

Port Aransas Nature Preserve Brazilian Pepper Control Plan



Port Aransas Nature Preserve Brazilian Pepper Control Plan

January 17, 2008

**Prepared by: Beau Hardegree
Fish and Wildlife Biologist, U.S. Fish and Wildlife Service**

In August 2006 the City of Port Aransas entered into a Cooperative Agreement (201816G941) with the U.S. Fish and Wildlife Service Coastal Program to assist with control of Brazilian Pepper within Port Aransas Nature Preserve. Brazilian Pepper is a non-native woody tree that has rapidly invaded into the open grasslands and native brush communities found throughout the Nature Preserve. This document was prepared as partial fulfillment of the obligation of the Service to the City as described in the Scope of the Cooperative Agreement.

Brazilian Pepper control within the Nature Preserve will require a combination of mechanical and hand removal, herbicide application, and prescribed fire. This document has two sections (Brazilian Pepper Control Plan, and Port Aransas Nature Preserve Prescribed Fire Plan) which when combined and implemented should provide for effective control of Brazilian Pepper.

The chemicals recommended are manufactured by DowAgroSciences and are commercially available from numerous vendors. They are **not** "Restricted Use" pesticides, so the City can purchase and apply them without having an Applicators License; however, the label must be followed. Although an Applicators License is not required, it is recommended that the City have someone trained in application of herbicides or consult with a Licensed Applicator.

Brazilian Pepper seeds and seedlings are destroyed by fire. Prescribed fire with a return interval of 5 years or less has been shown to prevent Brazilian Pepper from invading open grasslands. Large trees and or dense stands are not controllable with prescribed fire alone and will require chemical treatment. Use of prescribed fire with a return interval of greater than 5 years and not properly treating dense stands chemically will result in accelerated Brazilian Pepper growth.

Port Aransas Nature Preserve Brazilian Pepper Control Plan

The project to create the Port Aransas Nature Preserve began in 2002 when the City of Port Aransas (City) negotiated a 50-year lease with the Texas General Land Office (GLO) for 1,089 acres of state land in the area known as Charlie's Pasture, along the Corpus Christi Ship Channel. The City has acquired additional properties through purchase, donation, or condemnation, with a target total of 1,600 acres dedicated to the Nature Preserve. The Nature Preserve is widely known as a premier destination for bird watchers and nature enthusiasts. The Port Aransas Birding Center is located within the Preserve. Each year several thousand visitors come to the Birding Center and Nature Preserve to enjoy wildlife viewing opportunities. The goal of the Preserve is to keep the land in its "native" condition with observation towers, trails and pathways. These routes will connect nodes that have parking areas and pavilions and will allow visitors to access the interior sections of the Nature Preserve for passive recreational use (bird watching, guided hikes, and self-guided trails). To this end the City entered into a Cooperative Agreement with the Fish and Wildlife Service Coastal Program to assist with control of Brazilian Pepper within the Nature Preserve. This document is intended to assist in guiding the City in its Brazilian Pepper control efforts. It is intended to be part of an overall plan to improve the habitat for migratory birds through the use of prescribed fire, mechanical removal, specific herbicide application, and controlled vehicular access.

The shoreline of the Nature Preserve is subject to extremely high erosion rates causing the loss of valuable upland habitats and threatening sensitive wind tidal flats. To protect the Nature Preserve from erosion, the City, with State and Federal partners armored the shoreline with rock revetment. Approximately 7,000 feet of shoreline protection was completed in Summer 2007.

Most (approximately 1,400 acres) of the Nature Preserve is wetland and tidal flats while the remaining area (200 acres) is uplands that are dominated by barrier island grasslands (Seacoast Bluestem, Bushy Bluestem, Gulf dune Paspalum, and Marshhay Cordgrass). Historically the uplands also had isolated patches of thorn scrub species including, Mesquite, Granjeno, Prickly Ash, Prickly Pear, and Lantana. Recently, Brazilian Pepper has invaded these uplands and is now the dominant feature. Brazilian Pepper is a non-native, invasive woody plant with the ability to completely dominate and change the landscape. Brazilian Pepper-dominated landscapes have been shown to be poor habitat for native wildlife and may negatively impact bird populations. In Florida it is estimated that Brazilian Pepper now occupies approximately 700,000 acres. Brazilian Pepper is easily spread by birds, which consume the fruit and seeds. Because this plant is now widespread throughout the city of Port Aransas, it is unlikely that it can be permanently eradicated from the Nature Preserve; however, it can be controlled.

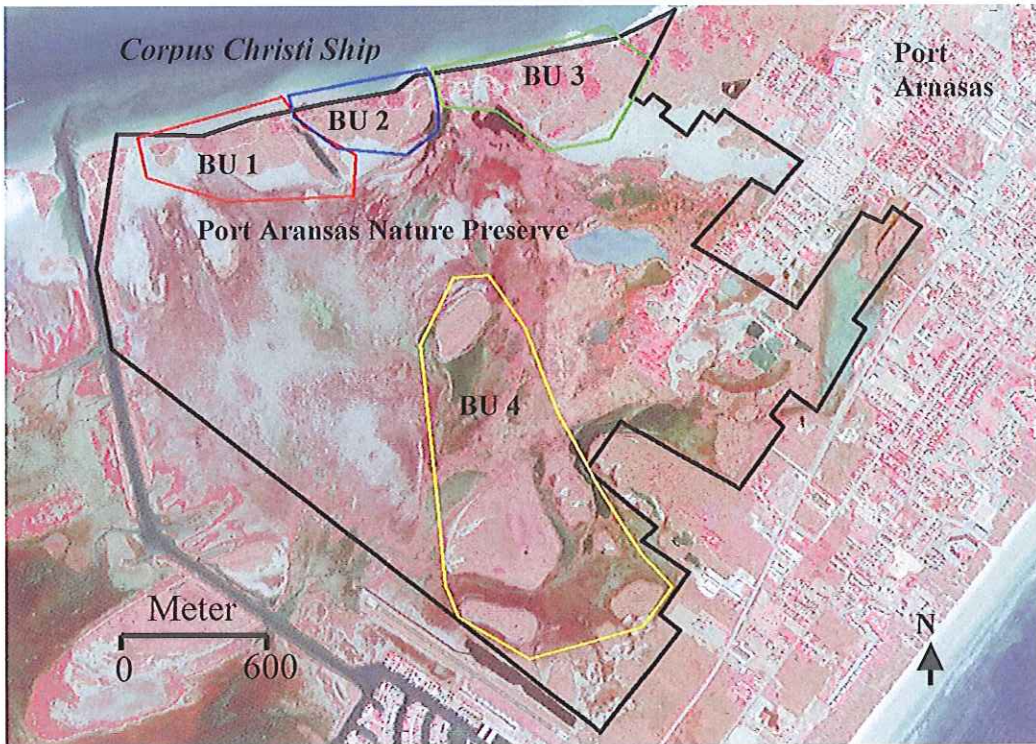


Figure 1. Port Aransas Nature Preserve with areas targeted for Brazilian Pepper Control.

Brazilian Pepper is susceptible to herbicides containing the active ingredient triclopyr. Two application methods have been shown to be particularly successful (basal bark application, and cut stump application). Garlon 3A has been shown to be effective using the cut stump method. Garlon 4 is effective as a basal bark treatment. The Specimen Label for both products are included in Attachment 1. The label must be followed to insure proper mixing rate and application method.

Garlon 3A is a water-soluble product and should be applied to cut stumps as quickly as possible following tree removal (preferably within 10 min). The label recommends mixing Garlon 3A with water at a rate of 1 : 1. It can be applied with pump sprayer, backpack sprayer, spray bottle, or paintbrush (see photos below from DowAgrosciences)



Garlon 4 is an oil soluble product and should be mixed 15 to 20 % in a vegetable oil based carrier such as Improved JLB Oil Plus. This mixture can be applied with a backpack sprayer or paintbrush. The mixture should be applied to the trunks of target

Brazilian Pepper trees thoroughly by wetting the lower 18 inches of the trunk, but not to the point of runoff (see photo below from DowAgrosciences).



Brazilian Pepper can also be controlled with a foliar application of Garlon 3A. The foliar mixing rate is 3% in water. A non-ionic surfactant is recommended for all foliar applications. The surfactant is commercially available from chemical supply vendors. Foliar application should be restricted to seedlings in the Nature Preserve because the chance of overspray to adjacent native brush is high.

All areas treated should be checked and retreated as necessary every 4 months for the first year. After the first year, annual inspections and treatment should be sufficient to control the Brazilian Pepper trees.

Many areas within the Nature Preserve have such dense stands of Brazilian Pepper that they will need to be mechanically removed. Mechanical removal should be accomplished using a tree-mulching machine that disturbs the soil as little as possible. Heavy machinery such as bulldozers or machines that uproot the trees should not be used. Disturbance of the soil could cause rapid seedling growth and open the area up to invasion by non-native grasses. In order to protect import native brush habitats within the Preserve, the City will need to assure that the equipment operator is proficient in the identification of native brush species so that they can be avoided to the greatest extent possible during operations. Mechanical removal will need subsequent chemical application to the stumps within 10 minutes of cutting. This will require that ground crews follow the machinery and quickly apply herbicide to the cut stumps of Brazilian Pepper. Care will need to be taken not to apply herbicide to native brush.

In this document if hand removal is recommended then prescribed fire could proceed the hand clearing and chemical application. This will open the area for ground crews and

make accessing areas easier. However, where the recommendation is to use mechanical removal followed by herbicide, prescribed fire should be used after the mechanical removal is accomplished. Prescribed fire will expose the ground making it more likely that equipment used during operations will disturb the soil. Soil disturbance should be minimized.

This document contains the specific recommendations for the use of chemical and mechanical methods to control Brazilian Pepper within the Nature Preserve. All recommendations will be based on the Burn Unit designations within the Preserve (Figure 1).

Recommendations:

Burn Unit 1. This unit has four areas of Brazilian Pepper concentration (Figure 2). Most of the area was burned by wildfire in sometime in 2006. Specific recommendation for each area follows:

BU1-A: This area was eliminated, for the most part, during the construction of the shoreline protection project. It is currently about 1/2 its former size and has only a few (less than 10) large Brazilian Pepper Trees. Because the area was burned by wildfire at some point in 2006, the trees can be accessed on foot with minimal hand clearing. The recommendation for this area is to access the area by foot and to treat the trees in place with the use of basal bark application. There is no need to use mechanical removal at this time in this location. Due to the small number of trees and minimal area involved, this control could be accomplished with a volunteer effort. If the trees are removed, this should be done by hand with chainsaws. At the time of cutting, the stumps should be treated per the above recommendations. Any small Brazilian Pepper trees encountered in this area should be treated basally. Seedlings can be treated with foliar application of Garlon 3A.

The work in this BU1-A area could be carried out by directed volunteers with city assistance to haul away material.

BU1-B: This area has approximately 15 large Brazilian Pepper trees. This area also has good diversity in the native brush community. This area should be hand-cleared and treated. Because of the mature nature of the Brazilian Pepper trees, in this stand, care should be taken during the removal process to minimize the spread of the berries. During cutting operations, the ground should be disturbed as little as possible to prevent seedling growth or invasion from non-native grasses. Cut limbs should be removed from the area of native brush and either hauled off-site (if berries are present) or placed in the open grasslands to the south (if no berries are present) for incineration during future prescribed fire operations. Leaving the dead brush in place could pose a threat to native brush during prescribed fire operations.

The work in area BU1-B could also be carried out by directed volunteers with city assistance to haul away material.

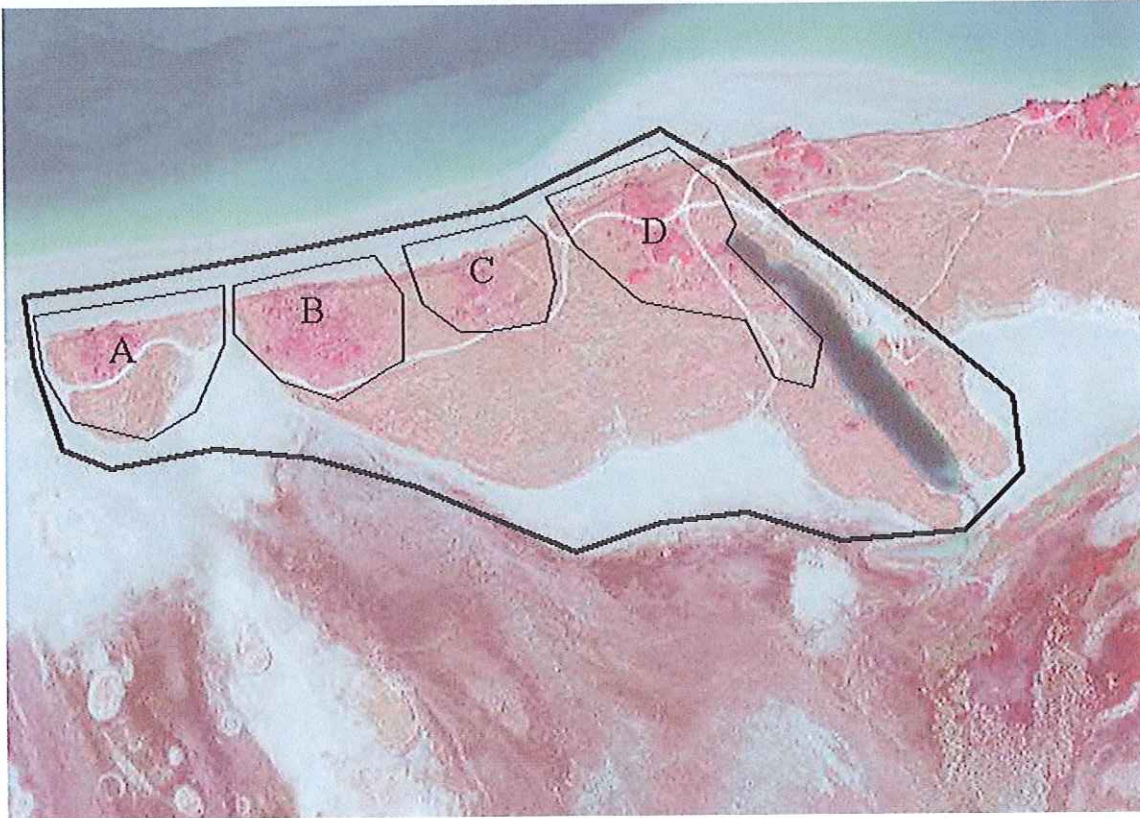


Figure 2. Burn Unit 1 with the areas of high Brazilian Pepper densities.

BU1-C: This area contains approximately 10 large Brazilian Pepper trees. The recommendation for this area is to hand cut and treat the stumps following the recommendations for areas A and B.

BU1-D: Area D contains numerous Brazilian Pepper trees in dense thickets with much native brush intermixed. The density of Brazilian Pepper in this site makes hand removal nearly impossible. The recommendation for this site is mechanical removal using a tree-mulching machine. Much care needs to be taken during the mechanical removal to avoid native brush. The city will need someone knowledgeable in the identification of native brush species on site during operations or to train the operator of the machinery to properly identify plants that need to be removed. Cut stumps will need herbicide application within 10 min. This area does not appear to have burned in the 2006 wildfire.

Burn Unit 2 This unit has 3 areas of dense Brazilian Pepper Concentration (Figure 3). Specific recommendation for each area follows:

BU2-A: This area has approximately 15 large Brazilian Pepper trees. There is a well maintained, off-road vehicle trail through the middle of the area. The recommendation is to hand-clear or treat the trees in place. There is good diversity in the native brush community within this site, therefore much care should be taken to avoid chemical

application to non-target trees. If the area is hand cleared, the road provides good access to haul away cuttings. The work here could be accomplished with city-directed volunteers.

BU2-B and C: Both of these areas have too many large trees for effective hand clearing alone. The recommendation is to use mechanical tree removal with special care to avoid clearing of native brush. Stumps should be quickly treated with chemical application. All mechanical work should be completed prior to prescribed fire operations.

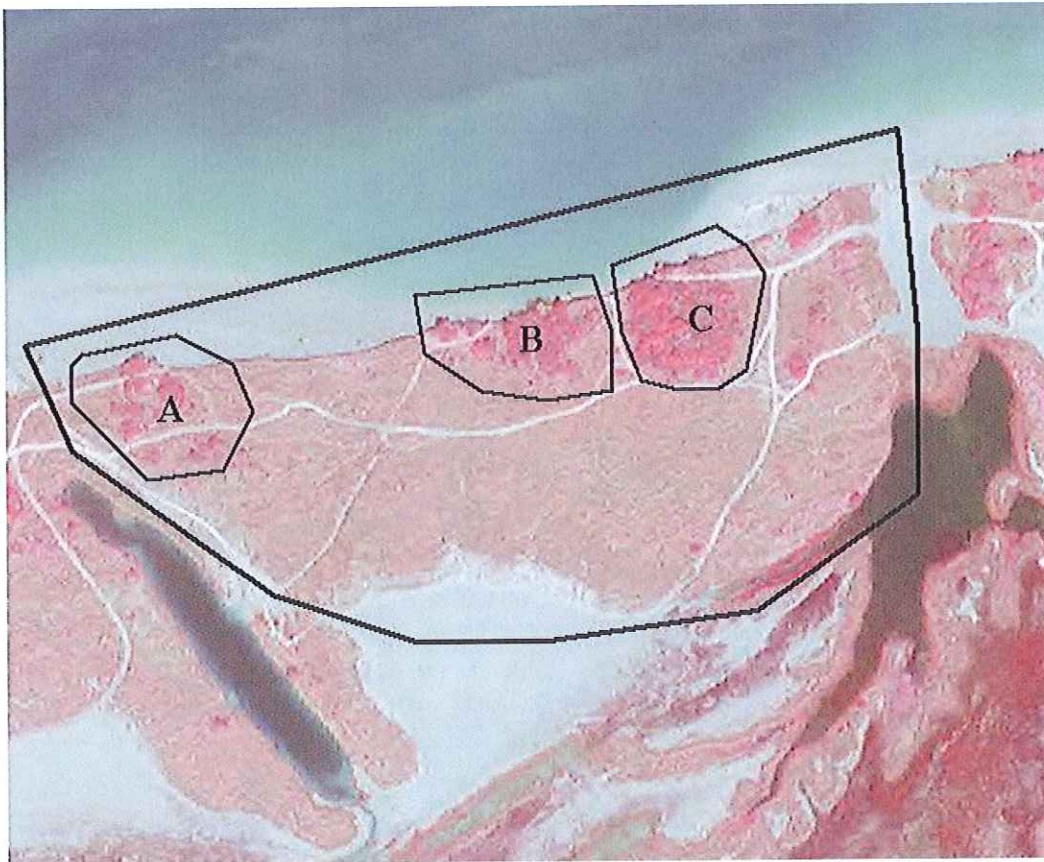


Figure 3. Burn Unit 2 with areas of high Brazilian Pepper densities.

Burn Unit 3 This unit has 5 areas of dense Brazilian Pepper cover (Figure 4). Specific recommendation for each area follows:

BU3-A: This area is included in the Burn Unit; however, it is elevated from past ship channel disposal practices, has numerous off road vehicle trails, and currently does not support enough fine fuels to control Brazilian Pepper with prescribed fire. The recommendation is to use mechanical methods to remove unwanted Brazilian Pepper trees. If mechanical removal is not possible due to the steep terrain, the trees should be treated in place with basil bark application.

BU3-B: This area is large and has numerous mature Brazilian Pepper trees. The recommendation is to mechanically remove the dense stands and mature trees. The area has good plant diversity so care needs to be taken to minimize impacts to the native brush species. The southern portion of this area has numerous (15 to 20) trees that could be hand cleared or treated in place.

BU3-C: Work was started by volunteers in this area, and they have managed to clear Brazilian Pepper from around a large live oak tree and a large toothache tree. However this area is too large to successfully eliminate the Brazilian Pepper by hand. The area should be mechanically treated with much care to protect the native brush component to the largest degree possible.

BU3-D: Because of off road vehicle trails, this site contains three areas with dense Brazilian Pepper growth. All of the areas contain mixed native brush; therefore, care should be taken during mechanical removal to avoid impacting this habitat as much as is possible.

BU3-E: There are numerous trees in this area that could be either treated in place or mechanically removed. The trees are too numerous to successfully remove them by hand. Future prescribed fire should help to remove trees that are treated in place and left to die.

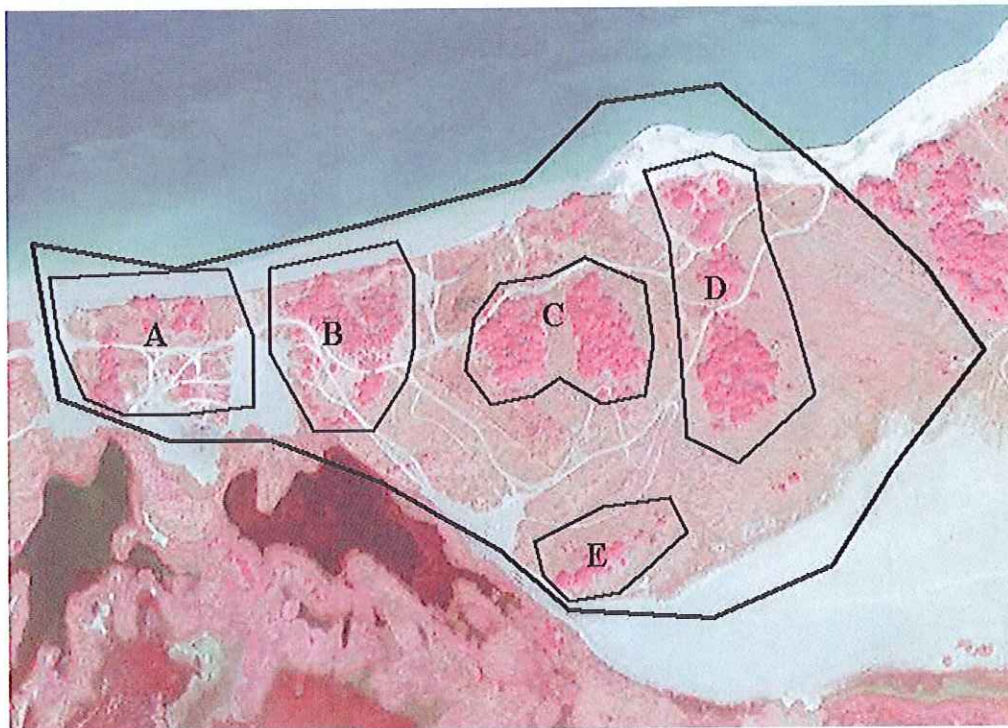


Figure 4. Burn Unit 3 with areas of high Brazilian Pepper densities.

Burn Unit 4 This unit has 3 areas of dense Brazilian Pepper (Figure 5). This unit is not accessible with heavy equipment and is only accessible on foot or by ATV during extremely low tides and dry weather conditions. Specific recommendations for each area follows:

BU4-A: There are very few Brazilian Pepper trees on this area. They should be treated in place with a basil bark application.

BU4-B: Less than 10 Brazilian Pepper trees occur in this area. They should be treated in place with basil bark application. There is no need to remove these trees as future prescribed fire will consume the dead snags.

BU4-C: Like area B, C has only a few Brazilian Pepper trees that should be treated basally and left in place.

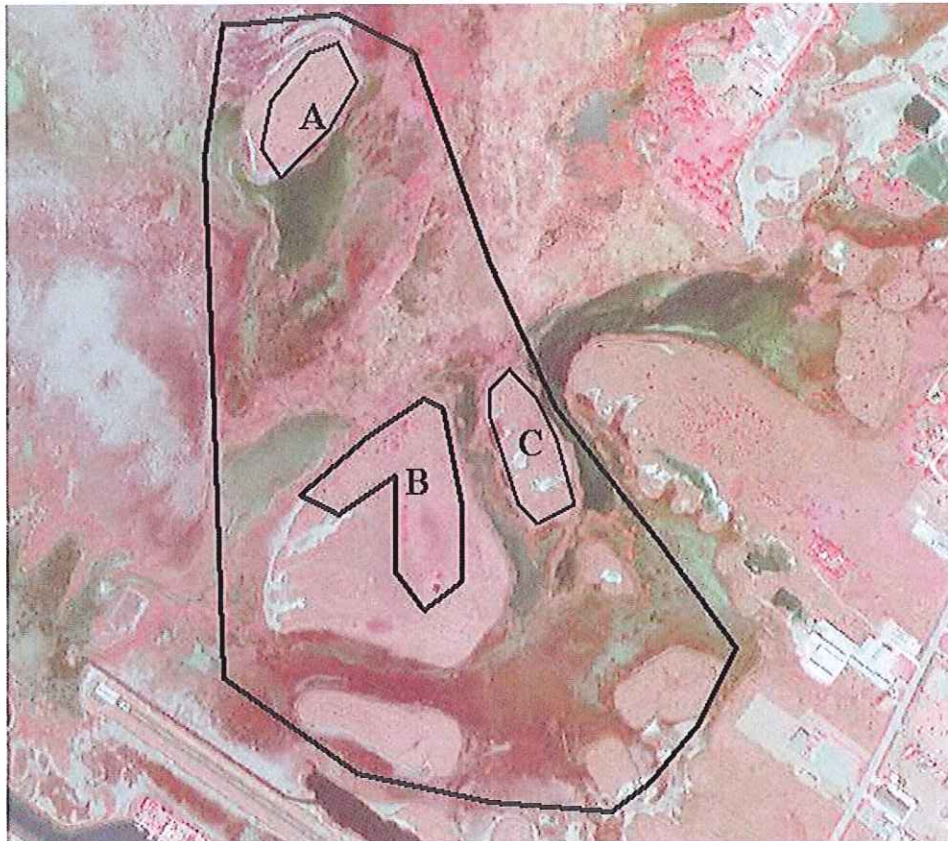


Figure 5. Burn Unit 4 with areas of high Brazilian Pepper densities.

**Port Aransas Nature Preserve
Prescribed Fire Plan 2008
City of Port Aransas**

Prepared By:	_____	Date:	_____
	Scott Mack, Fire Chief		
Reviewed By:	_____	Date:	_____
	Ryan Vice, Assistant Fire Management Coordinator		
Reviewed By:	_____	Date:	_____
	Beau Hardegree, Fish and Wildlife Biologist		
Reviewed By:	_____	Date:	_____
	Ray Guse, Prescribed Fire Specialist TNC		
Approved By:	_____	Date:	_____
	Larry Belles, Texas Fire Manager TNC		

PORT ARANSAS NATURE PRESERVE PRESCRIBED FIRE PLAN

The following plan will cover prescribed fire activity in Port Aransas Nature Preserve for the Winter/Summer 2008 season. Any prescribed fire activity in the Nature Preserve will follow both prescriptions and procedures as described. This plan is one part of a comprehensive Brazilian pepper tree control program for Port Aransas Nature Preserve. The goal is to reduce cover of Brazilian Pepper, improve grassland conditions, and protect and promote the cover of native brush species.

BURN RESTRICTIONS

Ground surveys will be conducted prior to any burning to eliminate possibility of unwanted take of wildlife and to locate desirable brush species to be protected from fire. County imposed burn restrictions for air quality will be evaluated and no burn will be conducted on a day prior to or day of an Ozone Action Day.

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 1: AGENCY ADMINISTRATOR GO/NO-GO PRE-IGNITION APPROVAL CHECKLIST

Instructions: The Administrator's GO/NO-GO Pre-Ignition Approval is the intermediate planning review process (i.e. between the Prescribed Fire Complexity Rating System Guide and Go/No-Go Checklist) that should be completed before a prescribed fire can be implemented. The Administrator's Go/No-Go Pre-Ignition Approval evaluates whether compliance requirements, Prescribed Fire Plan elements, and internal and external notifications have been or will be completed and expresses the Administrator's intent to implement the Prescribed Fire Plan. If ignition of the prescribed fire is not initiated prior to expiration date determined by the Administrator, a new approval will be required.

YES	NO	KEY ELEMENT QUESTIONS
		Is the Prescribed Fire Plan up to date? <i>Hints: amendments, seasonality.</i>
		Will all compliance requirements be completed? <i>Hints: cultural, threatened and endangered species, smoke management, NEPA.</i>
		Is risk management in place and the residual risk acceptable? <i>Hints: Prescribed Fire Complexity Rating Guide completed with rational and mitigation measures identified and documented?</i>
		Will all elements of the Prescribed Fire Plan be met? <i>Hints: Preparation work, mitigation, weather, organization, prescription, contingency resources</i>
		Will all internal and external notifications and media releases be completed? <i>Hints: Preparedness level restrictions</i>
		Will key staff be fully briefed and understand prescribed fire implementation?
		Are there any other extenuating circumstances that would preclude the successful implementation of the plan?
		Have you determined if and when you are to be notified that contingency actions are being taken? Will this be communicated to the Burn Boss?
		Other:

Recommended by: _____ Date: _____
Prescribed Fire Burn Boss

Approved by: _____ Date: _____
Administrator

Approval expires (date): _____

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 2: PRESCRIBED FIRE GO/NO-GO CHECKLIST

<p>A. Has the burn unit experienced unusual drought conditions or contain above normal fuel loadings which were not considered in the prescription development? If NO proceed with checklist., if YES go to item B.</p>	<p>YES</p>	<p>NO</p>
<p>B. If YES have appropriate changes been made to the Ignition and Holding plan and the Mop Up and Patrol Plans? If YES proceed with checklist below, if NO STOP.</p>		

YES	NO	QUESTIONS
		Are ALL fire prescription elements met?
		Are ALL smoke management specifications met?
		Has ALL required current and projected fire weather forecast been obtained and are they favorable?
		Are ALL planned operations personnel and equipment on-site, available, and operational?
		Has the availability of ALL contingency resources been checked, and are they available?
		Have ALL personnel been briefed on the project objectives, their assignment, safety hazards, escape routes, and safety zones?
		Have all the pre-burn considerations identified in the Prescribed Fire Plan been completed or addressed?
		Have ALL the required notifications been made?
		Are ALL permits and clearances obtained?
		In your opinion, can the burn be carried out according to the Prescribed Fire Plan and will it meet the planned objective?

If all the questions were answered "YES" proceed with a test fire. Document the current conditions, location, and results

_____ Burn Boss

_____ Date

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 3 COMPLEXITY ANALYSIS SUMMARY

See **Appendix I** Port Aransas Complexity Analysis for the full details.

PRESCRIBED FIRE NAME			
ELEMENT	RISK	POTENTIAL CONSEQUENCE	TECHNICAL DIFFICULTY
1. Potential for escape	Low	Low	Low
2. The number and dependence of activities	Moderate	Moderate	Moderate
3. Off-site Values	Low	Moderate	Low
4 On-Site Values	Low	Low	Low
5. Fire Behavior	Moderate	Low	Low
6. Management organization	Moderate	Moderate	Low
7. Public and political interest	Low	Low	Low
8. Fire Treatment objectives	Low	Low	Low
9 Constraints	Low	Low	Low
10 Safety	Low	Low	Low
11. Ignition procedures/methods	Low	Low	Low
12. Interagency coordination	Low	Low	Low
13. Project logistics	Low	Low	Low
14 Smoke management	Low	Low	Low
COMPLEXITY RATING SUMMARY			
			OVERALL RATING
RISK			Moderate
CONSEQUENCES			Moderate
TECHNICAL DIFFICULTY			Low
SUMMARY COMPLEXITY DETERMINATION			Moderate

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 4: DESCRIPTION OF PRESCRIBED FIRE AREA

A. Physical Description

1. Location:

All of the units are within the Port Aransas Nature Preserve, adjacent to the Corpus Christi Ship Channel and within the City Limits of Port Aransas on Mustang Island, Nueces County Texas. The Nature Preserve is approximately 1,400 acres of mostly unvegetated tidal flats and approximately 200 acres of uplands. See **Figure 1**.

2. Size:

There are 4 units totaling 175 acres of burnable upland grasslands. The units range in size between 6 and 40 acres (see attached Burn Unit Appendix for specifics of each unit).

3. Topography:

The entire project area is relatively flat with gentle undulations typical of the Mustang Island Ridge and Swale Community not rising above 14'.

4. Project Boundary:

See **Figure 1** and attached **Appendix II** Burn Unit Plans

B. Vegetation/Fuels Description:

On-site fuels data

Most (approximately 1,400 acres) of the Nature Preserve is wetland and tidal flats while the remaining area (200 acres) is uplands that are dominated by barrier island grasslands (Seacoast Bluestem, Bushy Bluestem, Gulfdune Paspalum, and Marshhay Cordgrass). Historically the uplands also had isolated patches of thorn scrub species including: Mesquite, Granjeno, Prickly Ash, Prickly Pear, and Lantana. Recently, Brazilian Pepper has invaded these uplands and is now the dominant feature. Brazilian Pepper is a non-native invasive woody plant with the ability to completely dominate and change the landscape. Brazilian Pepper dominated landscapes have been shown to be poor habitat for native wildlife and may negatively impact bird populations. The areas of the units with dense stands of Brazilian Pepper are not expected to burn. Brazilian pepper is evergreen and grows in such dense stands that fine fuels do not accumulate in the understory. Thickets with less cover of Brazilian Pepper will be protected from fire to preserve their quality for migratory bird species. These upland areas contain species such as live oak, spiny hackberry, prickly ash, lantana, saphora, and othes.

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

All of the Burn Units with the exception # 4 have been impacted by off road vehicles causing numerous tracks and trails down to mineral soil. These tracks may cause areas within units not to burn and increase mop-up times.

Adjacent fuels data

The adjacent areas to the east have thick Brazilian Pepper infestation and will not readily burn. North of the area is the Corpus Christi Ship Channel. West is Piper Channel. South is State Highway 361.

C. Description of Unique Features:

The upland native brush thickets are unique features of the Nature Preserve and will be protected from prescribed fire. The prescribed fire will be used to control the invasion of Brazilian Pepper into the open grasslands of the Nature Preserve.

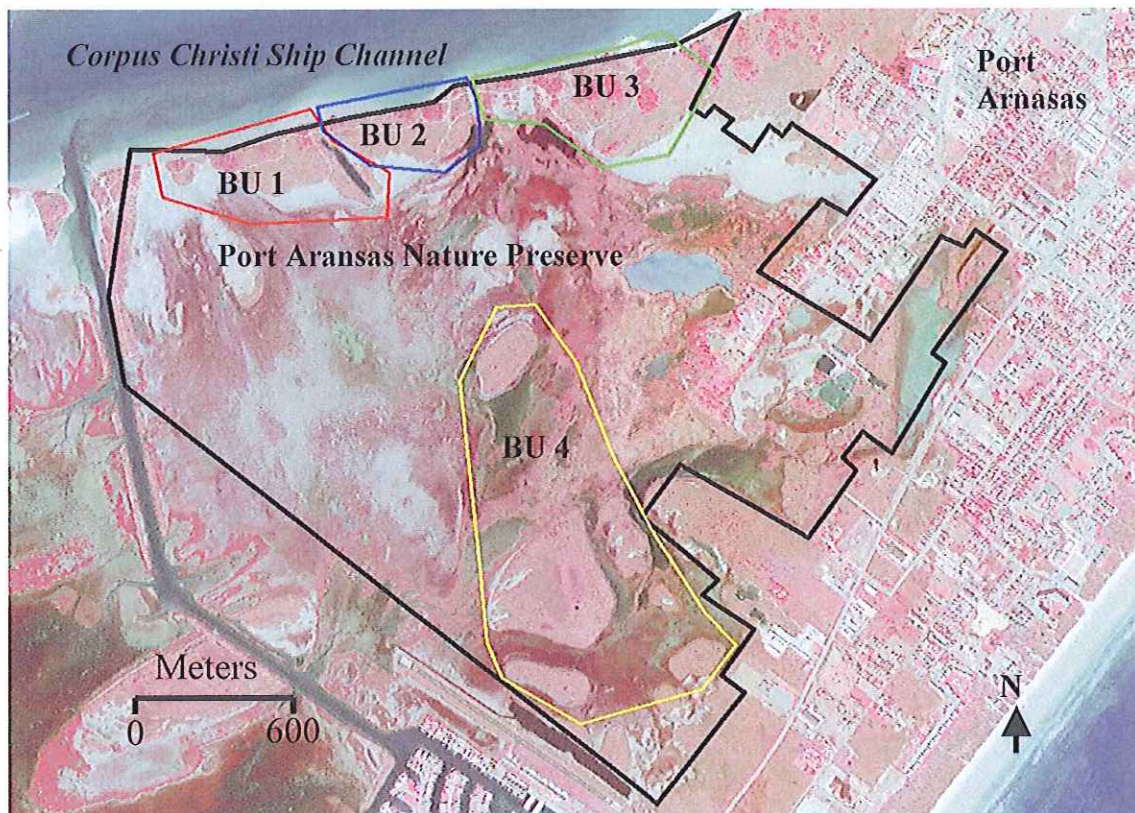


Figure 1. Map of Port Aransas Nature Preserve. The black Preserve Boundary line defines the Maximum Management Area (MMA). Included on the map is the location of Burn Units (BU) 1-4.

Name of Prescribed Fire Project: _____

ELEMENT 5: GOALS AND OBJECTIVES

A. Goals:

- Maintain habitat for resident and migratory birds.
- Control Brazilian Pepper in open Grasslands.

B. Objectives:

1. Resource objectives:

- Improve habitat for grassland species.
- Reduce cover of Brazilian Pepper.
- Maintain high quality native brush species.

2. Prescribed fire objectives:

- Maintain and/or improve structure of coastal prairie community to allow enhanced development of grasses and forbs. (Return Interval of fire 4-5 years)
- Improve availability and nutritional levels of grasses and forbs for a variety of mammalian and avian species.
- Reduce cover of Brazilian Pepper

3. Acceptable range of results

- Burn 60-90% of each burn unit.
- 50-80% top kill in Brazilian Pepper invading grasslands (not including the larger mottes).
- Remove 75-90% accumulated litter within each burn unit.

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 7: PRESCRIPTION

A. Environmental Prescription:

Scheduling	Planned or Proposed: 10/15/2008-2/15/2009 Actual:		
Time of Day	Planned or Proposed: 08:00-17:00		Actual:
FBPS Fuel Model 3@ 100%	Low	High	Target Range
Weather Conditions	Acceptable Range		
Temperature (°F)	40	97	85-95
Relative Humidity (%)	25	90	63-73
Wind Speed (mph)(20' forecast)	6	23	7-14
Wind Direction	See Appendices for Unacceptable Wind Directions South winds will be preferred for all units.		
Wind Speed (mph)(mid-flame 70% of 20')	4	16	5-10
Cloud Cover (%)	0	100	0-50
Mixing Height (ft)	1,500	7,000	
Environmental Conditions			
1 Hour Fuel Moisture (FM)(%)	4	16	10
10 Hour FM	5	20	
100 Hour FM	6	20	
Woody Live FM	90	150	
Herb. Live FM			
Fire Behavior			
Type of Fire (Head, Backing)	H-B		Target B-H
Rate of Spread (ch/hr)	3	319	15
Fireline Intensity (btu/ft/s)	36	3566	
Flame Length (ft)	2.4	19.4	4 12
Spotting Distance	.3 mi	105 ft	

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 8: SCHEDULING

A. Ignition Time Frames/Season(s):

The optimal time to burn the Nature Preserve units is Nov-Feb, but due to poor or missed opportunities and the need to keep units in rotation burn window may go into March or early April. If there is a potential to burn March 15 through July 30 ground surveys will need to be conducted by a Biologists to look for nesting birds. A determination whether to burn during these dates will be based upon survey results.

B. Projected Duration:

All burns typically only last one burning period, starting ignition early to late morning and terminating the burn by early to late afternoon.

C. Constraints:

Excessive rain may delay both preparation and ignition opportunities. Ozone Action Days may delay operations.

ELEMENT 9: PRE-BURN CONSIDERATIONS

A. Considerations:

1. On Site:

There are a few improvements within the project area and will be delineated in individual unit appendices.

2. Off Site

Because the site is within the city of Port Aransas there is considerable offsite assets including residences, and municipal holdings. The Burn Units are well isolated from these off site structures and each Burn Unit appendix will list specific measure to mitigate impacts.

B. Method and Frequency for Obtaining Weather and Smoke Management Forecast(s):

- A spot weather forecast will be obtained the day of the burn from National Weather Service (NWS) from <http://spot.nws.noaa.gov/cgi-bin/spot/spotmon?site=crp> and at (361) 289-0959 (fax (361) 289-7823), for the times the burn will be executed. Weather requested on the forecast will include wind speed and direction, relative humidity, cloud cover, mixing height, and transport wind. On-site weather information should be used to obtain the spot weather forecast. Spot weather

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

observations should be requested in two-hour increments for the duration of the proposed burn.

- On-site weather information (wind speed and direction, temperature, and humidity) will be taken every hour while the burn is being executed. If there are significant changes in weather parameters, burn boss may request observations every half hour. An additional spot weather forecast will be requested if the on-site weather observations are significantly different from the spot weather forecast.

C. Notifications:

Pre-burn Notifications to be made by City

TCEQ Air Program	Mike Reff	(361) 825-3101
	Dianne McCoig	
Texas Interagency Coordination Center	Joe Perez	(936) 875-4786
PCCA – Harbormaster		(361) 883-4077
US Naval Station Ingleside	Commanding Officer	(361) 776-4203
Fire Department Naval Station Ingleside	Dispatcher	(361) 776-4671
City of Port Aransas	Michael Kovacs	(361) 749-4723
City of Ingleside	Dispatcher	(361) 776-0297
Nueces County Sheriff's Dept.	Dispatcher	(361) 887-2276
National Weather Service, Corpus Christi, TX for Spot Weather		(361) 289-7823
Padre Island National Seashore	Dispatcher	(361) 949-2198
US Coast Guard	Kevin Kiefer	(361) 888-3115
Corpus Christi Fire Department	Dispatcher Supervisor	(361) 886-2586
PCCA – Port Security	Dispatcher	(361) 883-8779
City of Aransas Pass – Fire Department	Dispatcher	(361) 758-8188
San Patricio County Sheriff Dept.	Dispatcher	(361) 364-6110
Corpus Christi Fire Dept.	Dispatcher	(361) 880-3954
San Patricio County LEPC	Skip Kirby	(361) 364-5832
San Patricio County Commissioner Precinct #4	James Price, Jr.	(361) 758-7657
Corpus Christi Caller Times		(361) 886-3732
KIII Channel 3	Newsroom	(361) 986-8440
KRIS Channel 6	Newsroom	(361) 886-6175
KZTV Channel 10	Newsroom	(361) 884-8111
KORO Channel 28	Newsroom	(361) 883-2931

Burn-Day Contacts to be made by City.

TCEQ Air Program	Mike Reff	(361) 885-3136/3100
	Dianne McCoig	
PCCA – Harbormaster		(361) 882-6151

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

US Naval Station Ingleside	Commanding Officer	(361) 776-4146
Fire Department Naval Station Ingleside	Dispatcher	(361) 776-4146
City of Port Aransas	Michael Kovacs	(361) 749-4111
City of Ingleside	Dispatcher	(361) 776-2531
Nueces County Sheriff's Dept.	Dispatcher	(361) 887-2222
National Weather Service, Corpus Christi, TX for Spot Weather		(361) 289-0959
Padre Island National Seashore	Dispatcher	(361) 949-8173
US Coast Guard	Kevin Kiefer	(361) 888-3162 ext 200
Corpus Christi Fire Department	Dispatcher Supervisor	(361) 886-2802
PCCA – Port Security	Dispatcher	(361) 885-6198 or 6200
DOT State Office (only if smoke on Hwy 361)		(361) 854-2681
San Patricio County Sheriff Dept.	Dispatcher	(361) 364-6110
San Patricio County LEPC	Skip Kirby	(361) 364-6144

ELEMENT 10: BRIEFING

Briefing Checklist:

- Burn Organization
- Burn Objectives
- Description of Burn Area
- Expected Weather & Fire Behavior
- Communications
- Ignition plan
- Holding Plan
- Contingency Plan
- Wildfire Conversion
- Safety

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 11: ORGANIZATION AND EQUIPMENT

A. Positions:

See Appendix II for individual burn unit.

B. Equipment:

See Appendix II for individual burn unit.

C. Supplies:

See Appendix II for individual burn unit.

ELEMENT 12: COMMUNICATION

A. Radio Frequencies

CHANNEL	RX FREQ	TX FREQ	TX Tone	Assignment
Port Aransas Fire	154.445	150.405	136.5	Command
Port Aransas Police	154.860	158.975	167.9	

B. Telephone Numbers:

City Dispatch	361 749-6241
Scott Mack, Fire Chief	361 834-7715 (cell)

ELEMENT 13: PUBLIC AND PERSONNEL SAFETY, MEDICAL

A. Safety Hazards:

- Potential for extreme fire behavior in both grass and brush fuel types.
- Snakes, mosquitoes, and bees pose a potential but limited threat to line personnel.
- A variety of prickly, thorny and poisonous plants exists with in the project area.
- While the majority of these burns will take place in the winter months exposure to heat and dehydration are still a potential threat.
- Having unburned fuel between fire personnel and fire edge.
- Driving on poor roads and firebreaks.
- Inexperience, crew cohesion and dense smoke

B. Measures Taken to Reduce the Hazards:

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

- Employ LACES while engaged in prescribed fire activities to avoid entrapments.
- Only personnel trained in Wildland Firefighting (S-130, S-190, I-100) meeting NWCG standards and possessing a Red Card will be allowed in the Burn Unit during burn and mop-up operations.
- Any hazards in the Burn Unit will be mentioned in the briefing, flagged, and/or marked on a map.
- During the Prescribed Burn Briefing maps will be provided to fire crew and support staff.
- Smoke output and dispersal will be monitored throughout the burn to assure public and firefighter safety.
- Ensure good communication among all fire crewmembers.
- Avoid wildlife and provide space for them to move out of the way if possible.
- Recognize and avoid troublesome vegetation, have line personnel be aware of any allergies.
- Assure the fire apparatus and line personnel have fluids to remain hydrated.
- Assure that all equipment is serviced and functional prior to ignition.

C. Emergency Medical Procedures:

All medical issues will be addressed immediately with on site personnel as situations warrant. Any situations that need advanced medical care will be handled by following the attached medical plan and through City dispatch.

PORT ARANSAS NATURE PRESERVE PRESCRIBED FIRE MEDICAL PLAN

LATITUDE:	LONGITUDE:	FREQUENCY:
------------------	-------------------	-------------------

1. PROJECT: Port Aransas Nature Preserve		3. SEASON: Winter		2. DATE PREPARED: 8-30-07	
5. PROJECT MEDICAL AID STATION OR CLINIC					
MEDICAL AID STATION		LOCATION		PHONE #	
First Aid Station		First Aid kit			
Poison Control Center				800-764-7661	
6. TRANSPORTATION					
A. AMBULANCE SERVICE					
NAME		ADDRESS/LOCATION		PHONE #	
Nueces County EMS				361 887 2222	
San Patricio County EMS				911	
				PARAMEDICS YES OR N	
				No	
				PARAMEDICS YES OR NO	
				YES	
				YES	

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

Port Aransas EMS	705 W. Ave A	361 749 4405	YES		
B. AIR AMBULANCE OR FLIGHT FOR LIFE					
Herman Life Flight	6411 Fannin, Houston	800-392-4357	YES		
San Antonio Air Life	111 Dallas St, San Antonio	800 241-6428	YES		
Halo Air	315 Pinson , Corpus Christi	8000 776-4256	YES		
HOSPITALS					
NAME	ADDRESS OR LOCATION	TRAVEL TIME AIR GND	PHONE #	BURN CENTER Y OR N	HELIPAD Y OR N
Christus Spohn Memorial	2606 Hospital Blvd., Corpus Christi	.25 hr 45min	361-902-4000	Yes	Yes
Brooks Army Med Ctr	Ft. Sam Houston, San Antonio	1 hr 40 min 2 hr 30 min	210-916-2604	Yes	Yes
Hermann	6411 Fannin, Houston	2hr 4 hr 30min	713-704-4000	No	Yes
MEDICAL EMERGENCY PROCEDURES					
<p>Notify supervisor/burn boss of the nature of the injury, is it serious or non-emergency. If serious announce over the radio. Declare "Medical emergency, please clear the air." Provide burn boss/dispatch with type of injury, # of people injured, and basic vital signs. Utilize EMT's and first responders to stabilize and comfort the patient(s). For minor injuries, transport to the doctor via govt. vehicle(s) and notify dispatch of destination , ETA and "Non-emergency" if so appropriate. If helicopter is used a minimum of 100' x 100' helispot is needed and notify dispatch of any hazards (power lines). Dispatcher should have a copy of the aviation plan that is within the dispatch plan.</p>					
DIRECTIONS FROM NEAREST HOSPITAL OR AID STATION TO PROJECT VIA GROUND TRANSPORTATION					

ELEMENT 14 TEST FIRE

A. Planned location:

The test fire will be conducted in the downwind corner of the burn unit. The burn boss will observe the test fire to ensure wind direction and burning conditions are within predicted and required parameters and will meet the planned ecological objectives.

B. Test Fire Documentation:

1. Weather conditions On-Site:

Weather conditions will fall within the acceptable range as stated in the parameters.

2. Test Fire Results:

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

The test fire should prove that the intended burn will accomplish the prescribed results in a safe and controlled environment. If at any time the burn is not within safe parameters or is not accomplishing prescribed results, the burn will be suspended.

ELEMENT 15: IGNITION PLAN

A. Firing Methods:

Ignition will begin on the downwind side of the unit (continuation of test fire) and will be allowed to back off of downwind line to assure that containment to the given burn unit will be maintained. Once an appropriate blackline on the downwind portion of the unit is established (100'-200') the ignition teams will proceed along flanks on burn unit. Interior strip firing will follow ignitions along the flanks to assure that head fire does not compromise native brush. Hand firing around native brush mottes will be employed to assure that fire intensity around mottes does not become too intense. Ignition boss will coordinate all ignition crews to maintain safe procedures. Once the flanks are secure and interior mottes are protected, strip/head fire technique will be used to complete ignition sequence. (See Appendix II for specific firing methods for each unit)

B. Devices:

Drip torches will be the primary tool employed to burn crane units. Fusee's, flare pistols ATV ignition may augment drip torch use.

C. Techniques:

To reduce intensity and provide escape lanes for wildlife, burn boss should employ spot head ignition when igniting upwind head fire.

D. Sequences:

All Nature Preserve burns will follow standard backing, flanking and head fire sequence.

E. Patterns:

Hand ignitions will only take place in interior of burn unit if ignition team has good black or other safety zones to utilize should the need arise. If the vegetation is at a height which prohibits ease of travel for ignition personnel on foot or visual of fire, interior ignitions will either be conducted from breaks or cancelled.

F. Ignition Staffing:

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

Individual units will have two ignition teams igniting under the direction of either ignition boss or burn boss depending on the size.

ELEMENT 16: HOLDING PLAN

A. General Procedures for Holding:

Holding will be accomplished by personnel patrolling via engines, ATV's and heavy equipment. Burn boss will direct holding personnel or on larger burns, a task force leader may be assigned the responsibility of holding boss. Experience has shown that once the fire has backed off the line 100' or more than holding concerns are reduced and heavy equipment and engines will stay closer to ignition crews. Personnel on ATV's will monitor the entire line, as they are more mobile and able to discover and minimize spots before becoming established.

B. Critical Holding Points and Actions:

History has shown that the majority of spotting/slopovers have occurred where there are mottes or heavy concentrations of brush near the line. While these areas are actively burning heavy equipment and engines should be near to take action on anything outside the unit.

If there is holding concerns a portable tank or pump and hose will be put in place to aid in holding operations.

C. Minimum Organization or Capabilities Needed:

At a minimum one type 6 engine and either a dozer or tractor will be available for each burn unit. More equipment may be required based on size and complexity of each unit and will be addressed in individual appendices.

ELEMENT 17: CONTINGENCY PLAN

A. Trigger Points:

The Maximum Management Area (MMA) for the Nature Preserve is defined as the Preserve Boundary. In the event of a spot fire or slop over into adjacent Burn Units direct attack tactics will be taken to contain the fire at a small manageable size. Escape beyond the Nature Preserve boundary is not likely, but if occurs will be suppressed with direct attack and heavy equipment to prevent impact to residences and other structures.

B. Actions Needed:

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

If an escape becomes established within an adjacent Burn Unit then indirect methods will be employed to minimize risk to firefighters and limit resource damage. There is no reason to utilize direct suppression tactics with heavy equipment, as the resource will recover quicker from the fire than from extensive heavy equipment use. If an escape becomes established off the Preserve it will be attacked with heavy equipment and suppressed to prevent impacting city structures and residences.

C. Additional Resources and Maximum Response Time(s):

RESOURCE & LOCATION:	CONTACT & PHONE #:	RESPONSE TIME (HRs)
Padre Island National Seashore	361 949 8173 Ext. 237	1-2 Hour
Local fire departments	911	.5-2 Hour
Other federal wildland fire fighting resources	TICC 936 875 4786	2-5 Hours

ELEMENT 18: WILDFIRE CONVERSION

A. Wildfire Declared By:

The burn boss will convert from prescribed to wildfire if any of the following conditions are met.

- The fire requires additional resources (beyond on-site contingency) to contain fire outside of the control line.
- Fire burns outside of the MMA.
- The fire outside of the control line has rehabilitation needs.
- A fire outside the prescribed boundaries is actively burning into following burning period.

B. IC Assignment:

If the burn boss is the City Fire Chief the position will transition into the role as IC. If the burn boss is other than the City Fire Chief than the IC will position will be transferred to the controlling authorities when they arrive on scene.

C. Notifications:

The burn boss will notify both City dispatch and manager of escaped fire.
Burn boss will notify Regional Fire Management Coordinator.

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

The City dispatcher will notify any contingency resources requested by the IC.

D. Extended Attack Actions and Opportunities to Aid in Fire Suppression:

The objectives for the fire will be to contain growth to as few adjacent units as possible using pre-established breaks and on-site resources. City management will participate in strategic decisions as safety dictates to minimize negative impacts to the resource.

ELEMENT 19: SMOKE MANAGEMENT AND AIR QUALITY

A. Compliance:

Notify Texas Commission on Environmental Quality (TCEQ) with plans in September/October and in the morning when burning individual units.

B. Permits to be Obtained:

None

C. Smoke Sensitive Areas:

Smoke Sensitive Sites:	Distance (miles)	Direction
Corpus Christi Ship Channel	Adjacent	360°
Aransas Pass	7.6	314°
Ingleside Naval Air Station	8.3	265°
Ingleside on the Bay	9.9	268°
Ingleside	9.7	288°
Port Aransas Ferry	1.5	52°
Port Aransas Causway	5.0	320°
Rockport	12.8	360°
Portland	16.3	281°
Corpus Christi	20.6	264°
Corpus Christi Airport	27.9	262°
Hwy 361	1.0	119°
Port Aransas Airport	0.9	52°

D. Impacted Areas:

Smoke has limited potential to impacts City residents, or boat traffic in the Corpus Christi Ship Channel.

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

E. Mitigation Strategies and Techniques to Reduce Smoke Impacts:

- Smoke/Traffic Monitor or weather observer will monitor smoke outputs of fire. On-site weather will be taken hourly or more frequently as needed depending on changes in conditions.
- Monitor will work in conjunction with burn boss concerning safety issues related to smoke impacts. Hard copies of weather data and observed fire behavior will be turned in to the burn boss at completion of burn.
- All burns will be conducted when winds Transport smoke away from sensitive areas. In case of wind shift the prescribed fire will be terminated and extinguished. Signs will be placed on Hwy 361 to warn of smoke.

ELEMENT 20: MONITORING

A. Fuels Information:

Burn Units will be monitored the day before scheduled burn to insure that all fuel is appropriate for this plan, and that no hazards exist within or surrounding the Unit.

B. Weather Monitoring:

A Spot Weather Forecast will be carried out on burn day and weather conditions will be monitored hourly.

C. Fire Behavior Monitoring:

The Burn Boss will monitor Fire Behavior and if the fire behavior is out of prescription the fire will be terminated.

D. Monitoring Required To Ensure That Prescribed Fire Plan Objectives Are Met:

After the fire the Burn Boss will observe the burned area and make sure that the objectives are met. Pre- and Post-burn photographic monitoring stations will be established in each unit.

E. Smoke Dispersal Monitoring:

The Weather Monitor will also act as the Smoke Monitor and if smoke does not disperse as anticipated and impacts sensitive resources the Burn Boss will terminate the fire.

Port Aransas Nature Preserve

Name of Prescribed Fire Project: _____

ELEMENT 21: POST-BURN ACTIVITIES

Post-burn Activities That Must be Completed:

Notify all on burn day contact list and inform them of burn completion.

Conduct After Action Review on site prior to releasing personnel.

Assure that entire burn unit is secure from any escape or production of problematic smoke.

Population required databases within one week's time. FMIS, NFPORS, IQCS

Appendix II

This Appendix contains the individual Burn Unit plans for Port Aransas Nature Preserve.

Burn Unit #1	ii
Burn Unit #2	vi
Burn Unit #3	x
Burn Unit #4	xiv

Burn Unit #1

This 30.9 acre Burn Unit is adjacent to Corpus Christi Ship Channel. The unit is located in the northwest corner of the Preserve (Figure 1). This unit poses little chance for fire escapement because it is bordered by unvegetated salt flats to the west and south, the Ship channel to the north, and Burn Unit #2 to the West. Although there is an off road vehicle trail separating Unit #1 and #2 this line will need to be disked to mineral soil prior to the burn. Required wind direction is between 120° and 220°.

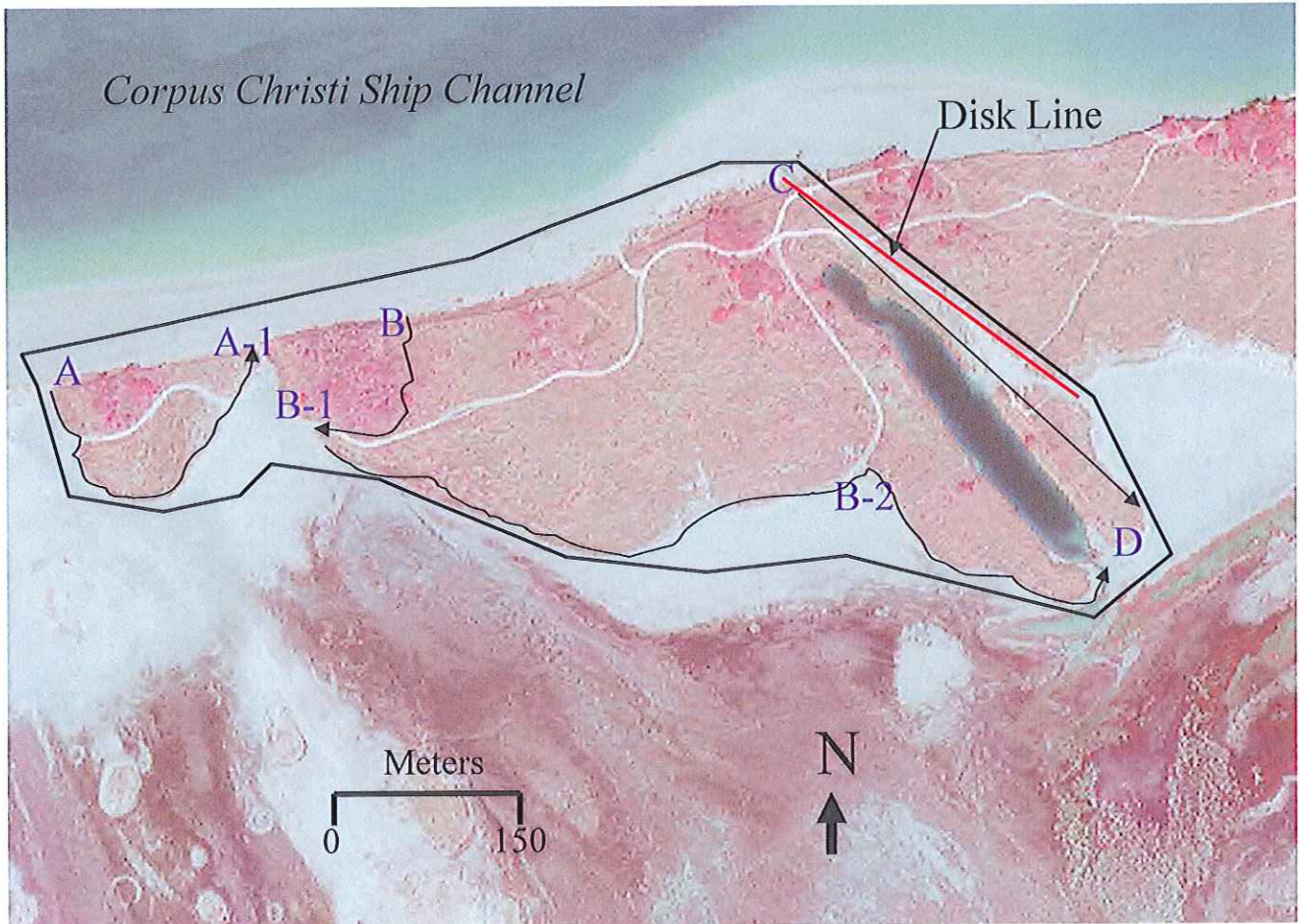


Figure 1. Burn Unit #1 with disk line, and ignition pattern

The vegetation type is Coastal Prairie with areas of dense Brazilian Pepper thickets. There are areas of Native Brush that will be protected by backing fires.

Equipments Needed on Site:

- Tractor with disc or dozer
- ATV
- Type 6 Engine
- Pickup Truck
- Two drip torches
- Hand tools (Flappers)

Required Personnel:

RXB2-Burn Boss	1
ENGB-Engine Boss	1
FFT2-Fire Fighter	4
EQOP-Equipment Operator	1
DISP- Dispatcher	1
Total	8

Site Preparation:

The line between Burn Unit #1 and #2 will need to be disked to mineral soil (20 ft wide). Walk entire unit to look for additional hazards. Entry Points into the Nature Preserve will need to be posted to keep the public out.

Pre-burn Briefing: Conducted By Burn Boss. (See Outline)

Ignitions: Will be overseen by the Burn Boss. 2 FFT2 will began operations at Point A. This 2 acre area will also serve as the Test Burn. Once Point A is complete and the Burn Boss indicates a successful test, the 2 FFT2's will proceed to Point B. Beginning at Point B a backing fire will be set to protect Native Brush thickets from direct exposure to head fire. Once ignition has moved from Point B to the intersection of the off road vehicle trail and the sand flat (point B-1) they will proceed southeast igniting along the edge of the grassland toward point B-2. At this point 2 FFT2's will began ignition at Point C and proceed southeast along the disk line. Both teams will meet and halt ignitions at Point D.

Because of the interior roads it is likely that mop-up will require addition ignitions. Mop-up will be coordinated by the Burn Boss.

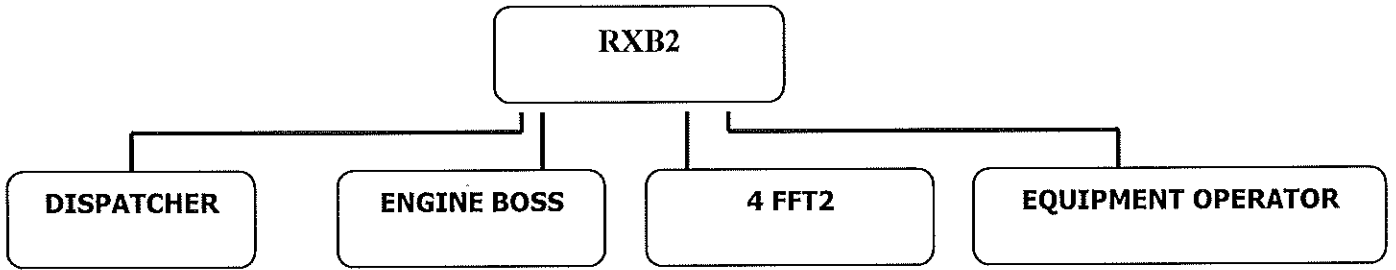
Debriefing: Conducted By Burn Boss

- Where burn objectives within acceptable range of results?
- What could be done differently to obtain results or get better results?
- Was there any deviation from the plan? If so, why?

Problems and general questions?

Release all personnel: Burn Boss

Prescribed Fire Organization



Total = 8 Minimum

Prescribed Burn Briefing Outline

Burn Organization

- A. Organizational Chart/Personnel Assignments
- B. Equipment Assignments
- C. Other Resources (in staging, local, etc.)

Burn Objectives - include complexity analysis

Description of Burn Area

- A. Review Map of Burn/Topographical Features/Acreage
- B. Values at Risk (structures, T&E species, etc.)
- C. Problem Areas (fuel loading, smoke management, etc.)
- D. Fuel Type (both inside and outside the burn unit)
- E. Roads/Access
- F. Water Sources
- G. Control lines (natural, manmade)

Firing Sequence

- A. Test Burn
- B. Ignition Equipment (type, number, etc.)
- C. Pattern and Sequence of Firing

Weather/Fire Behavior

- A. General History (seasonal, previous burn period, drought conditions, etc.)
- B. Expected Weather (fire weather, spot weather)
 - 1. Wind Speed and Direction
 - 2. Relative Humidity
 - 3. Temperature
 - 4. Current Weather (relate to expected weather)
- C. Fuel Moisture (live, dead, leaf litter, KBDI)
- D. Fire Behavior
 - 1. Burn Index (history, expected, percentile)
 - 2. Behave Run (ROS, FL, IC, etc.)

Communications

- A. Procedures
- B. Frequencies/Channels (review frequency assignments)

Contingency Plan

- A. MMA
- B. Slop Over vs. Escape
- C. Initial Assignments (slop over, escape, IA, etc.)
- D. Strategy/Tactics

Safety

- A. Personal Protective Equipment (including PPE for boat safety)
- B. Lookouts, Escape Routes, and Safety Zones
- C. Hazards (footing, natural, man made, smoke, visibility, etc.)
- D. EMTs – Medical Plan
- E. Potential for unexploded ordnance
- F. Other (air operations, flammable fuel handling, etc.)

Agency Comments

Burn Unit #2

This Burn Unit contains 26 acres of grasslands of which portions are heavily invaded with Brazilian Pepper. The Unit is bordered to the North by Corpus Christi Ship Channel, Unit #1 to the West, unvegetated sand flats to the South and East. A secure firebreak will need to be installed to separate Unit #1 and Unit #2. The firebreak should be disked to mineral soil and minimum of 20 feet wide. There is little chance of fire escapement. Required wind direction is between 120° and 220°.

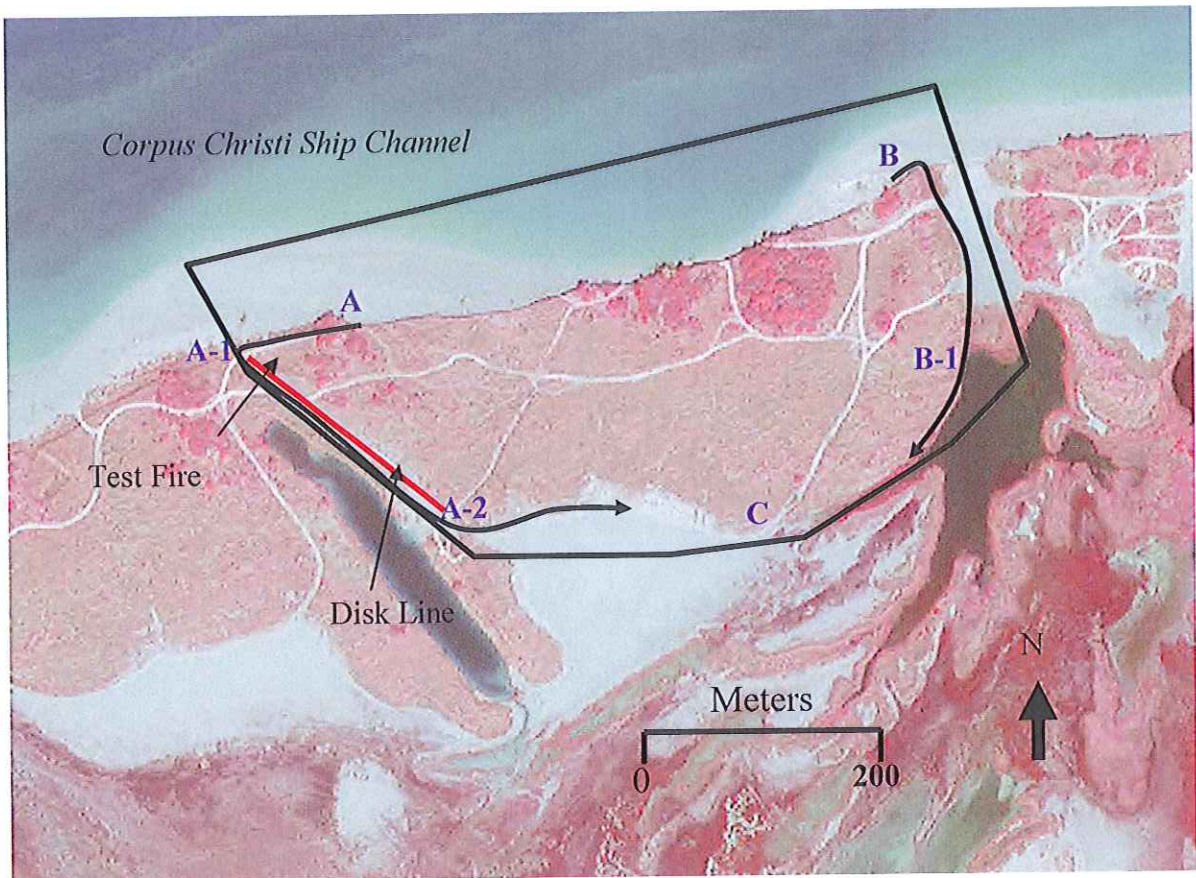


Figure 2. Burn Unit #2 depicting location of Disk Line and ignition points A to C.

The vegetation type is Coastal Prairie with areas of dense Brazilian Pepper thickets. There are areas of Native Brush that will be protected by backing fires if needed.

Equipments Needed on Site:

- Tractor with disc or dozer
- ATV
- Type 6 Engine
- Pickup Truck
- Two drip torches
- Hand tools (Flappers)

Required Personnel:

RXB2-Burn Boss	1
ENGB-Engine Boss	1
FFT2-Fire Fighter	4
EQOP-Equipment Operator	1
DISP- Dispatcher	1
Total	8

Site Preparation:

The line between Burn Unit #1 and #2 will need to be disked to mineral soil (20 ft wide). Walk entire unit to look for additional hazards. Entry Points into the Nature Preserve will need to be posted to keep the public out.

Pre-burn Briefing: Conducted By Burn Boss. (See Outline)

Ignitions: Will be overseen by the Burn Boss. A test fire will be set in the corner of the unit near Point A. Once the Burn Boss determines that the test fire was successful, 2 FFT2 will began operations at Point A. Ignitions will proceed from Point A west to the Disk Line. Ignitions will then proceed southeast along the Disk Line toward Point C. The fire will be allowed to back into the Unit until there is approximately 50 feet of black inside the Disk Line. Once there is sufficient black separating Unit #1 from Unit #2, 2 FFT2's will begin ignitions from Point B toward Point C. The two ignition teams will meet at Point C. Because of the interior road running east and west through the middle of the unit it is unlikely that the native bush thickets will be adversely affected by the prescribed fire. In addition most of the native brush is within dense stands of Brazilian Pepper which should not carry the fire. If the Brazilian Pepper is removed prior to prescribed fire operations then backing fires may be required to prevent damage to native brush species.

Because of the interior roads it is likely that mop-up will require additional ignitions. Mop-up will be coordinated by the Burn Boss.

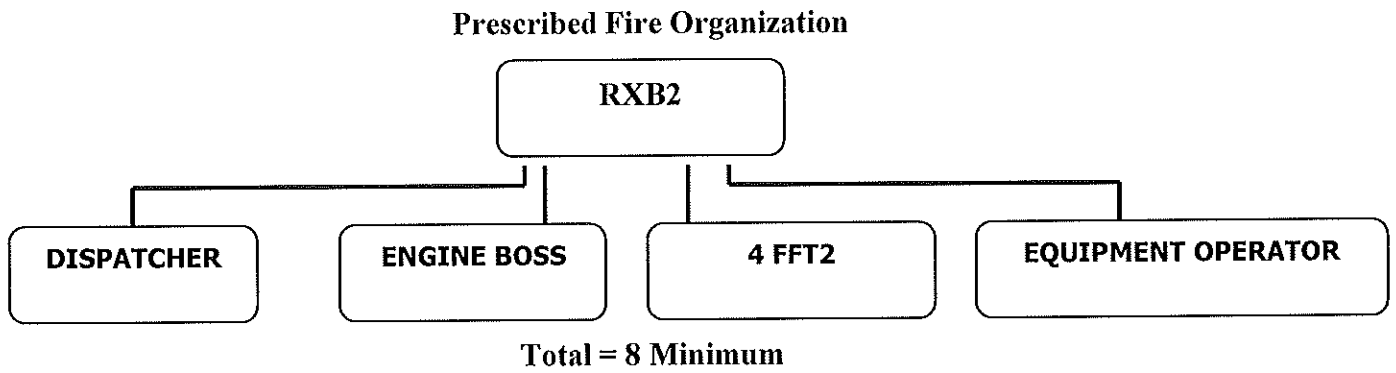
Debriefing: Conducted By Burn Boss

- Where burn objectives within acceptable range of results?
- What could be done differently to obtain results or get better results?

Was there any deviation from the plan? If so, why?

Problems and general questions?

Release all personnel: Burn Boss



Prescribed Burn Briefing Outline

Burn Organization

- D. Organizational Chart/Personnel Assignments
- E. Equipment Assignments
- F. Other Resources (in staging, local, etc.)

Burn Objectives - include complexity analysis

Description of Burn Area

- H. Review Map of Burn/Topographical Features/Acreage
- I. Values at Risk (structures, T&E species, etc.)
- J. Problem Areas (fuel loading, smoke management, etc.)
- K. Fuel Type (both inside and outside the burn unit)
- L. Roads/Access
- M. Water Sources
- N. Control lines (natural, manmade)

Firing Sequence

- D. Test Burn
- E. Ignition Equipment (type, number, etc.)
- F. Pattern and Sequence of Firing

Weather/Fire Behavior

- E. General History (seasonal, previous burn period, drought conditions, etc.)
- F. Expected Weather (fire weather, spot weather)
 - 1. Wind Speed and Direction
 - 2. Relative Humidity
 - 3. Temperature
 - 4. Current Weather (relate to expected weather)
- G. Fuel Moisture (live, dead, leaf litter, KBDI)
- H. Fire Behavior
 - 1. Burn Index (history, expected, percentile)
 - 2. Behave Run (ROS, FL, IC, etc.)

Communications

- C. Procedures
- D. Frequencies/Channels (review frequency assignments)

Contingency Plan

- E. MMA
- F. Slop Over vs. Escape
- G. Initial Assignments (slop over, escape, IA, etc.)
- H. Strategy/Tactics

Safety

- G. Personal Protective Equipment (including PPE for boat safety)
- H. Lookouts, Escape Routes, and Safety Zones
- I. Hazards (footing, natural, man made, smoke, visibility, etc.)
- J. EMTs – Medical Plan
- K. Potential for unexploded ordnance
- L. Other (air operations, flammable fuel handling, etc.)

Agency Comments

Burn Unit #3

This Unit has approximately 41 acres of burnable grasslands. The Unit is heavily invaded with Brazilian Pepper. The Unit is bordered to the North by the Corpus Christi Ship Channel to the West by Burn Unit 2, unvegetated sand flats to the South, and City owned property to the East. A disk line will be installed on the East side of the unit (Figure 3). The disk line will be a minimum of 20 feet wide and cleared of all vegetation down to mineral soil. The Line will protect the city property to the East as well as the only wooden structure within the burn unit. Escapement of fire from the unit is only possible to the East. The fire brake, ignition pattern, and holding crew will assure that escapement will not occur. Required wind direction is between 100° and 180°.

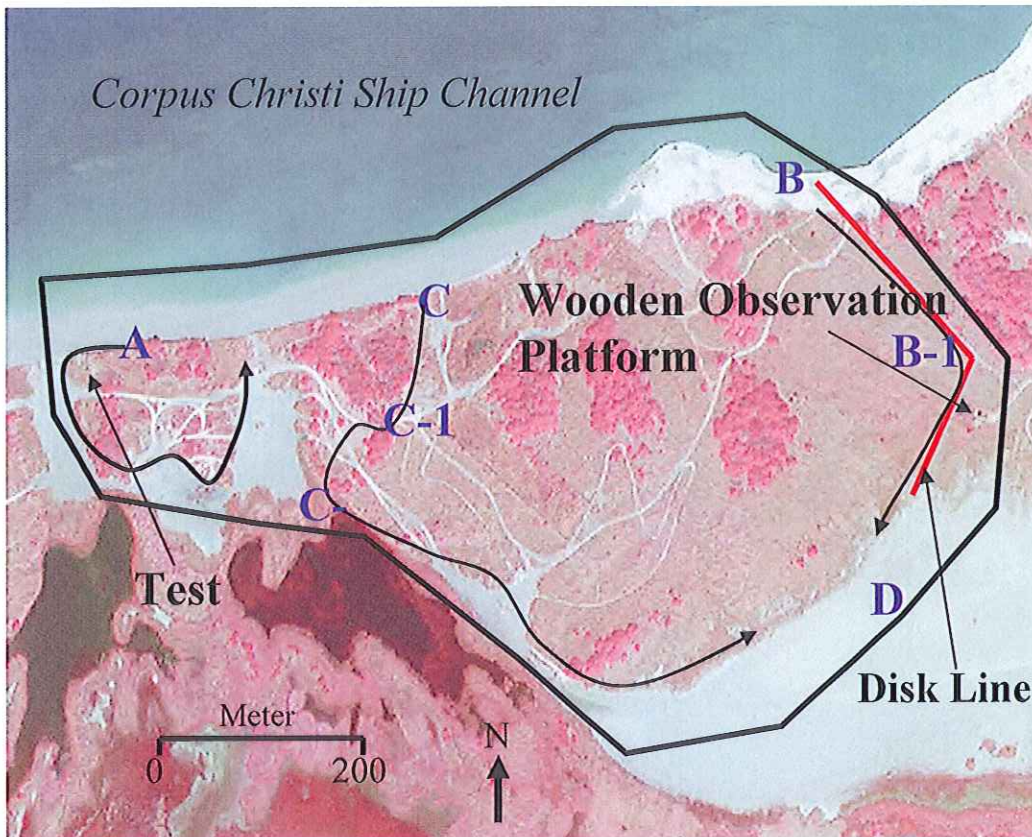


Figure 3. Burn Unit #3 depicting the Disk Line, Test Fire location, and ignition pattern.

The vegetation type is Coastal Prairie with areas of dense Brazilian Pepper thickets. There are areas of Native Brush that will be protected by backing fires if needed.

Equipments Needed on Site:

- Tractor with disc or dozer
- ATV
- Type 6 Engine
- Pickup Truck
- Two drip torches
- Hand tools (Flappers)

Required Personnel:

RXB2-Burn Boss	1
ENGB-Engine Boss	1
FFT2-Fire Fighter	4
EQOP-Equipment Operator	1
DISP- Dispatcher	1
Total	8

Site Preparation:

The line between Burn Unit #3 and the City owned property to the East will need to be disked to mineral soil (20 ft wide). This line will parallel a dense stand of Brazilian Pepper to the East, and protect a wooden observation platform (Figure 3).

Walk entire unit to look for additional hazards.

Entry Points into the Nature Preserve will need to be posted to keep the public out.

Pre-burn Briefing: Conducted By Burn Boss. (See Outline)

Ignitions: Will be overseen by the Burn Boss. A test fire will be set in the corner of the unit near Point A. Once the Burn Boss determines that the test fire was successful, 2 FFT2 will begin operations at Point A. Ignitions will proceed from Point A and encircle the small area in the far west corner of the unit. The 2 FFT2's will then move to Point C. Ignitions will then proceed south from Point C to the unvegetated sand flat. They will hold at the sand flat Once there is sufficient black separating Unit #3 from Unit #2, 2 FFT2's will begin ignitions from Point B, south along the disk line toward Point D. This crew will move slow and assure on escapement to the east. Once this crew reaches the southern end of the disk line and sand flat both crews will continue ignitions and meet at Point D. Because of the numerous off road vehicle trails within the unit it is unlikely that the native bush thickets will be adversely affected by the prescribed fire. In addition most of the native brush is within dense stands of Brazilian Pepper which should not carry the fire. If the Brazilian Pepper is removed prior to prescribed fire operations then backing fires may be required to prevent damage to native brush species.

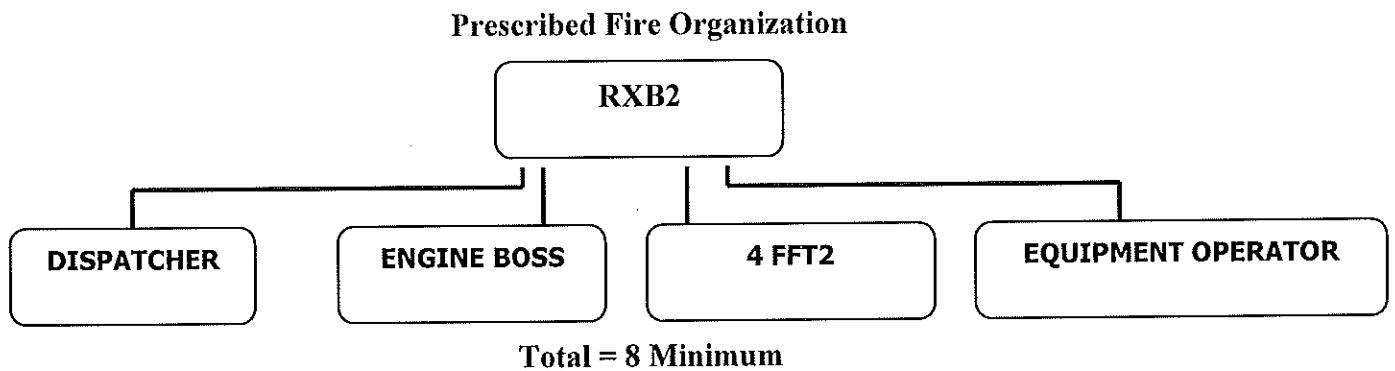
Because of the interior roads it is likely that mop-up will require additional ignitions. Mop-up will be coordinated by the Burn Boss.

Debriefing: Conducted By Burn Boss

Where burn objectives within acceptable range of results?
What could be done differently to obtain results or get better results?
Was there any deviation from the plan? If so, why?

Problems and general questions?

Release all personnel: Burn Boss



Prescribed Burn Briefing Outline

Burn Organization

- G. Organizational Chart/Personnel Assignments
- H. Equipment Assignments
- I. Other Resources (in staging, local, etc.)

Burn Objectives - include complexity analysis

Description of Burn Area

- O. Review Map of Burn/Topographical Features/Acreage
- P. Values at Risk (structures, T&E species, etc.)
- Q. Problem Areas (fuel loading, smoke management, etc.)
- R. Fuel Type (both inside and outside the burn unit)
- S. Roads/Access
- T. Water Sources
- U. Control lines (natural, manmade)

Firing Sequence

- G. Test Burn
- H. Ignition Equipment (type, number, etc.)
- I. Pattern and Sequence of Firing

Weather/Fire Behavior

- I. General History (seasonal, previous burn period, drought conditions, etc.)
- J. Expected Weather (fire weather, spot weather)
 - 1. Wind Speed and Direction
 - 2. Relative Humidity
 - 3. Temperature
 - 4. Current Weather (relate to expected weather)
- K. Fuel Moisture (live, dead, leaf litter, KBDI)
- L. Fire Behavior
 - 1. Burn Index (history, expected, percentile)
 - 2. Behavior Run (ROS, FL, IC, etc.)

Communications

- E. Procedures
- F. Frequencies/Channels (review frequency assignments)

Contingency Plan

- I. MMA
- J. Slop Over vs. Escape
- K. Initial Assignments (slop over, escape, IA, etc.)
- L. Strategy/Tactics

Safety

- M. Personal Protective Equipment (including PPE for boat safety)
- N. Lookouts, Escape Routes, and Safety Zones
- O. Hazards (footing, natural, man made, smoke, visibility, etc.)
- P. EMTs – Medical Plan
- Q. Potential for unexploded ordnance
- R. Other (air operations, flammable fuel handling, etc.)

Agency Comments

Burn Unit #4

This Unit contains 5 areas of upland islands surrounded by sand flats and cattail dominated wetlands (Figure 4). Island numbers 1, 3, and 4, are isolated and pose almost no chance for fire escapement. Island 2 and 5 have cattail dominated wetlands to the north and during dry conditions fire could escape to these cattails. Therefore, island 2 and 5 should only be considered for burning if the cattails are green and there is sufficient water in the marsh to prevent escape.

There is a new housing addition being constructed just east of island 5 and an airport southwest of Island 3; therefore, any burning within this unit will require only southeast winds (Required direction between 120° and 180°). Although it is possible to reach these islands when it is dry using an ATV use of such equipment should be restricted to emergency only. Ignitions crews can walk in to each island. Access to island 1 should be from the north across dry sand flats. Access to the other islands should be from the south by foot. ATV's and fire engines can be positioned just outside the unit to be used if necessary. The Burn Boss will determine the location of these holding and emergency resources.

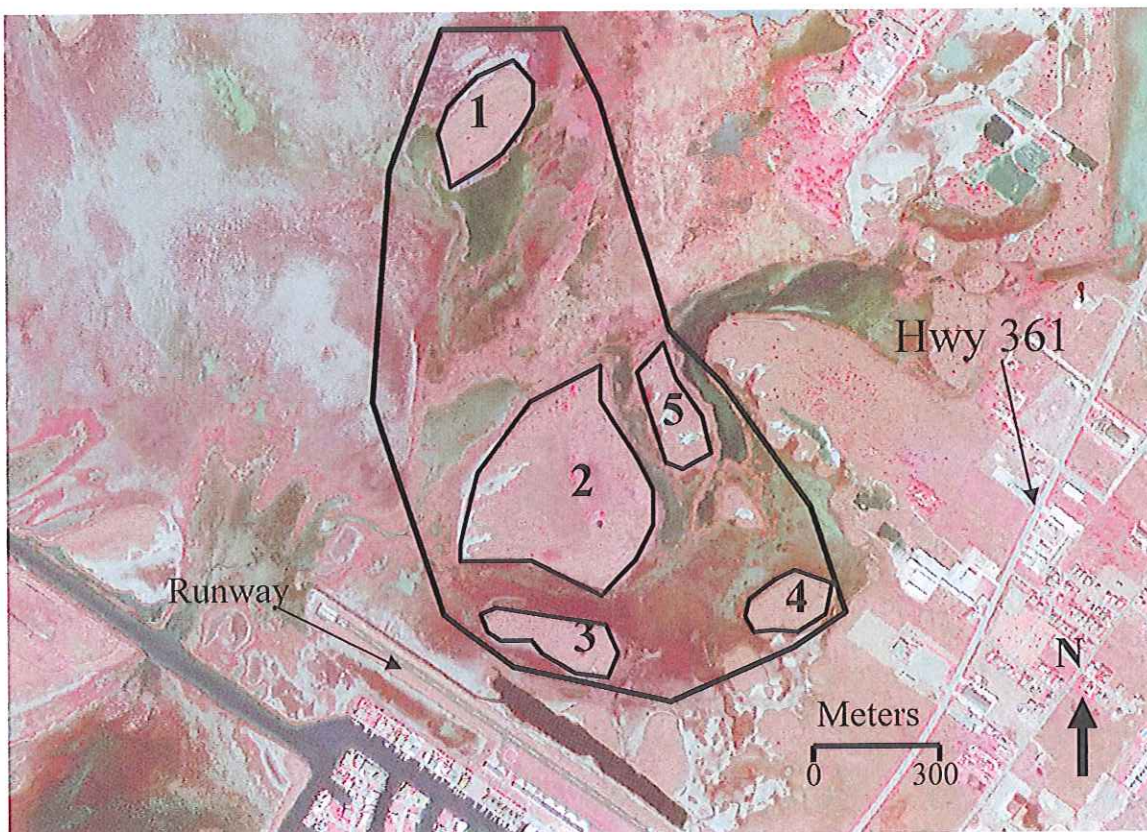


Figure 4. Location of Burn Unit #4 within Port Aransas Nature Preserve.

The islands vary in size: 1 = 9.6 acres, 2 = 41.0 acres, 3 = 7.1 acres, 4 = 6.1 acres and 5 = 8.2 acres.

Equipments Needed on Site:

- ATV
- Type 6 Engine
- Pickup Truck
- Two drip torches
- Hand tools (Flappers)

Required Personnel:

RXB2-Burn Boss	1
ENGB-Engine Boss	1
FFT2-Fire Fighter	4
DISP- Dispatcher	1
Total	7

Site Preparation:

Only island 2 has a diverse mixture of native brush and stands of Brazilian Pepper. This island will need to be evaluated on burn day to determine if backing fires will be utilized to protect native brush. The other islands are mostly grasslands and will require very little preparation. All of the islands will be walked prior to ignitions to look for additional hazards. Entry Points into the Nature Preserve will need to be posted to keep the public out. Coordination with the Airport will be necessary.

Pre-burn Briefing: Conducted By Burn Boss. (See Outline)

Ignitions: Will be overseen by the Burn Boss. A test fire will be set in the northwest corner of each island within the unit prior to ignitions. Once the Burn Boss determines that the test fire was successful, 2 FFT2 will begin ignitions around the perimeter of the island. To minimize coordination and burn day contacts all of the islands should be burned on the same day. Ignitions on island 2 and 5 will require care to prevent escapement into the cattails. Backing fires should first be set at the north margins of these islands and allowed to back into the island for a distance of 100 feet prior to carrying out ignitions around the islands.

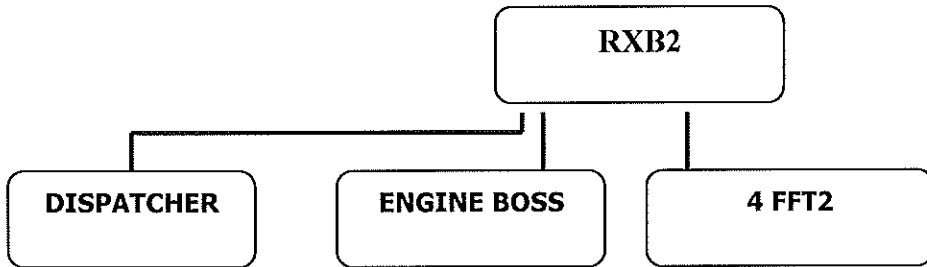
Debriefing: Conducted By Burn Boss

- Where burn objectives within acceptable range of results?
- What could be done differently to obtain results or get better results?
- Was there any deviation from the plan? If so, why?

Problems and general questions?

Release all personnel: Burn Boss

Prescribed Fire Organization



Total = 7 Minimum

Prescribed Burn Briefing Outline

Burn Organization

- J. Organizational Chart/Personnel Assignments
- K. Equipment Assignments
- L. Other Resources (in staging, local, etc.)

Burn Objectives - include complexity analysis

Description of Burn Area

- V. Review Map of Burn/Topographical Features/Acreage
- W. Values at Risk (structures, T&E species, etc.)
- X. Problem Areas (fuel loading, smoke management, etc.)
- Y. Fuel Type (both inside and outside the burn unit)
- Z. Roads/Access
- AA. Water Sources
- BB. Control lines (natural, manmade)

Firing Sequence

- J. Test Burn
- K. Ignition Equipment (type, number, etc.)
- L. Pattern and Sequence of Firing

Weather/Fire Behavior

- M. General History (seasonal, previous burn period, drought conditions, etc.)
- N. Expected Weather (fire weather, spot weather)
 - 1. Wind Speed and Direction
 - 2. Relative Humidity
 - 3. Temperature
 - 4. Current Weather (relate to expected weather)
- O. Fuel Moisture (live, dead, leaf litter, KBDI)
- P. Fire Behavior
 - 1. Burn Index (history, expected, percentile)
 - 2. Behave Run (ROS, FL, IC, etc.)

Communications

- G. Procedures
- H. Frequencies/Channels (review frequency assignments)

Contingency Plan

- M. MMA
- N. Slop Over vs. Escape
- O. Initial Assignments (slop over, escape, IA, etc.)
- P. Strategy/Tactics

Safety

- S. Personal Protective Equipment (including PPE for boat safety)
- T. Lookouts, Escape Routes, and Safety Zones
- U. Hazards (footing, natural, man made, smoke, visibility, etc.)
- V. EMTs – Medical Plan
- W. Potential for unexploded ordnance
- X. Other (air operations, flammable fuel handling, etc.)

Agency Comments