

**Texas Gulf Region Cooperative Weed Management Area: Dune Management
& Restoration on Mustang Island
21-060-010-C670**

**Final Report
February 2022**

Prepared By:

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THIS REPORT WAS FUNDED BY A TEXAS COASTAL MANAGEMENT PROGRAM GRANT APPROVED BY THE TEXAS LAND COMMISSIONER, PROVIDING FINANCIAL ASSISTANCE UNDER THE COASTAL ZONE MANAGEMENT ACT OF 1972, AS AMENDED, AWARDED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA), OFFICE FOR COASTAL MANAGEMENT, PURSUANT TO NOAA AWARD NO. NA20NOS4190184. THE VIEWS EXPRESSED HEREIN ARE THOSE OF THE AUTHOR(S) AND DO NOT NECESSARILY REFLECT THE VIEWS OF NOAA, THE U.S. DEPARTMENT OF COMMERCE, OR ANY OF THEIR SUBAGENCIES.



Project Background:

Dunes provide critical habitat for wildlife and serve as defense for inland areas against storm surge and beach erosion by absorbing the impact of waves and the intrusion of water. Brazilian peppertree is an invasive, noxious, and prohibited species in Texas that negatively impacts dune habitats, as well as many other coastal environments. Through rapid and aggressive growth, as well as allelopathic chemicals, the species quickly modifies and degrades the quality of dune habitats. Coastal Bend Bays and Estuaries Program (CBBEP) will advance local Brazilian peppertree management efforts of the Texas Gulf Region Cooperative Weed Management Area (CWMA).

CBBEP utilized CMP Cycle 25 funds to remove Brazilian peppertree from an impacted dune habitat on Mustang Island and begin the dune restoration process by replanting and/or reseeding treated areas. This restoration will provide habitat and dune stabilization, while also preventing the reintroduction of peppertrees by limiting the germination of seeds that are otherwise easily dispersed. Another goal of the CWMA effort is to educate the community on the importance of dunes and other natural habitats within our ecosystem and promote stewardship of our coastal resources and natural heritage.

Task 1 Summary: Contract for Cooperative Weed Management Area Coordinator

The contract was executed on December 7, 2020 between the CBBEP and the University of Texas Marine Science Institute. An amendment was executed on January 13, 2021 modifying the budget categories to include some funds for supplies.

The CWMA Coordination duties included the implementation of the management plan, run semiannual meetings, coordinate workdays, lead monthly Steering Committee telecommunications, update the website and social media accounts, and produce outreach materials. In addition to overseeing the ongoing implementation of the CWMA Steering Committee, the CWMA coordinator position also promoted Brazilian peppertree awareness, recruited volunteers for reporting new sightings, assisted with oversight of removal and restoration contracts, and assisted with the monitoring and treatment of restored areas.

Task 2 Summary: Conduct Semiannual CWMA Meetings and Monthly Steering Committee Telephone Conferences

The CWMA Steering Committee has held monthly meetings via Zoom on the following dates:

- December 17, 2020
- January 28, 2021
- March 5, 2021
- May 19, 2021
- June 23, 2021
- July 28, 2021
- September 27, 2021
- November 30, 2021

CWMA members discussed the status of current Brazilian peppertree removal projects, new project opportunities along with funding opportunities, planned workdays and outreach events and discussed future goals of the TGR-CWMA.

The 2021 Spring CWMA meeting was held via Zoom on April 15th, and the 2021 Fall CWMA meeting was held in-person at the Estuarine Research Center located on the UT Marine Science Institute in Port Aransas, TX on October 22, 2021. There was also a virtual option for the fall meeting. These meetings were facilitated and coordinated by the Texas Gulf Region CWMA Coordinator, Christina Marconi (MA-NERR employee). Agendas and meeting minutes have been submitted to the GLO.

Task 3 Summary: Contractual Agreement with Vegetation Management Firm

Brazilian peppertree removal work was completed in multiple phases and at multiple locations (See Appendix A for maps of Brazilian peppertree removal). All contractual work was completed by Triton Environmental Solutions (TES).

Zone 4.1: The contract (in the form of a purchase order) was executed on April 1, 2021. This initial contract was to have Zone 4.1 (4.8 acres) cleared of all Brazilian peppertree. TES began work on April 12, 2021 and completed material removal from the site on September 26, 2021 (Appendix B- TES Contract Report; Appendix C: Additional photos of contractual work). TES cut down, hauled away, and treated approximately 2.01 acres of solid Brazilian peppertree within Zone 4.1. The approximate amount of Brazilian peppertree was estimated at about 140 cubic yards are mulch material. Initial herbicide treatments were completed in April 2021, with follow-up retreatments occurring in July 2021, September 2021, and November 2021 (Appendix D TES Report contains detail on this final retreatment).

Zone 3- North Beach Street: TES was contracted to complete foliar retreatments on Brazilian peppertree within Zone 3 (located on the northside of Beach Street). Zone 3 had previously been treated with a CMP grant (CMP Cycle 24) in 2020. These retreatments were completed on November 30 and December 29, 2021. This area was about 0.75 acres (See Appendix D for TES Report of this retreatment).

Zone 4.3: With funds leftover from the restoration component of the project, TES began treatment of Brazilian peppertree in Zone 4.3. Zone 4.3 is approximately 1.85 acres large, with 1.2 acres of solid Brazilian peppertree. There weren't enough funds to complete this entire area, but ~0.5 acres of Brazilian peppertree were removed with the remaining funds. This work was completed from January 17-20, 2022 (Appendix E – TES Report).

Task 4 Summary: Contractual Agreement with Dune Restoration Firm

A Purchase Order was approved by UT Austin on June 17th for Triton Environmental Solutions (TES) to complete the restoration component of the project. The restoration component of the project included the following work: 1) Clear the planting area of Rattlebush (*Sesbania drummondii*) and 2.) Plant over 2,000 plugs of Coastal Little Bluestem (*Schizachyrium littorale*) (Appendix D for a report from TES on the planting and Appendix A for a map of the planting locations). Due to the wet conditions, Rattlebush dominated the regrowth within the treatment area. Due to this, we had the contractor remove the dead Rattlebush to allow for optimal planting conditions for the plugs. The plugs were donated by a local grower who provided time, seed, soil, and enrichment supplements. See Appendix F for photos of the 2,000 plugs. This work required for this phase of the project was reduced significantly due to the project area's ability to naturally restore itself. The project area is surrounded by healthy, native vegetation that naturally encroached into the areas that had been cleared of Brazilian peppertree.

Task 5 Summary: Conduct Workdays and Community Outreach Event

Community Workday/Outreach Events: The following workday and outreach events were completed by the Texas Gulf Region CWMA during the time period of this project (Appendix G for map of locations and photos):

Community Workday, April 16, 2021: Twelve volunteers, City of Port Aransas employees, representatives from the Texas Forest Service, and staff from the Mission-Aransas Reserve and Texas State University, removed Brazilian peppertree from a part of the City of Port Aransas Nature Preserve (near Paradise Point). The twelve-person crew worked from 9am to noon.

Community Workday, October 22, 2021: Members from the Texas Forest Service, Mission-Aransas NERR, UTMSI Grounds Crew, City of Port Aransas, Texas State University, and CBBEP. Properties within the Port

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GLO Contract No. 21-060-010-C670

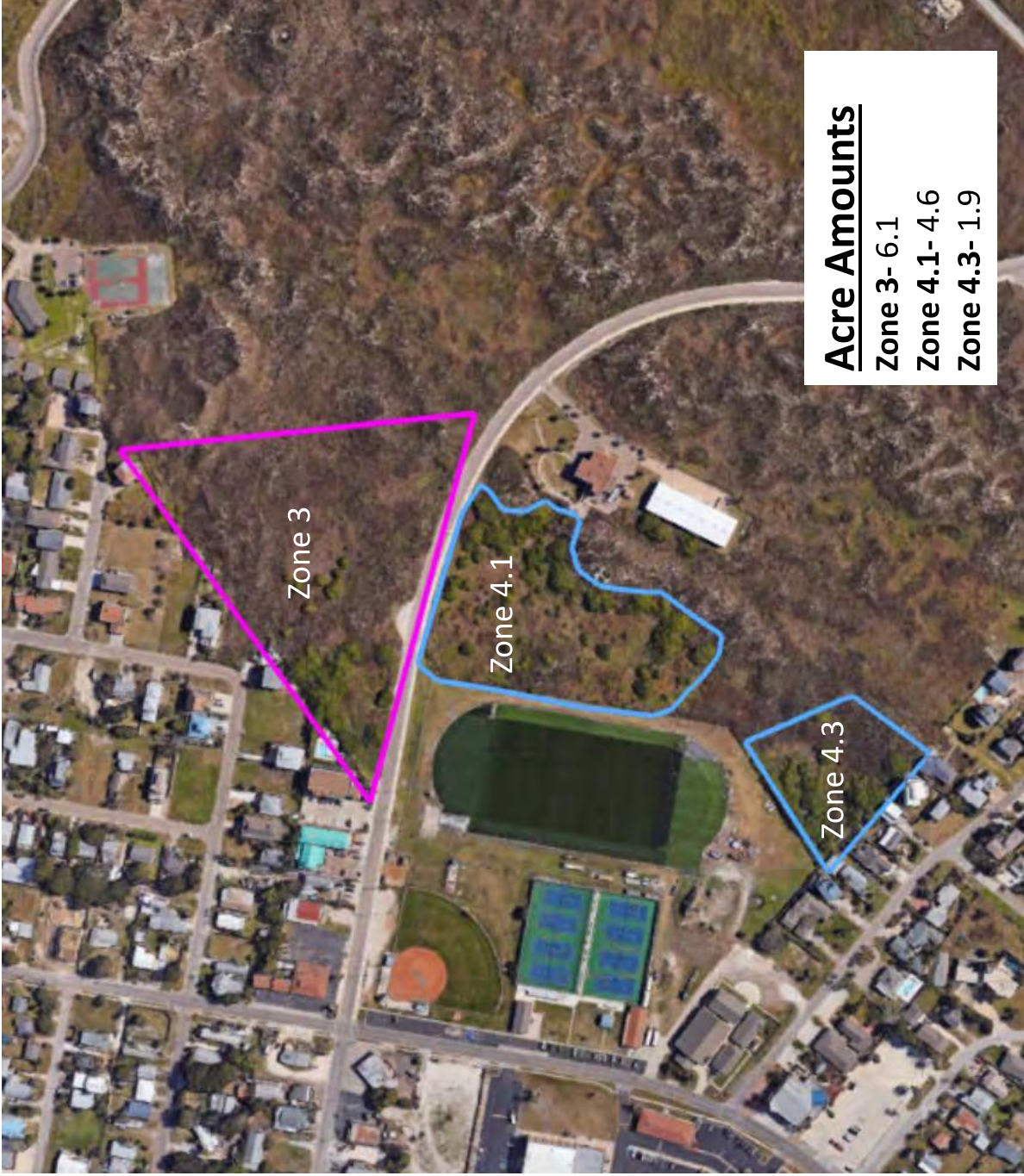
Aransas Nature Preserve boundaries were worked on. A group of volunteers also went to a private resident to retreat an area that had previously been worked on (by the TPWD Coastal Fisheries Grant for work on private property). That group of volunteers also planted a large native tree for the homeowner, to show appreciation for working with the CWMA and removing her Brazilian peppertrees.

Community Outreach Event: Native Tree Give Away, October 23, 2021: The City of Port Aransas Nature Preserve, the Texas Forest Service, Mission-Aransas NERR, and the Arbor Day Foundation hosted a native tree give away. Four hundred trees were given away to over 220 residents of Port Aransas and the surrounding area. The event was hosted at the UT Marine Science Institute. This event allows the CWMA and its partners to provide educational information on the importance of planting native.

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APPENDIX A: PROJECT MAPS

- 1. Contractual Zone Map**
- 2. Zone 4 Map**
- 3. Planting Zone Map**



ZONE 4- TOTAL PROJECT AREA



ZONE 4.1



ZONE 4.3





Legend

- Approximate Planting Area (0.5-Ac)
- Approximate Sennabeen, Drummond Sesbania (0.75-Ac)
- Approximate Boundaries

Sennabeen, Drummond Sesbania
Removal Location (0.75 Acre)

0.5-Ac Native Vegetation Planting Area

4.8- Acre Boundary

Beach St.



Native Vegetation Transplant Area
University of Texas Marine Science
Institute Property (Beach Street)

Prepared By:

Triton Environmental Solutions, LLC
P.O. Box 1755
Rockport, TX 78381



UT Marine Science Institute (UTMSI)
750 Channel View Dr.
Port Aransas, TX 78373-5015

Prepared for:

Map Notes:
For planning and permitting purposes only, not for construction.
Map Preparation Date: February 2, 2022 (RKW).
Base Source: Low-Altitude Aerial Imagery Obtained from
Connect Explorer; Photo Date: January 26, 2021.
All created layers on this map are georeferenced from PDF files and are approximate.

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APPENDIX B: TRITON ENVIRONMENTAL REPORT- BEACH STREET BRAZILIAN PEPPERTREE TREATMENT AND REMOVAL PROJECT, ZONE 4.1

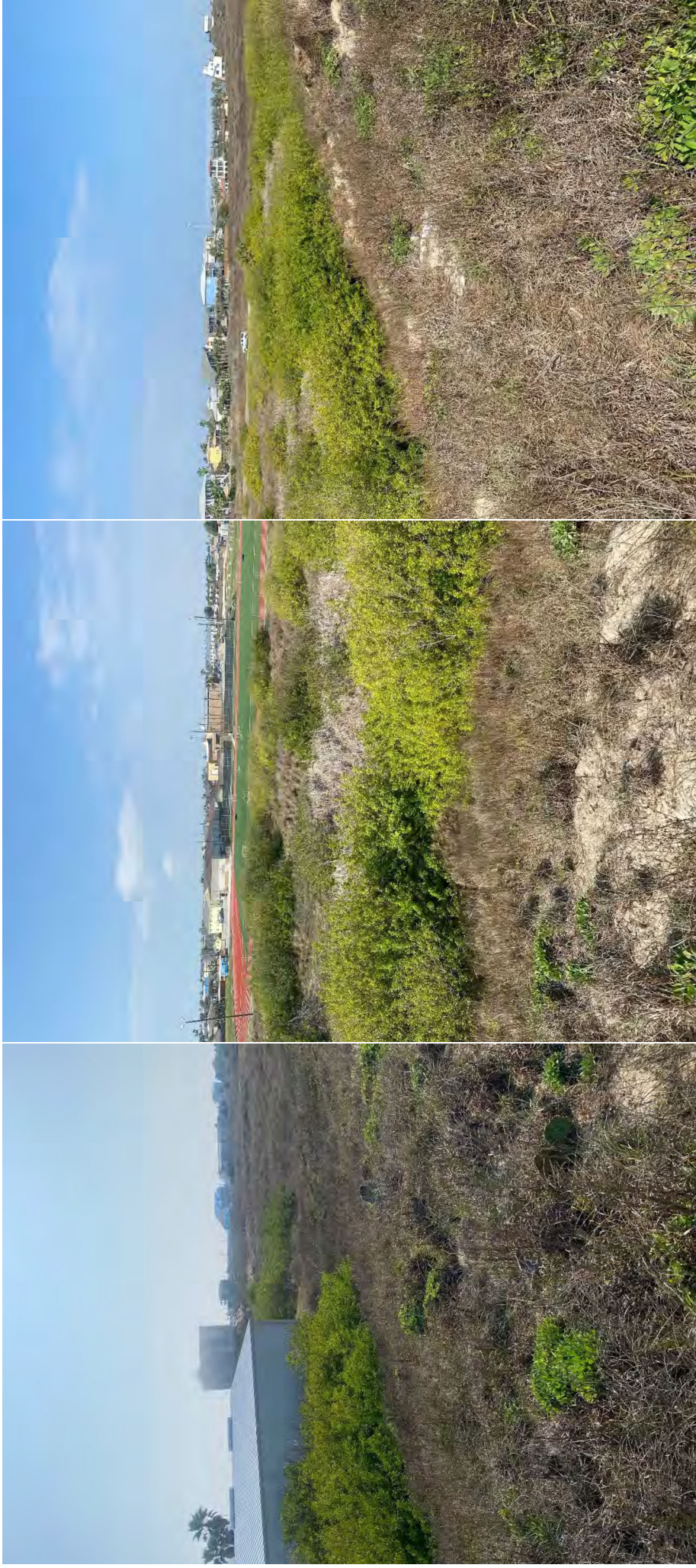


University of Texas Marine Science Institute (UTMSI)

Beach Street Brazilian Peppertree Treatment and Removal Project

Project Summary

- Project Timeframe: April 12, 2021 – September 26, 2021
- Initial Treatment: April 2021; Retreatment #1: July 2021; Retreatment #2: September 2021
- Approximate Acreage of Brazilian Peppertree Treated and Removed: 2.01 Acres
- Approximate Amount of Brazilian Peppertree Mulch Removed: 140 Cubic Yards
- Reported Record Rainfall During Project Timeframe: 36.89 inches



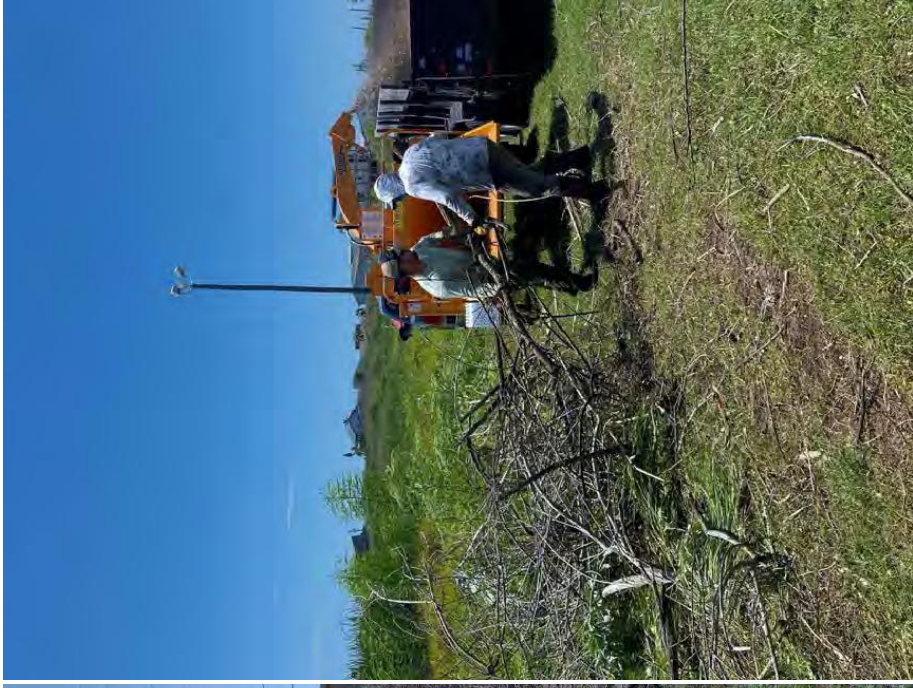
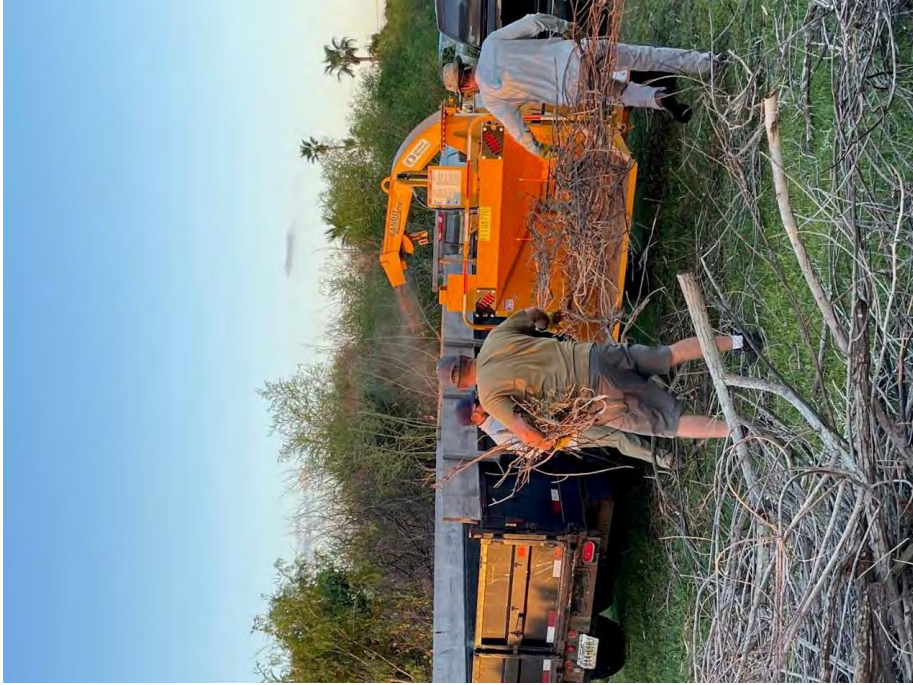
Brazilian Peppertree treatment and removal area prior to initiation of control efforts

- Treatment and Removal Area: 4.8 Acres
- Approximate Amount of Brazilian Peppertree Within Project Area: 2.01 Acres
- Project Initiation: April 12, 2021



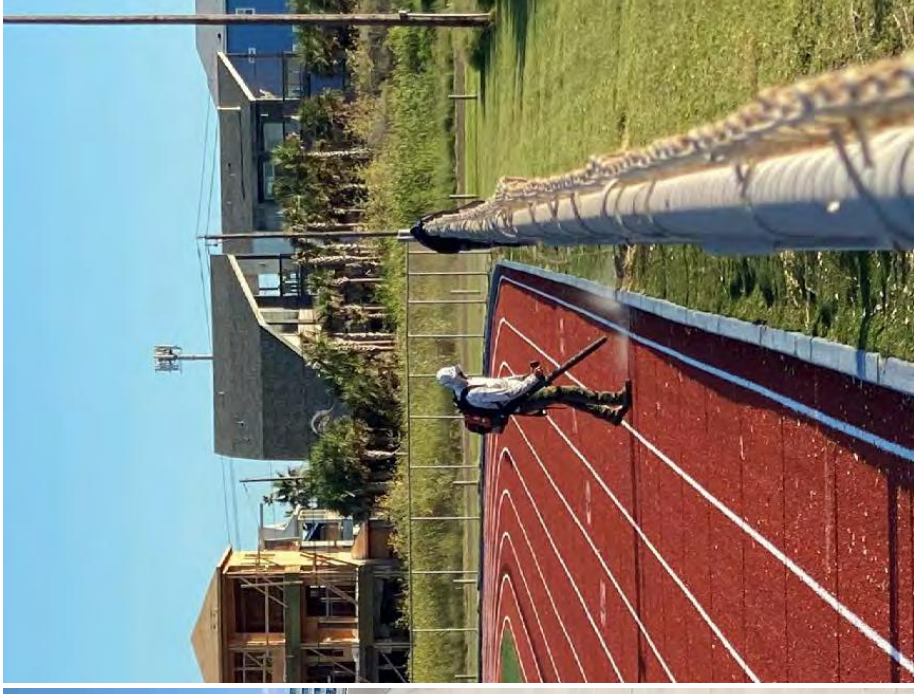
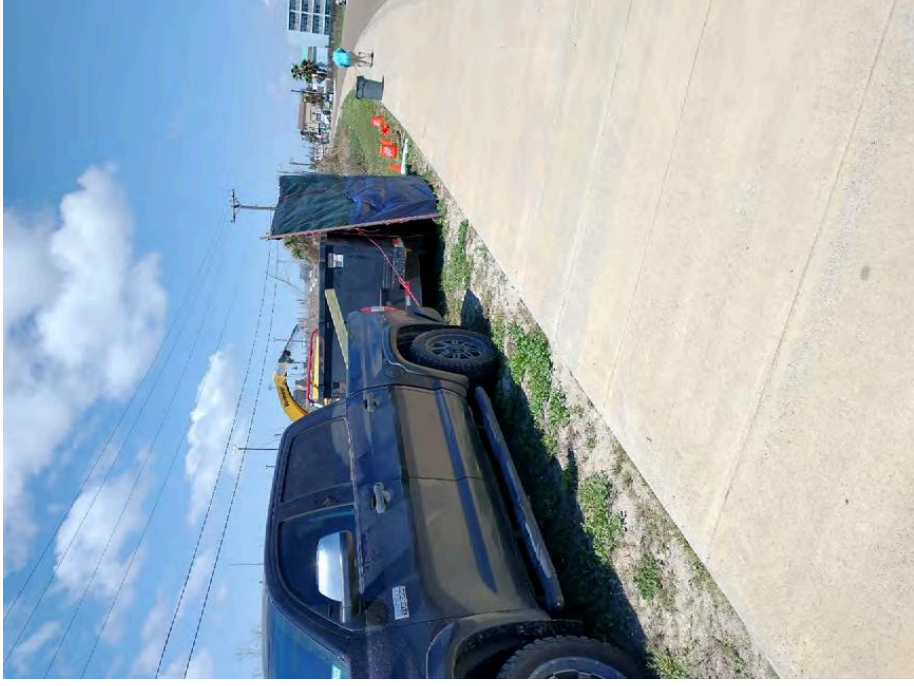
Brazilian Peppertree treatment and removal efforts

- **Approximate Acreage of Brazilian Peppertree Removed from Project Area: 2.01 Acres**
- **Approximate Amount of Brazilian Peppertree Mulch Removed from Project Area: 140 Cubic Yards**
- **Project Timeframe: April 12, 2021 – September 26, 2021**

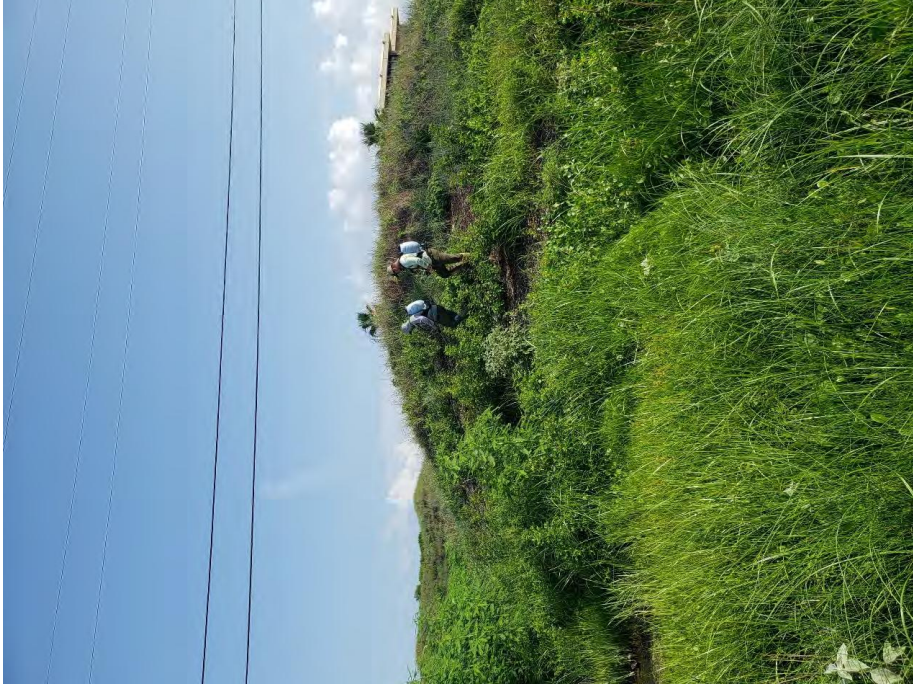


Brazilian Peppertree mulching and removal efforts

- **Approximate Acreage of Brazilian Peppertree Removed from Project Area: 2.01 Acres**
- **Approximate Amount of Brazilian Peppertree Mulch Removed from Project Area: 140 Cubic Yards**
- **Project Timeframe: April 12, 2021 – September 26, 2021**



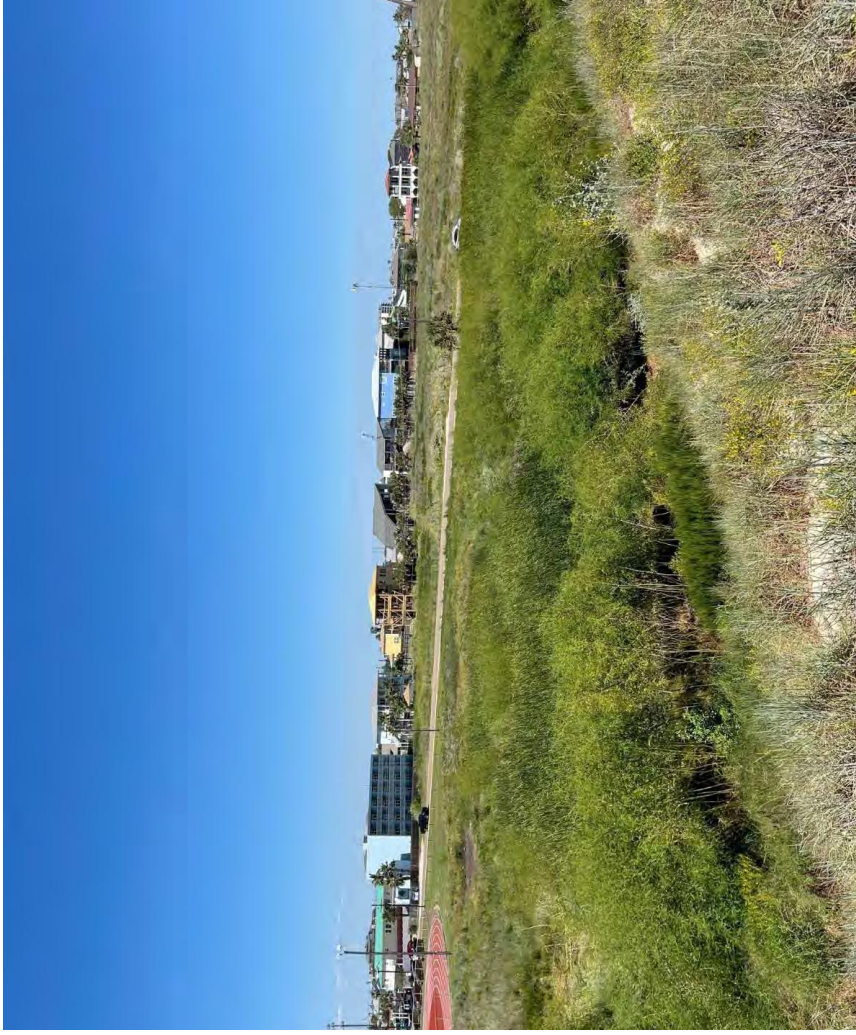
- Representation of Triton's efforts to maintain cleanliness of the areas surrounding the project site
- Approximate Acreage of Brazilian Peppertree Removed from Project Area: 2.01 Acres
 - Approximate Amount of Brazilian Peppertree Mulch Removed from Project Area: 140 Cubic Yards
 - Project Timeframe: April 12, 2021 – September 26, 2021



- Re-treatment efforts via foliar application of chemical herbicide to Brazilian Peppertree new growth**
- **Approximate Acreage of Brazilian Peppertree Removed from Project Area: 2.01 Acres**
 - **Approximate Amount of Brazilian Peppertree Mulch Removed from Project Area: 140 Cubic Yards**
 - **Project Timeframe: April 12, 2021 – September 26, 2021**



- Brazilian Peppertree treatment and removal area immediately following completion of control efforts**
- **Approximate Acreage of Brazilian Peppertree Removed from Project Area: 2.01 Acres**
 - **Approximate Amount of Brazilian Peppertree Mulch Removed from Project Area: 140 Cubic Yards**
 - **Project Timeframe: April 12, 2021 – September 26, 2021**



- Direct comparison of Brazilian Peppertree treatment and removal area prior to and immediately following control efforts**
- **Treatment and Removal Area: 4.8 Acres**
 - **Approximate Acreage of Brazilian Peppertree Removed from Project Area: 2.01 Acres**
 - **Approximate Amount of Brazilian Peppertree Mulch Removed from Project Area: 140 Cubic Yards**
 - **Project Timeframe: April 12, 2021 – September 26, 2021**

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APPENDIX C: TIME SERIES and PHOTOS OF BRAZILIAN PEPPERTREE REMOVAL- ZONE 4.1

October 2, 2019



April 11, 2021

Pre-Removal, Post-Freeze





May 14, 2021
Mid-Removal

May 14, 2021

Mid-Removal

Zoom-Ins of Removal Areas



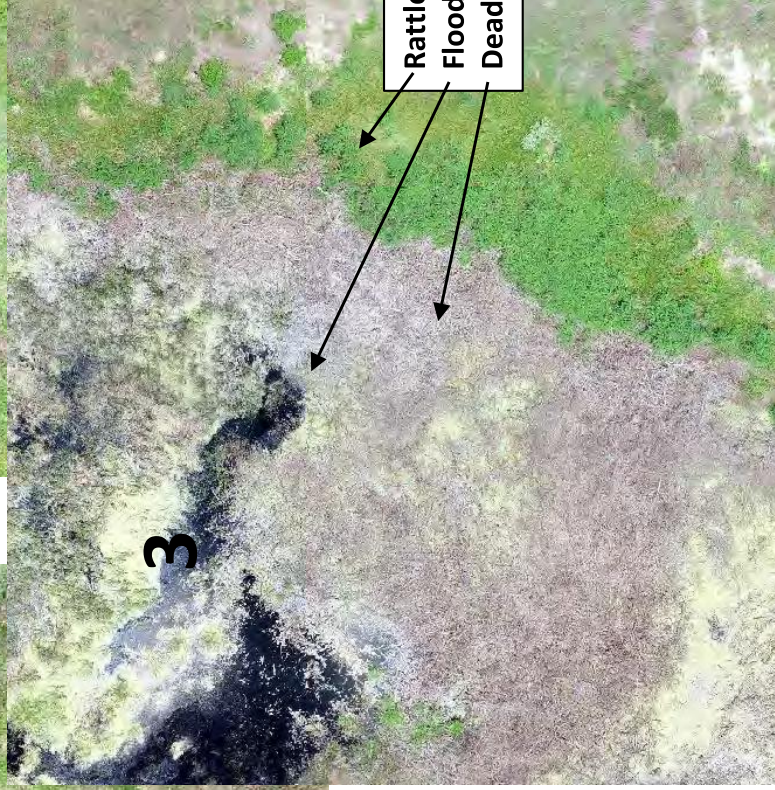
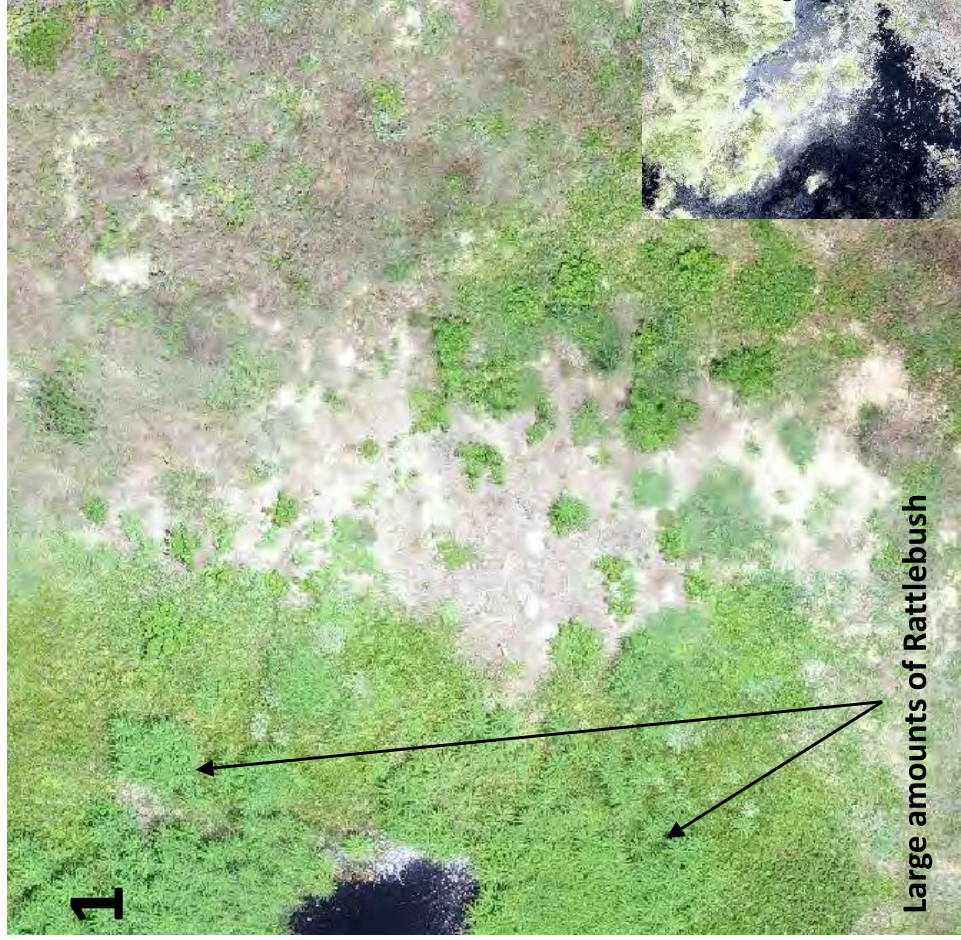
July 19, 2021
Post-Removal (and rain)



July 19, 2021

Post-Removal

Zoom-Ins of Removal Areas





December 8, 2021

Post-Removal

December 8, 2021

Post-Removal

Zoom-Ins of Removal Areas



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APPENDIX D: TRITON ENVIRONMENTAL REPORT- Native Vegetation Transplant and Brazilian Peppertree Retreatment Zones 4.1 & ZONE 3



TRITON ENVIRONMENTAL SOLUTIONS LLC

**Native Vegetation Transplant and
Brazilian Peppertree Retreatment**
Zones 1 & 2, Purchase Order # 2021A24581

University of Texas, Marine Science Institute
750 Channel View Drive,
Port Aransas, TX 78373

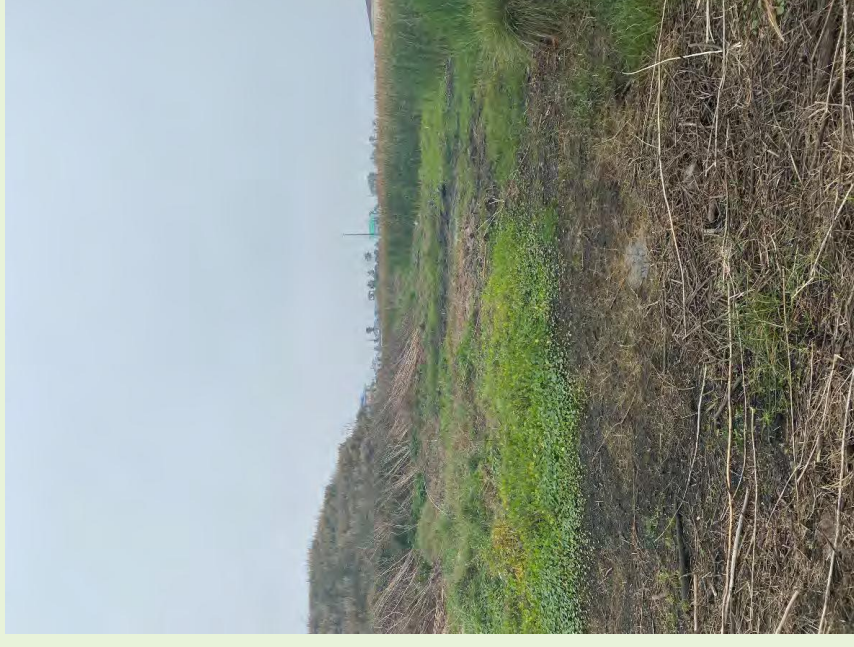
- Item 1 (Zone 1): Transplant 2,000 *Schizachyrium scoparium* plugs within designated planting area
Completed 12/09/2021 – 12/10/2021
- Item 2 (Zone 1): Removal of *Sesbania drummondii* and retreatment of *Schinus terebinthifolia*
Completed 11/18/2021 – 11/19/2021
- Item 3 (Zone 2): Retreatment of *Schinus terebinthifolia*
Completed 11/30/2021 & 12/29/2021

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581

Item 1 (Zone 1) - Transplant 2,000 little bluestem (*Schizachyrium scoparium*) plugs within designated planting area



Representative photo of *Schizachyrium scoparium* plugs prior to planting.



Representative photo of designated planting area prior to initiation of planting.

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581

Item 1 (Zone 1) - Transplant 2,000 little bluestem (*Schizachyrium scoparium*) plugs within designated planting area



Representative photo of planting *Schizachyrium scoparium* plugs within the designated planting area.



Representative photo of digging 3-foot centers for *Schizachyrium scoparium* transplants.



Representative photo of *Schizachyrium scoparium* plugs immediately following planting at 3-foot centers.

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581

Item 1 (Zone 1) - Transplant 2,000 little bluestem (*Schizachyrium scoparium*) plugs within designated planting area



Representative photo of *Schizachyrium scoparium* plugs during 30-day transplant follow-up.



Representative photo of designated planting area during 30-day transplant follow-up.

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581

Item 2 (Zone 1) - Removal of rattlebush (*Sesbania drummondii*) and retreatment of Brazilian peppertree (*Schinus terebinthifolia*)



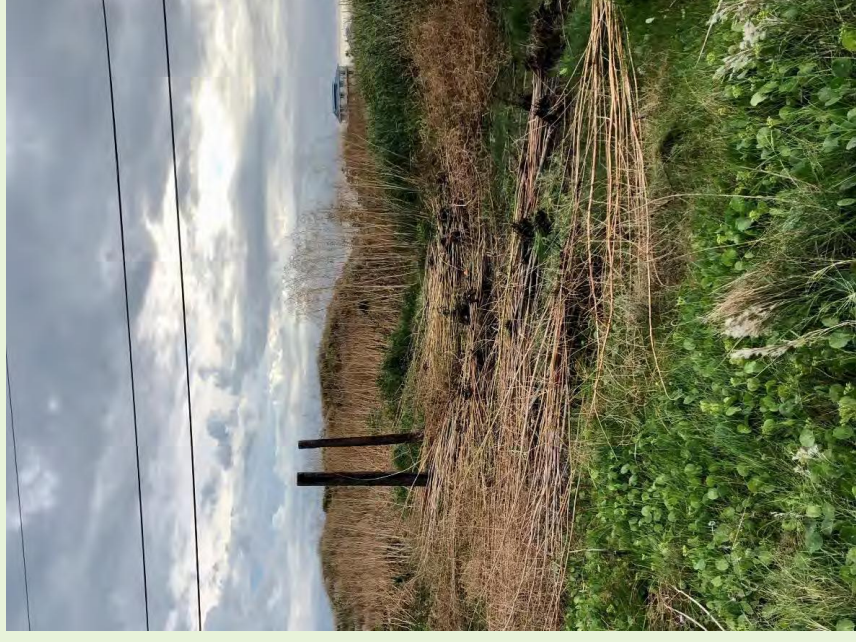
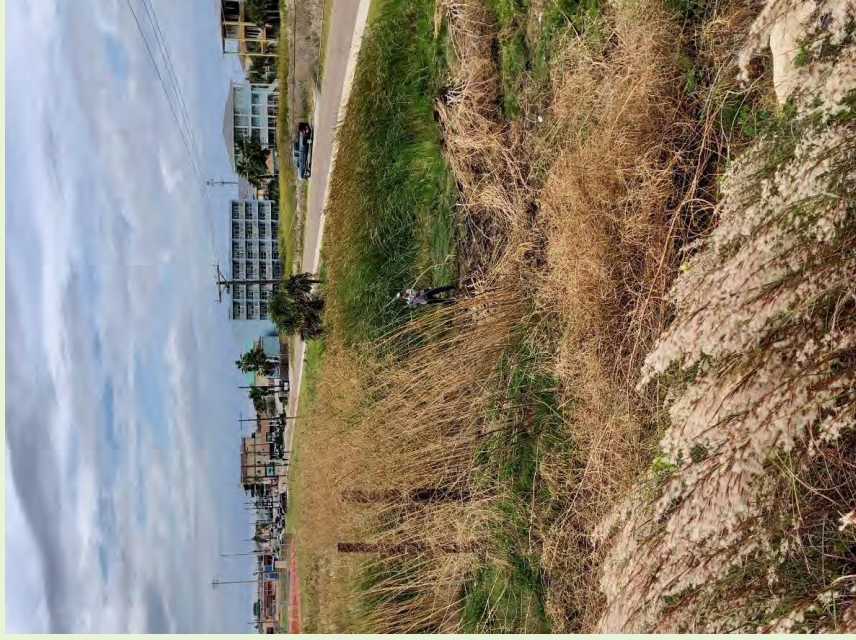
Sesbania drummondii Zone 1 removal area prior to removal, facing southwest.



Sesbania drummondii Zone 1 removal area prior to removal, facing northwest.

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581

Item 2 (Zone 1) - Removal of rattlebush (*Sesbania drummondii*) and retreatment of Brazilian peppertree (*Schinus terebinthifolia*)



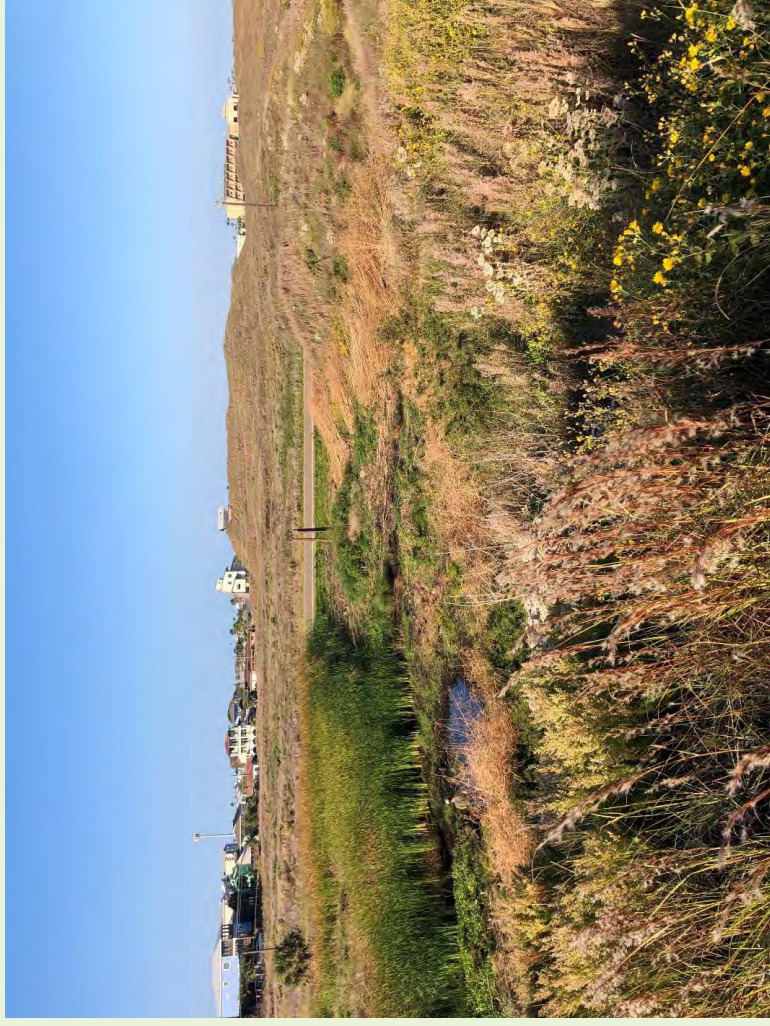
Representative photos of removal efforts of *Sesbania drummondii* within Zone 1 removal area.

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581

Item 2 (Zone 1) - Removal of rattlebush (*Sesbania drummondii*) and retreatment of Brazilian peppertree (*Schinus terebinthifolia*)



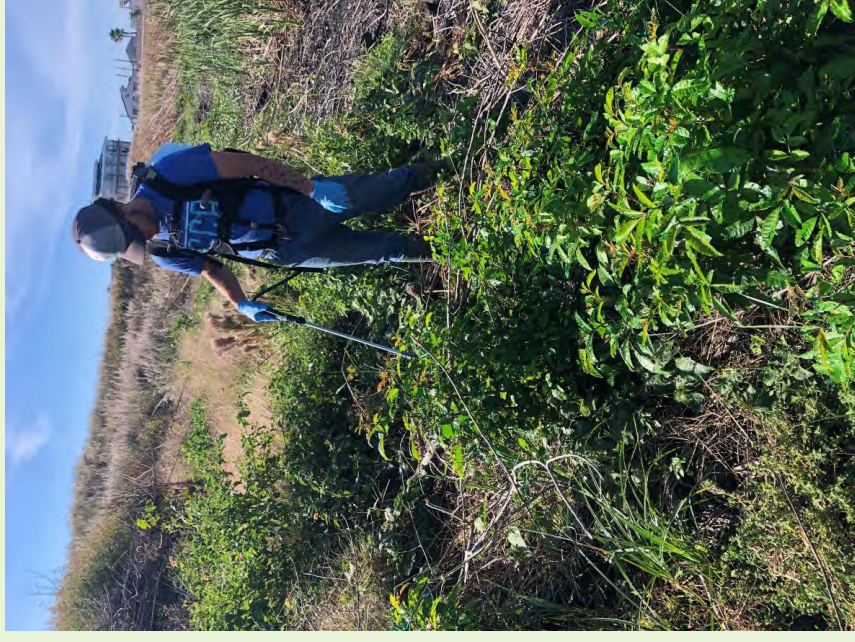
Sesbania drummondii Zone 1 removal area immediately following removal, facing southwest.



Sesbania drummondii Zone 1 removal area immediately following removal, facing northwest.

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581

Item 2 (Zone 1) - Removal of rattlebush (*Sesbania drummondii*) and retreatment of Brazilian peppertree (*Schinus terebinthifolia*)



Representative photos of *Schinus terebinthifolia* treatment within Zone 1.

Transplant Survival and Retreatment: Zones 1 & 2, Purchase Order # 2021A24581
Item 3 (Zone 2) - Retreatment of Brazilian peppertree (*Schinus terebinthifolia*)



Representative photos of *Schinus terebinthifolia* before and immediately following retreatment within Zone 2.

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APPENDIX E: TRITON ENVIRONMENTAL REPORT- BEACH STREET BRAZILIAN PEPPERTREE TREATMENT PROJECT- ZONE 4.3



**University of Texas Marine Science
Institute (UTMSI)**

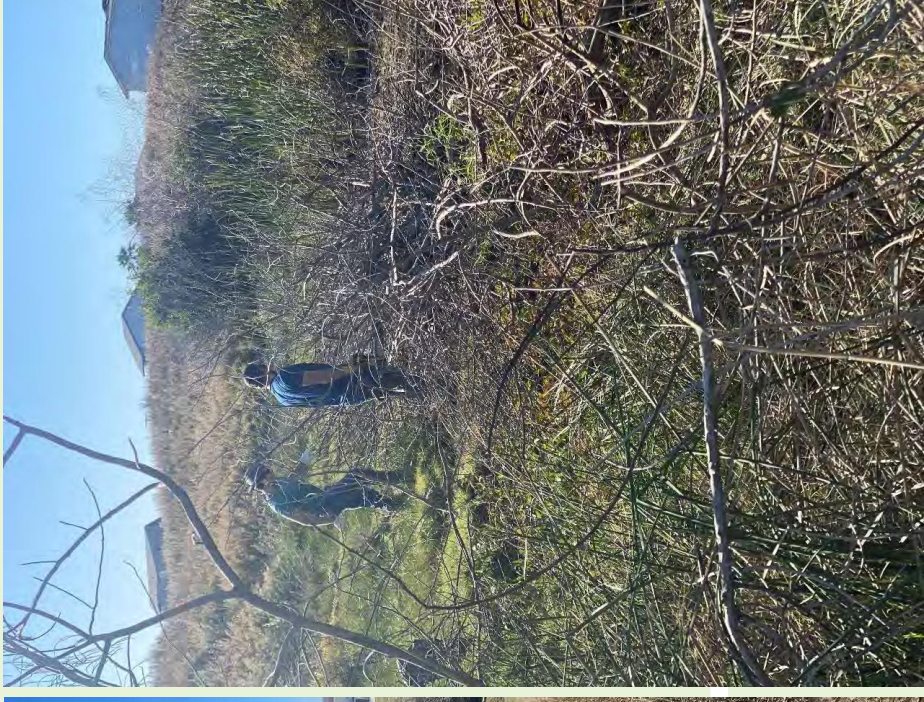
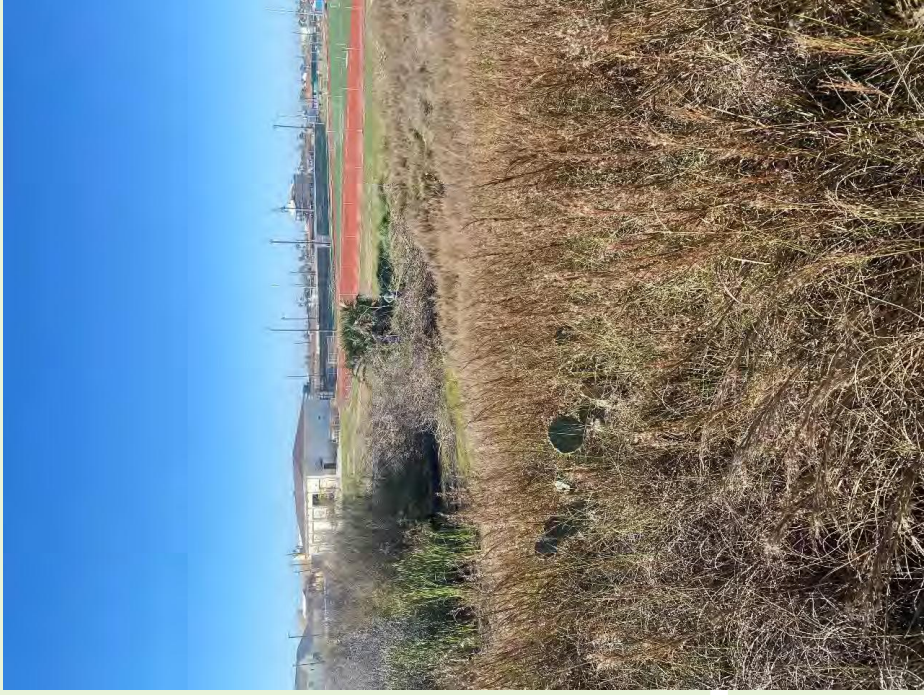
***Beach Street Brazilian
Peppertree Treatment Project (Zone 3)***

Project Notes:

- 1.85-Acre Site (Zone 3)
- Task: Brazilian Peppertree Cut Stump Herbicide Application Services
- Purchase Order # 2022A12521 (Item 1)
- Purchase Order # 2021A24581 (Item 4)
- Project Initiation January 17, 2022
- Project Completion January 20, 2022
- Triton cut, treated and stacked approximately .50-acres of Brazilian peppertree from the 1.85- acre project site.
- Approximately 1.35-acres remains to be treated.



University of Texas Marine Science Institute 1.85-Acre Site (Zone 3) Brazilian Peppertree Cut Stump Herbicide Application Services Timeframe: January 17-January 20, 2022 Purchase Order # 2022A12521 (Item 1) Purchase Order # 2021A24581 (Item 4)	Prepared By: Triton Environmental Solutions, LLC P.O. Box 1755 Rockport, TX 78381
Prepared for: UT Marine Science Institute (UTMSI) 750 Channel View Dr. Port Aransas, TX 78373-5015	Map Notes: For planning and permitting purposes only, not for construction. Map Preparation Date: January 21, 2022 (RKW). Base Map Source: Low-Altitude Aerial Imagery Obtained from Connect Explorer; Photo Date: January 26, 2021. All created layers on this map are georeferenced from PDF files and are approximate.



1.85-Acre Site (Zone 3)

Task: Brazilian Peppertree Cut Stump Herbicide Application Services

-Treatment and Removal Area: 1.85 Acres

-Project Initiation January 17, 2022

-Project Completion January 20, 2022



1.85-Acre Site (Zone 3)

Task: Brazilian Peppertree Cut Stump Herbicide Application Services

-Treatment and Removal Area: 1.85 Acres

-Project Initiation January 17, 2022

-Project Completion January 20, 2022



1.85-Acre Site (Zone 3)
Task: Brazilian Peppertree Cut Stump Herbicide Application Services
-Treatment and Removal Area: 1.85 Acres
-Project Initiation January 17, 2022
-Project Completion January 20, 2022



1.85-Acre Site (Zone 3)
Task: Brazilian Peppertree Cut Stump Herbicide Application Services
-Treatment and Removal Area: 1.85 Acres
-Project Initiation January 17, 2022
-Project Completion January 20, 2022



1.85-Acre Site (Zone 3)
Task: Brazilian Peppertree Cut Stump Herbicide Application Services
-Treatment and Removal Area: 1.85 Acres
-Project Initiation January 17, 2022
-Project Completion January 20, 2022

APPENDIX F: PHOTOS OF COASTAL LITTLE BLUESTEM PLUGS

PLUGS AT THE PLANTING FACILITY

December 8, 2021



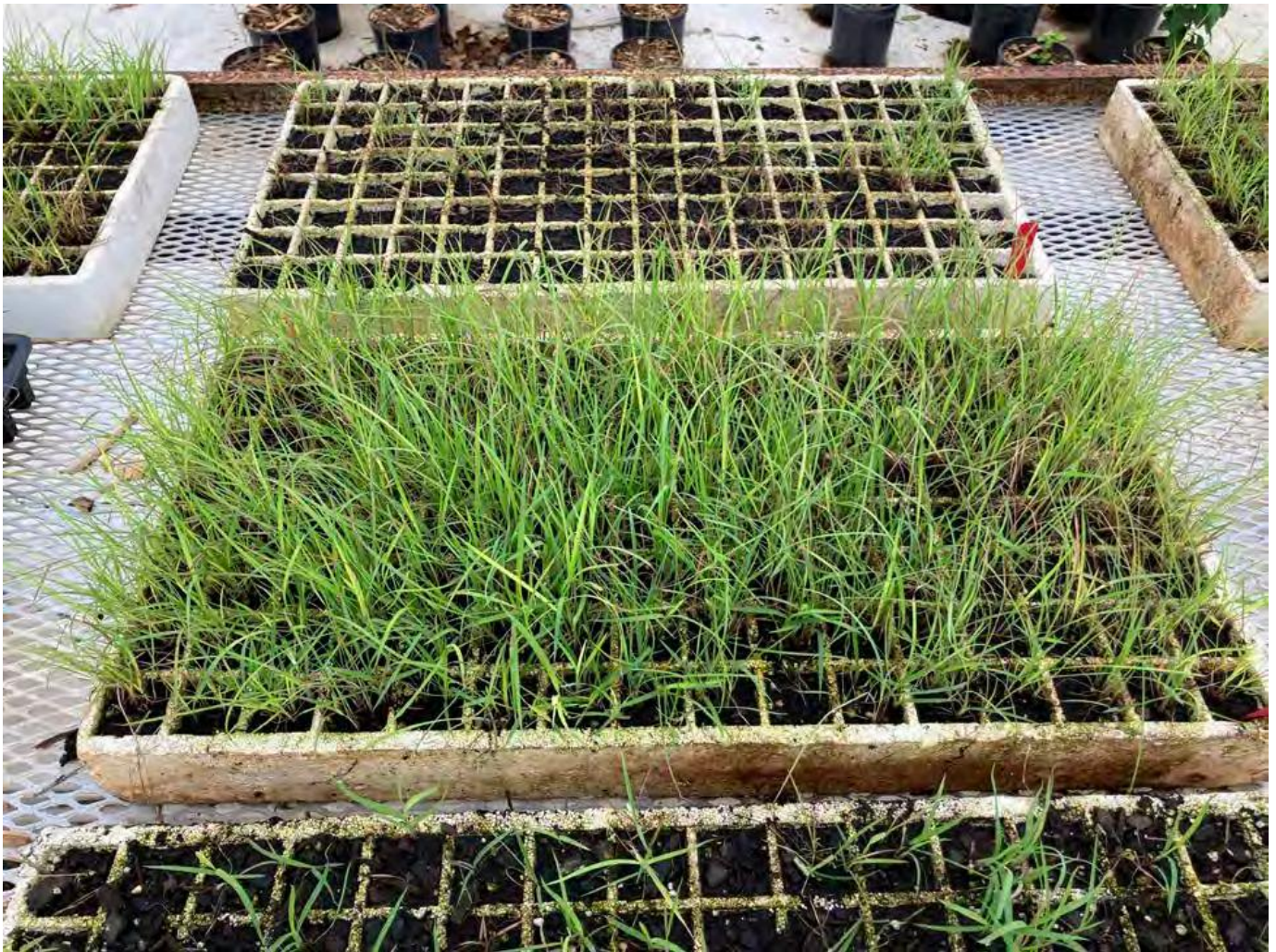
PLUGS AT THE PLANTING FACILITY

December 8, 2021



PLUGS AT THE PLANTING FACILITY

December 8, 2021



PLUGS AT PRIOR TO PLANTING at BEACH STREET LOCATION

December 8, 2021



PLUGS AT PRIOR TO PLANTING at BEACH STREET LOCATION

December 8, 2021



APPENDIX G: CWMA WORKDAY MAP AND PHOTOS

MAP OF LOCATIONS

COMMUNITY WORKDAY- APRIL 16, 2021

COMMUNITY WORKDAY- OCTOBER 22, 2021

NATIVE TREE GIVE AWAY, October 23, 2021



Fall 2021 Community Workday
October 22, 2021
Birding Center, Community Park,
Private Resident

Spring 2021 Community Workday
April 17, 2021
Port Aransas Nature Preserve Land

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APRIL 17TH COMMUNITY WORKDAY PHOTOS

Texas Gulf Region CWMA: Dune Management and Restoration on Mustang Island-



Texas Gulf Region CWMA: Dune Management and Restoration on Mustang Island



Texas Gulf Region CWMA: Dune Management and Restoration on Mustang Island



Fall 2021 CWMA Community Workday Photos

October 22, 2021











Texas Gulf Region CWMA: Dune Management and Restoration on Mustang Island

Native Tree Give Away, October 23, 2021

