

SG. Seagrass Restoration at Big Slough, Sebastian Inlet

Preachers Hole North Wabasso Causeway, Indian River County

Restoration Leaders: Melissa Meisenburg, Senior Lagoon Environmental Specialist, Indian River County (IRC)

Carter Henne, President, Sea & Shoreline LLC

The Indian River County seagrass project is designed to restore and enhance important seagrass communities near the Sebastian Inlet and Pelican Island National Wildlife Refuge. The sites were identified based on its proximity to the Sebastian Inlet, water quality and shelter from wave energy. Both sites historically supported robust seagrass meadows but suffered extensive losses after widespread algal blooms in 2011 and 2016. The sites now have consistently sufficient water quality to support seagrass. Experts believe insufficient recruitment and the lack of a seed bank at the project sites is the primary driver for the lack of seagrass cover.

This project will restore vital seagrass habitat lost at the two sites in proximity to Sebastian inlet that functions as an important estuary to ocean corridor. Water clarity is consistently conducive for seagrass survival at the sites. It is expected seeds and fragments generated from the project will accelerate recruitment in adjacent areas of the Indian River Lagoon (IRL).

SITE DELIVERABLES

- **Big Slough** (27.817980°, -80.432373°). Restore a 12.8-acre seagrass habitat.
- **Preachers Hole** (27.777054°, -80.424806°). Restore a 10-acre seagrass habitat.
- Seagrass will be processed for planting by personnel trained at a Sea & Shoreline LLC facility in the underserved community of Lincoln Park in Fort Pierce, FL.

PARTNER ROLES, EXPERIENCE and Specific Design Considerations:

Seagrass (SG)

- Sea & Shoreline (S&S) will utilize proven seagrass restoration design and installation at both seagrass sites utilizing *Halodule wrightii* (e.g., density = planting units).
- Indian River County (IRC) and Sea & Shoreline (S&S) will conduct initial seagrass assessments one-month post installation continuing to monitor monthly for the first year and quarterly for the next two years.
- Grow SAV™ Herbivory Exclusion Devices will be placed temporarily for a period of 12 months on 10-foot centers with 25 devices per acre.

SITE DESCRIPTION, DESIGN AND MONITORING

Big Slough Site Description: Big Slough (Indian River County, FL) is located three miles south of Sebastian Inlet on the eastern side of the IRL surrounded by Melba Island and Pelican Island National Wildlife Refuge (figure 1). The site's proximity to the inlet allows for improved water flow and water quality needed for successful seagrass restoration projects. The natural islands adjacent to Big Slough shelter the site from wave energy, reducing sediment transport and ultimately improving seagrass establishment.

Design: Indian River County will work with Sea & Shoreline to cultivate, plant and maintain 12.8 acres of seagrass within Big Slough (Figure 2). The seagrass utilized in the project is a pure strain cultivar of *Halodule wrightii*, originally collected from previous projects within the IRL. Seagrass will be harvested

from an upland nursery and packaged into Mechanical Planting Units (MPU) and four-inch peat pots. MPUs are pre-rooted plants in biodegradable mesh containers containing 1-3 apical meristems and a proprietary blend of sediments promoting seagrass growth. Peat pots are larger planting units containing up to 25 shoots, pre-rooted in a 4"x4" biodegradable fabric pot.

Sixty-four thousand MPUs will be installed on three-foot centers across the site. 1,600 peat pots will be installed in groups of five and planted below GrowSAV™ herbivory exclusion devices. GrowSAV™ herbivory exclusion devices will be deployed in clusters of five placed on 15-foot centers for a total of 320 devices (Figure 3). The legs of the device bury in the sediment anchoring and keeping it flush with the seafloor to prevent entrapment. Each cluster will be staked with PVC pipe to mark its location. The exclusion devices will protect an area of seven-square feet preventing grazing from herbivores and allowing the establishment of the peat pots. Seagrass educational signage will be installed at the site to protect the newly installed MPUs and educate users.

Maintenance: During GrowSAV™ deployment, monthly maintenance events will remove drift algae and biofouling organisms from the exclusion devices to ensure ample light penetration. GrowSAV™ Herbivory Exclusion Devices will be removed from the project site after twelve months.

Preachers Hole Site Description: Preachers Hole (Indian River County, FL) is located approximately four miles south of the Sebastian Inlet and a mile north of the Wabasso Causeway (Figure 5). It is located on the eastern side of the IRL. As the name suggests, the area is protected on all sides by a series of natural islands creating a cove. The natural islands adjacent to Preachers Hole restoration site shelter the site from wave energy, reducing sediment transport and will allow for seagrass establishment.

Design: The Preachers Hole project provides seagrass restoration for a total of 20 acres (Figure 6). The Indian River County project will provide restoration for 10 acres within the site. Portions of the remaining 10-acre restoration project is funded by the Florida Fish and Wildlife Foundation. Indian River County will work with Sea & Shoreline to cultivate, plant and maintain 10 out of the 20 acres of seagrass within Preachers Hole. The seagrass utilized in the project is a pure strain cultivar of *Halodule wrightii*, originally collected from previous projects within the IRL. Seagrass will be harvested from an upland nursery and packaged into Mechanical Planting Units (MPU) and four-inch peat pots. MPUs are pre-rooted plants in biodegradable mesh containers containing 1-3 apical meristems and a proprietary blend of sediments promoting seagrass growth. Peat pots are larger planting units that contain up to 25 shoots, pre-rooted in a 4"x4" biodegradable fabric pot.

Fifty thousand MPUs will be installed on three-foot centers across the site 10-acre project site. 1,250 peat pots will be installed in groups of five and planted below GrowSAV™ herbivory exclusion devices. GrowSAV™ herbivory exclusion devices will be deployed in clusters of five placed on 15-foot centers for a total of 250 devices (Figure 3). The legs of the device bury in the sediment anchoring and keeping it flush with the seafloor to prevent entrapment. Each cluster will be staked with PVC pipe to mark its location. The exclusion devices will protect an area of seven-square feet preventing grazing from herbivores and allowing the establishment of the peat pots. Seagrass educational signage will be installed at the site to protect the newly installed MPUs and educate users.

Maintenance: During GrowSAV™ deployment, monthly maintenance events will remove drift algae and biofouling organisms from the exclusion devices to ensure ample light penetration. GrowSAV™ Herbivory Exclusion Devices will be removed from the project site after twelve months.

Status of Consultation and Permits: Permits have been issued from the Florida Department of Environmental Protection (FDEP) and the United States Army Corps of Engineers (USACE) for the Preachers Hole Project. Permit applications were submitted to the FDEP and USACE for Big Slough on September 4, 2024.

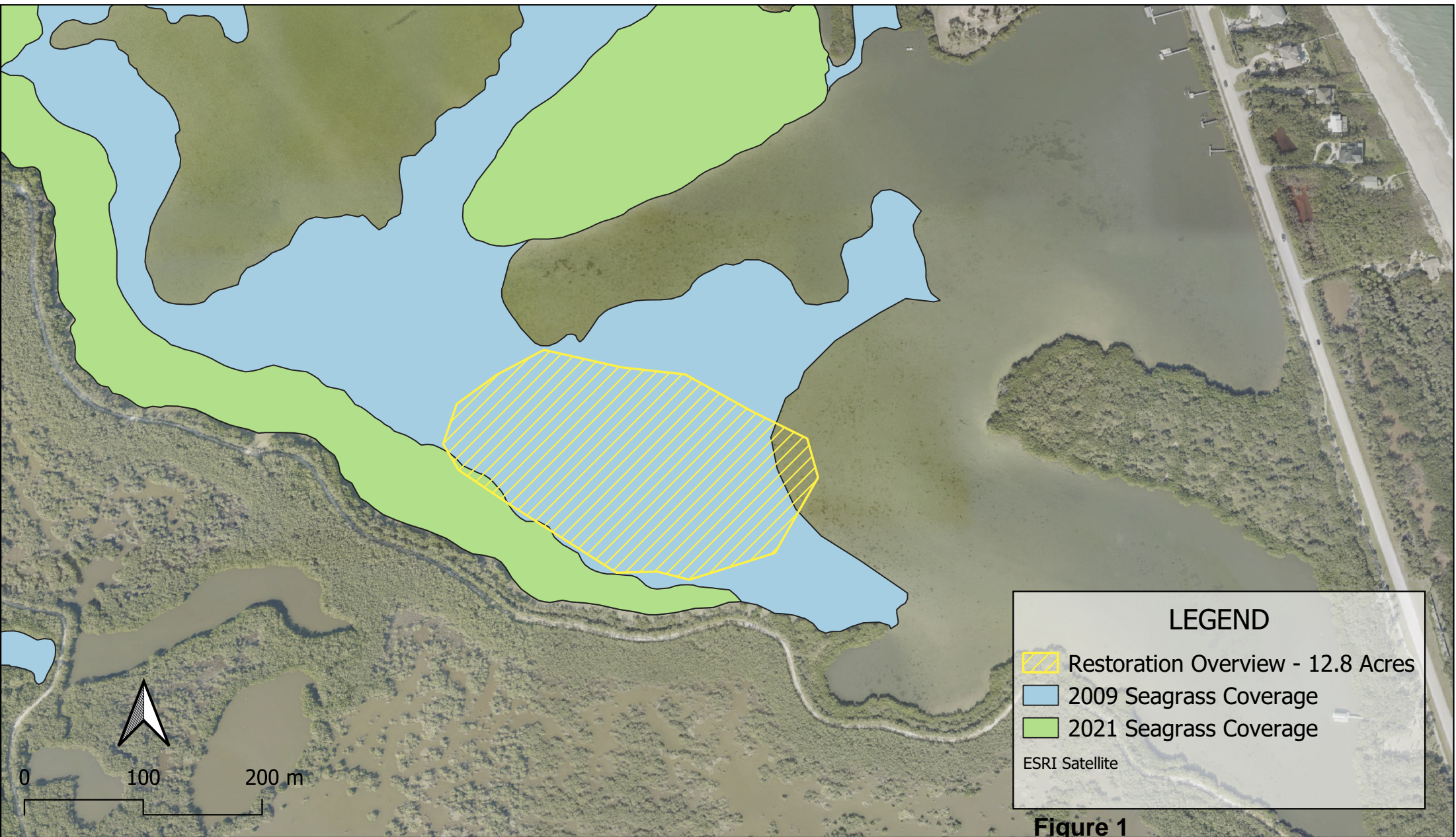


Figure 1



Location:
Indian River County, FL

PROJECT: Indian River Lagoon Seagrass Restoration Project

EXHIBIT: Historic Seagrass Coverage

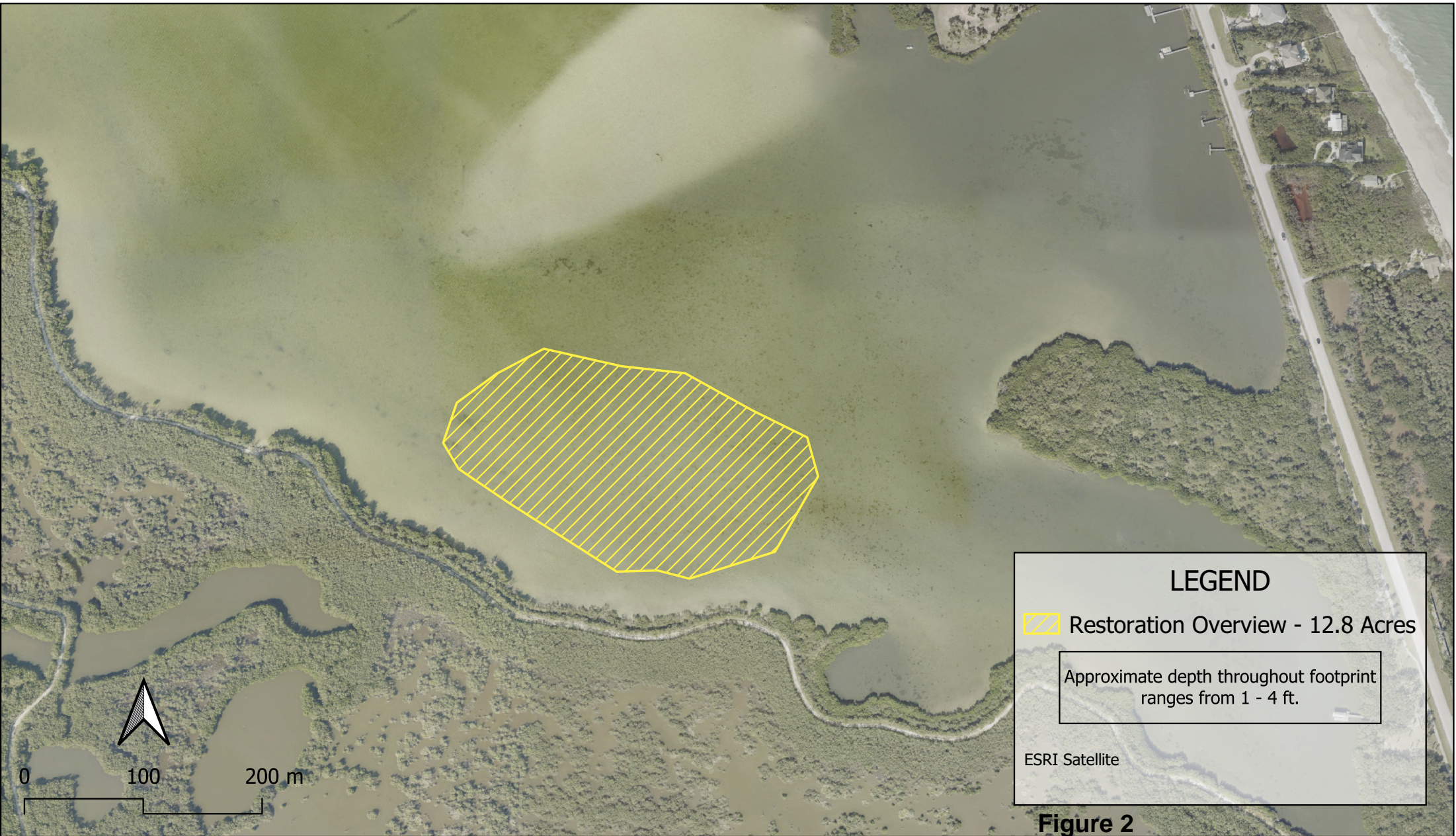
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Drawn By: BK


Checked By: RB

Date: 08/30/2024

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LEGEND

 Restoration Overview - 12.8 Acres

Approximate depth throughout footprint
ranges from 1 - 4 ft.

ESRI Satellite

Figure 2



Location:
Indian River County, FL

PROJECT: Indian River Lagoon Seagrass Restoration
Project

EXHIBIT: Restoration Overview

DRAWN FOR: Permitting

Drawn By: BK

Checked By: RB

Date: 08/30/2024

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Figure 3. GrowSAV™ Herbivory Exclusion Devices deployed on 15-foot centers in a cluster of five marked with PVC poles.

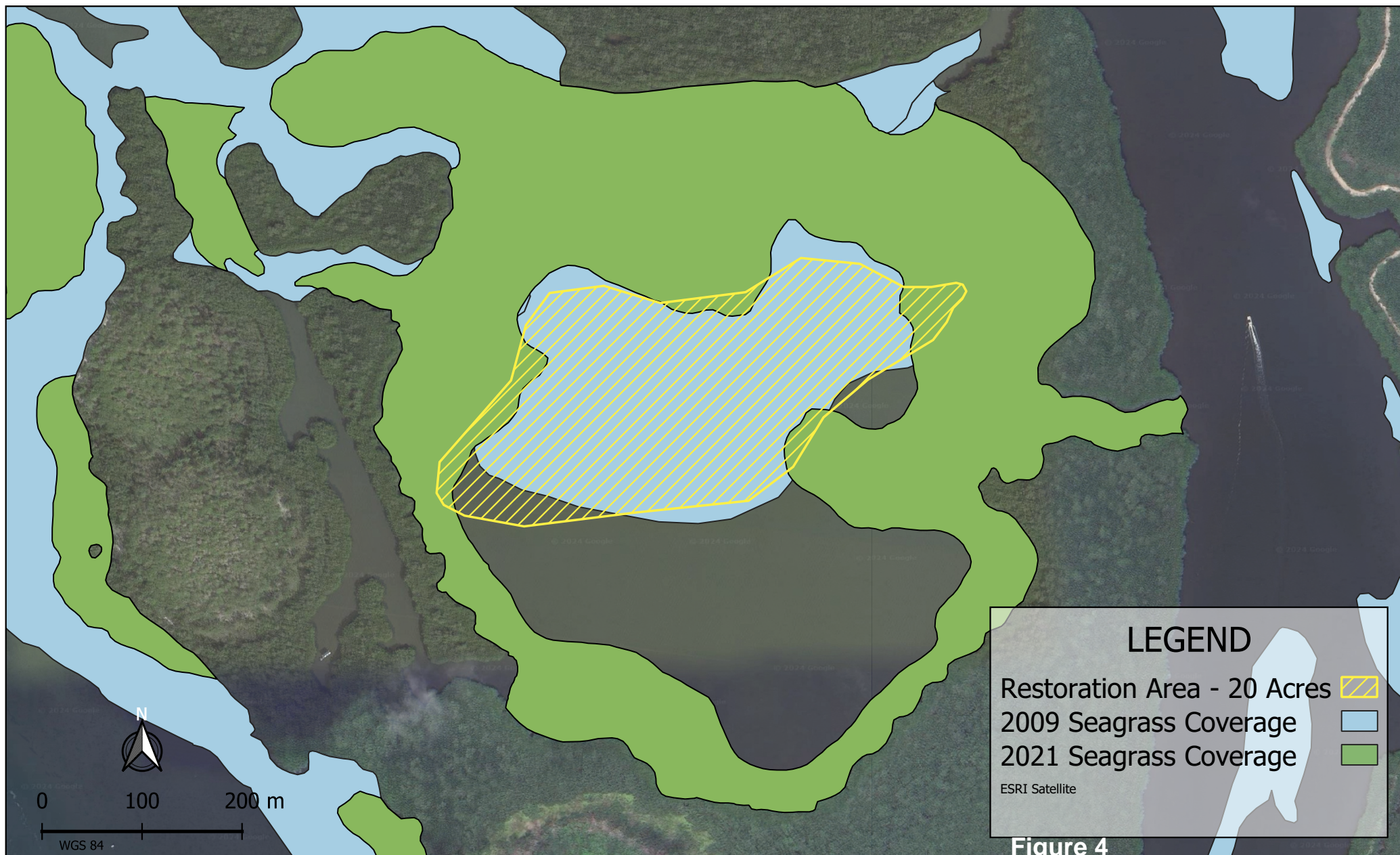


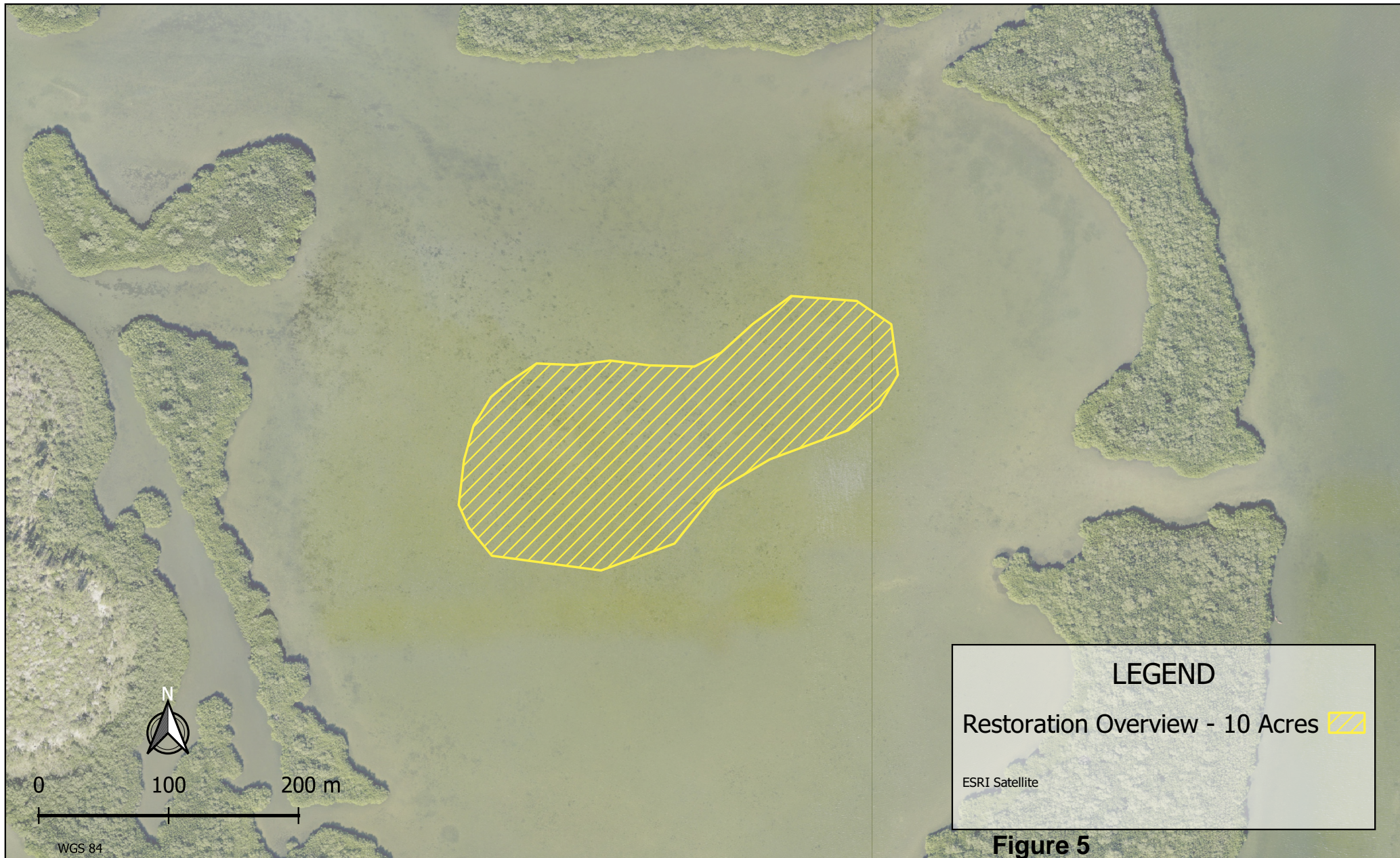
Figure 4



Location:
Indian River County, FL

PROJECT: Indian River Seagrass Restoration
EXHIBIT: Historic Seagrass Coverage
DRWN FOR: Permitting

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Checked By: RB
Date: 2024-03-22
Sheet: 03



Location:
Indian River County, FL

PROJECT: Indian River Seagrass Restoration Project
EXHIBIT: Project Overview
DRWN FOR: IRLNEP Grant

Drawn By: BK
Checked By: RB
Date: 2024-09-03
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