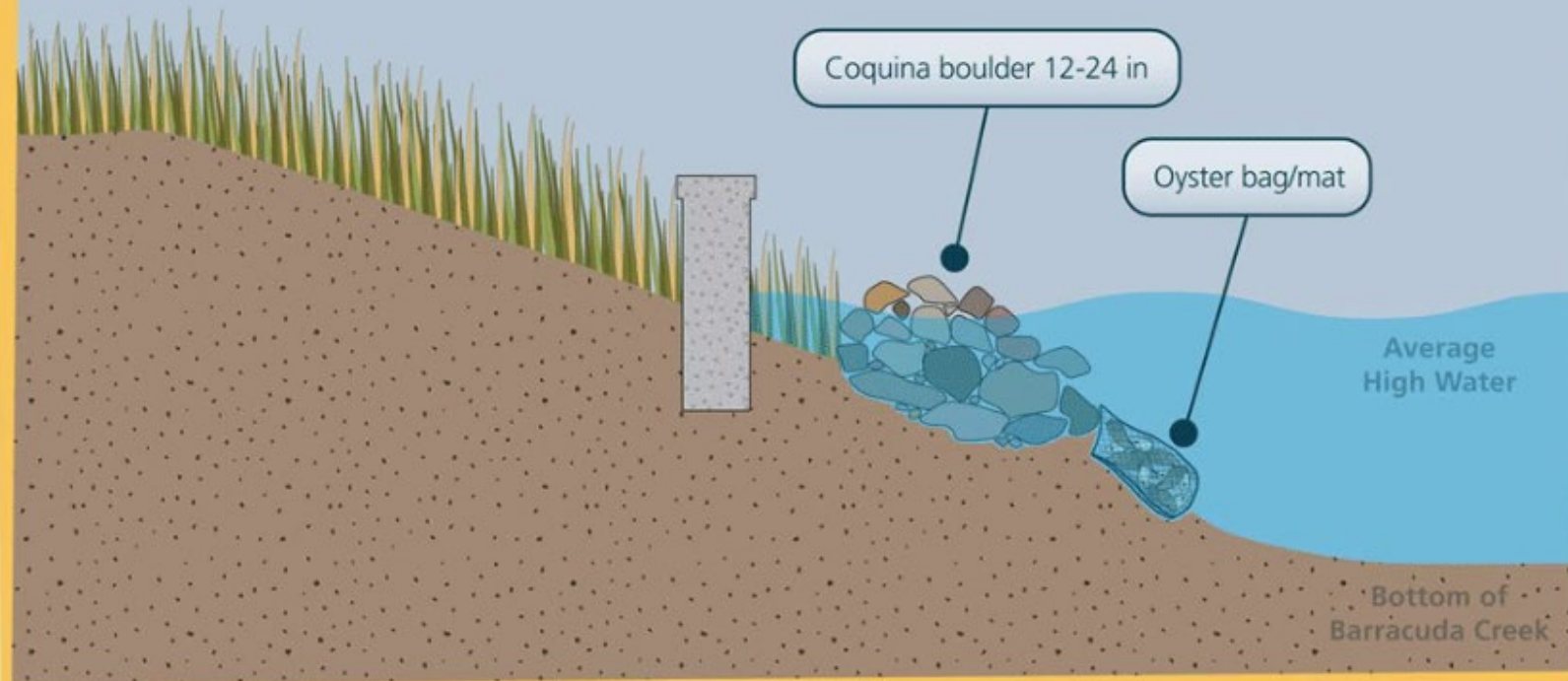


TYPICAL CROSS SECTION VIEW RIP-RAP AND PLANTS





TYPICAL CROSS SECTION VIEW SEAWALL, RIP-RAP AND PLANTS





Project Examples



Nassau County UF-IFAS Extension

- **Goffinsville Park, Fernandina Beach, Florida**
- **Planting salt marsh plants (*Spartina alterniflora*), oysters gabions, community oyster reef enhancement (CORE), Biodegradable Element for Starting Ecosystems (BESEs), and repurposed crab traps**

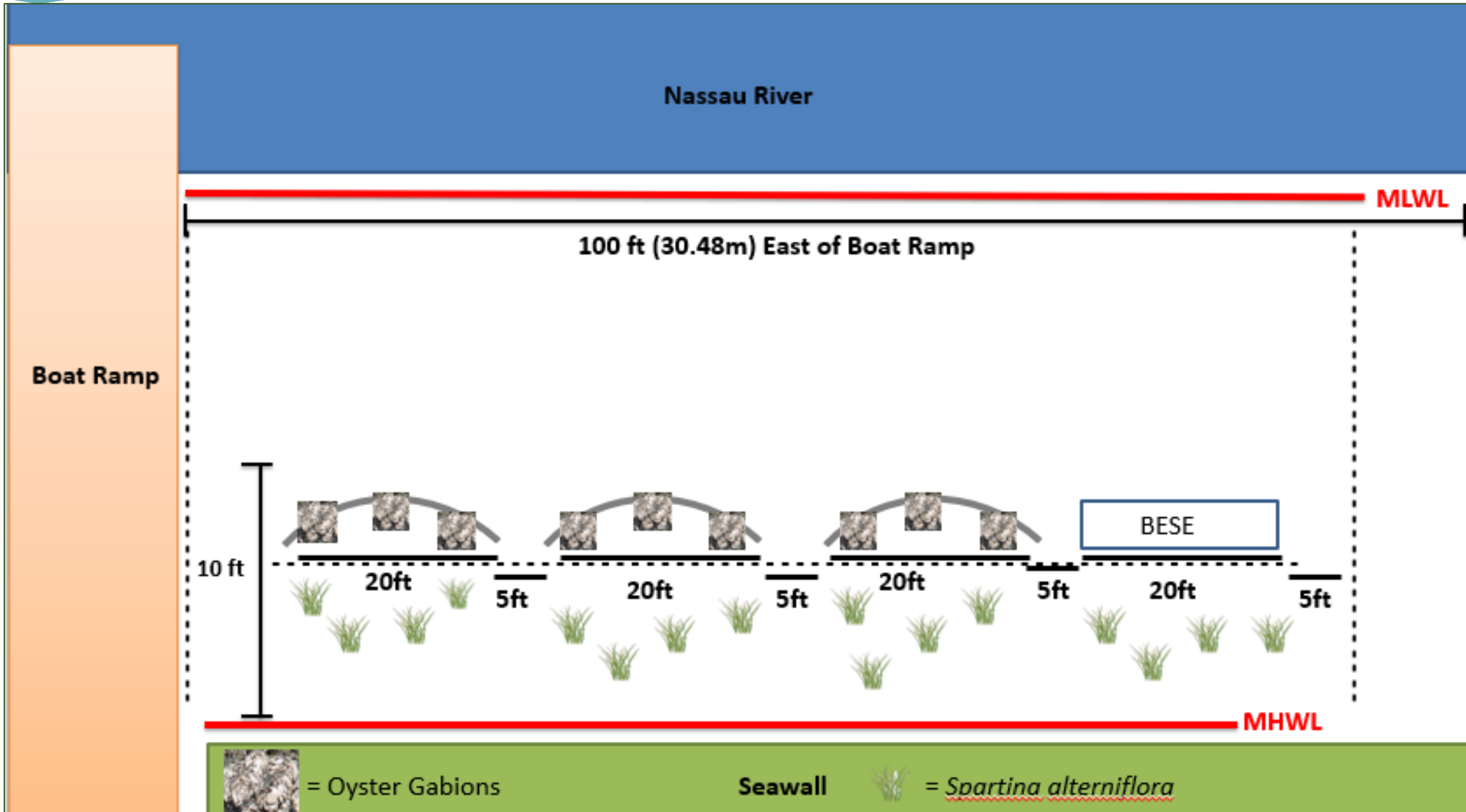


Nassau County UF-IFAS





Nassau County UF-IFAS





Jacksonville Zoo

- **Jacksonville Zoo, Jacksonville, Florida**
- **Plantings, soil bags, oyster gabions, and reef balls**
- **Purpose or goals of the project?**



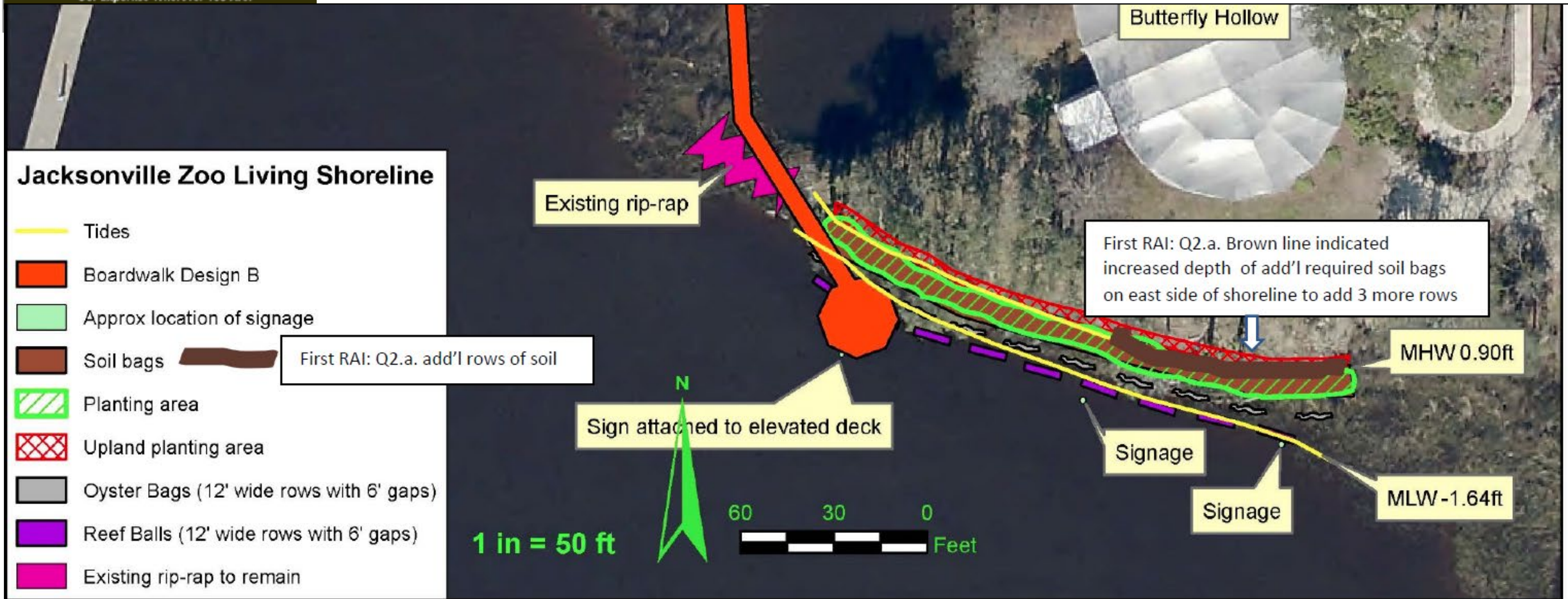
Jacksonville Zoo



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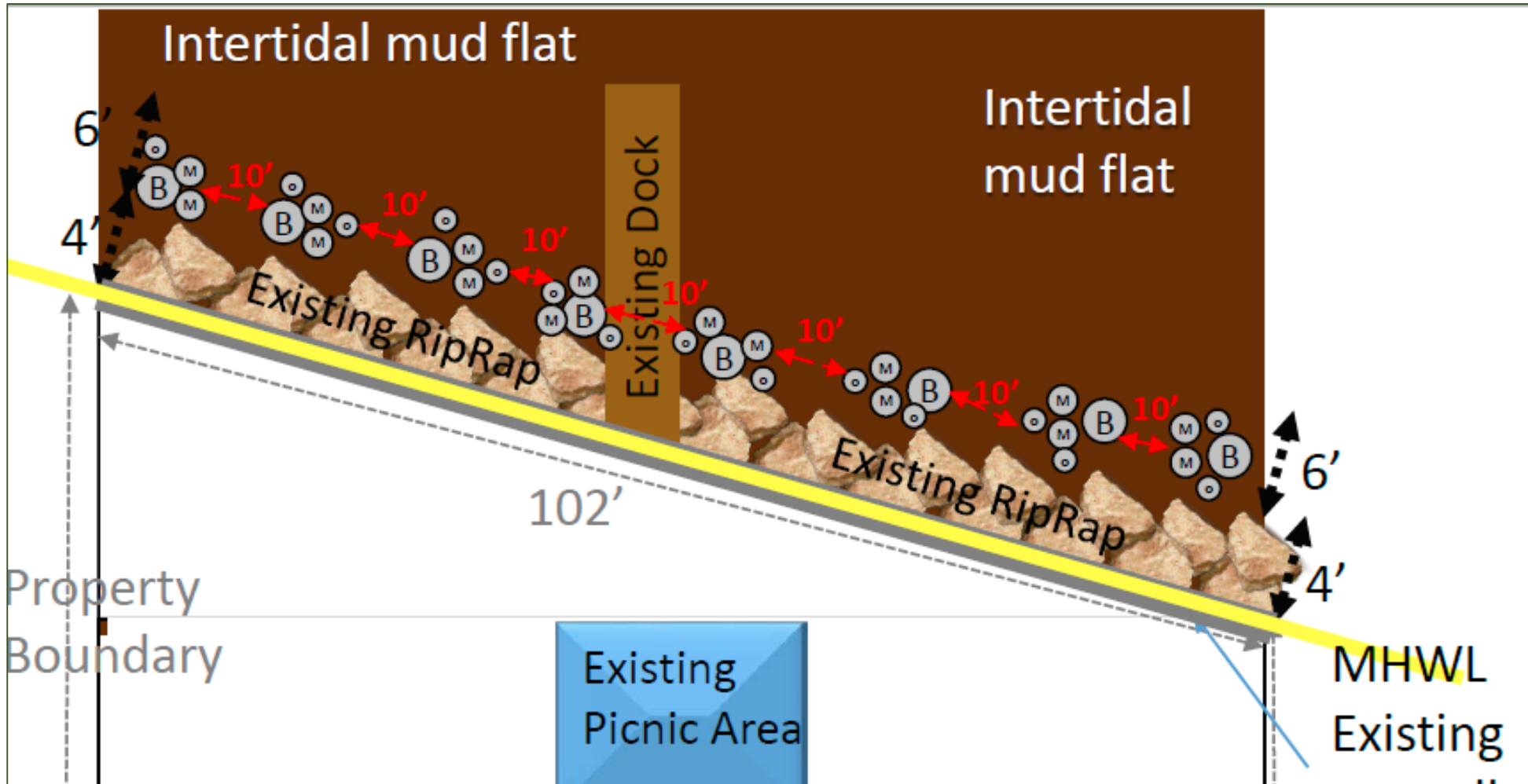


UF - Cedar Key Biological Field Station

- **UF/IFAS Cedar Key Biological Field Station, Cedar Key, Florida**
- **Reef balls to increase resilience of seawall infrastructure**
- **Enhance oyster recruitment**



UF Biological Field Station



LEGEND

- ⊙ = Bay Ball
- ⊙_M = Mini Bay Ball
- ⊙_O = Oyster Ball



Needs, Lessons, Resources



Needs

- **Need monitoring of sites.**
- **Cost comparison.**
- **Consultant training.**



Lessons

- **Coconut husk logs for planting have microfilament.**
- **Oyster bags break down to microplastics.**
- **Lessons still not learned.**



Resources

Living Shoreline Academy

<https://livingshorelinesacademy.org/>

University of Florida / Sea Grant Florida

<https://www.flseagrant.org/florida-living-shorelines/>

Florida Living Shorelines

<http://floridalivingshorelines.com/>

NOAA

<https://www.habitatblueprint.noaa.gov/living-shorelines/>



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