

Section 3 Fire

BURNED AREA EMERGENCY STABILIZATION AND REHABILITATION (ESR) PLAN

AGENCY/UNIT: A.R.M. Loxahatchee National Wildlife Refuge

LOCATION: Boynton Beach, Palm Beach County, Florida

DATE: August 2, 2001

PREPARED BY: Local Resource Specialists,
A.R.M. Loxahatchee National Wildlife Refuge, Ad Hoc ESR team.

Submitted By: _____ Date: _____
Project Leader, A.R.M. Loxahatchee NWR

EXECUTIVE SUMMARY

Introduction

This plan has been prepared in accordance with the Interagency Policy Guidance and Direction: Wildland Fire Rehabilitation and Restoration (1998) signed by the Assistant Secretary of the Interior. This plan provides burned area emergency rehabilitation (ESR) recommendations for all lands burned within the Section 3 Fire perimeter. The primary objectives of the Section 3 Fire Burned Area Emergency Rehabilitation (ESR) Plan are to:

- Rehabilitate former native vegetation by killing post-fire exotic melaleuca regeneration.
- Restore healthy, stable ecosystems as specified in approved land management plans.

This plan addresses emergency stabilization and rehabilitation of fire suppression and fire damages. The burned area emergency stabilization and rehabilitation team (ESR) Team conducted an analysis of fire damages throughout the lands impacted by the fire. The vegetation specialist evaluated and assessed fire damages and suppression impacts to vegetative resources, including threatened and endangered (T&E) species, and identified values at risk associated with fire induced increases in melaleuca. Section 7 Consultation for Federally listed Threatened and Endangered species was completed by the team and reviewed by the US Fish and Wildlife Service Ecological Services Office in Vero Beach, FL. The proposed herbicide treatments are used annually on the Refuge to control melaleuca. The GIS specialists gathered the data layers necessary for the plan and coordinated GPS activities.

Individual resource Fire Damage Assessment Reports produced by these specialists are in Appendix I.. The individual treatments specifications including the effectiveness monitoring identified in the assessments can be found in Part F. A summary of the costs by jurisdictions is in Part E. Appendix II contains the National Environmental Policy Act (NEPA) compliance documentation summary. Appendix III contains the ESR Plan maps. Appendix IV contains photo documentation. Appendix V contains a historical fire and melaleuca infestation map.

Fire Background

June 25: On Monday June 25, 2001, lightning ignited the seventh and final wildfire to burn in the Refuge in a five day period. Florida Division of Forestry and US Fish and Wildlife Service personnel first noted the fire's smoke at 1500. Norman Masencup, the Florida Division of Forestry's local Forest Area Supervisor, and a senior ranger viewed the fire from the levee near the western edge of the fire and estimated it's size to be 300 acres.

June 26: At 0900 on June 26, Dawn Greenlee, A.R.M. Loxahatchee's Prescribed Fire Specialist and Keith Boliek, the Refuge's helicopter crew member, met Norman Masencup and a DOF senior ranger near the S-6 pump station to develop an action plan for the fire. Greenlee and Masencup served as Unified Command Incident Commanders. At 1100 they estimated the fire to be 1,920 acres. Consistent east winds, 6-16 m.p.h. were predicted by both short and long-range Division of Forestry and National Weather Service forecasts. Each day for the subsequent week, daily and evening thunderstorms were predicted to provide .25 to 1 inch of rain. Greenlee and Masencup agreed that because the east winds

would prevent smoke from impacting urban interface areas and because the fire would likely be put out by rain within 24 hours, as the other six recent wildfires had been, we would not risk personnel safety to take active suppression action at that time. Interagency staff continued to monitor the fire to ensure that it did not spot onto the private land to the west of the Refuge, and that smoke was dispersing away from communities. There was no rainfall on June 26. At 2000 on June 26, Masencup and Greenlee estimated fire acreage at 5,000 acres.

June 27: At 0800, Greenlee received a spot weather forecast from National Weather Service meteorologist Tom Warner, which called for east winds for the next 7 days, a 70% chance of rain for June 27 and a 40% chance of rain on June 28. At its average daily rate of spread of 15 chains/hour, without rain, Greenlee predicted that the fire would double to 10,000 acres within the next 24 hours. On the morning of June 27, Greenlee met with Refuge biology staff to prepare an informal fire situation analysis. Suppression resources, including two large amphibious tanked vehicles at Merritt Island N.W.R., and one amphibious Division of Forestry rologon were available. Wildlife Biologist and Exotic Plant Specialist William G. Thomas Jr. noted that the fire was burning into thicker Melaleuca (created by a 1989 wildfire) and that the cost/acre to remove the exotic plant in that area would double if it burned. Wildlife Biologist Laura Brandt, PhD. weighed the issues of firefighter safety, public safety, forecasted weather, resource benefits, and resource damages and concluded that we would not take active suppression action at that time. A few hours after the biologist's meeting, the Refuge received .74 inches of rain. After June 27, no smoke was visible in the burned area. On July 6, Greenlee and Thomas flew the fire and declared it out at 9,008 acres.

Fire Damages and Threats to Human Safety and Natural and Cultural Resources

The Section 3 fire burned in an area which had elevated melaleuca density as a result of a 40,000 acre wildfire which burned the same area in 1989. The 1989 fire "contributed to the exponential spread of melaleuca in the refuge interior" (CCP, 2000). The Section 3 fire burned over 1,800 acres of individual melaleuca trees and dense melaleuca "heads". Sprouting and fire induced seed release following the Section 3 fire will more than double the melaleuca in the fire area.

Invasive pest plant management is one of the highest priorities identified at Arthur R. Marshall Loxahatchee National Wildlife Refuge. Approximately 60%, nearly 90,000 acres, of Water Conservation Area I are impacted by melaleuca and Old World climbing fern respectively. Additional acreage is being invaded and altered on a daily basis. Wildfires burning adult melaleuca have contributed significantly to the spread of this plant in the Refuge (Appendix V, Figure 1.)

Arthur R. Marshall Loxahatchee National Wildlife Refuge Management Requirements

Rehabilitation:

The following statements in approved Comprehensive Conservation Plan justify the proposed burned area rehabilitation treatments funded with Emergency Fire Rehabilitation funds. Herbicide treatment of Melaleuca is consistent with all aspects of resource management objectives at A.R.M. Loxahatchee NWR.

- "Invasive exotic plants are out-competing native vegetation and are altering the Everglades ecosystem. Control efforts have not kept up with the spread of these species." (A.R.M. Loxahatchee National Wildlife Refuge Comprehensive Conservation Plan, page13, 2000).

- “In addition to the above effects, live melaleuca inhibits the use of prescribed fire as a management tool since fire would generate a massive seedfall which would allow the tree to become quickly established in adjacent areas. The raging wildfire during the drought of 1989-1990 contributed to the exponential spread of melaleuca in the refuge interior. The primary management tool used at the refuge for the control of melaleuca is herbicides.” (A.R.M. Loxahatchee National Wildlife Refuge Comprehensive Conservation Plan, page 35, William G. Thomas, Jr., 2000).
- The increasing number of exotic and invasive plant and animal species is negatively impacting the Refuge’s native wildlife and habitat. Many local citizens ... desire that the Refuge staff increase its efforts to protect native plants and wildlife from these threats” (A.R.M. Loxahatchee National Wildlife Refuge Comprehensive Conservation Plan, page 73, William G. Thomas, Jr., 2000).

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PART A - FIRE LOCATION AND BACKGROUND INFORMATION

Fire Name	Section 3
Fire Number	41560-9261-4025 (P80002)
Agency Unit	A.R.M. Loxahatchee NWR
Region	4
State	Florida
County(s)	Palm Beach
Ignition Date/Cause	June 25, 2001/Lightning
Zone	
Date Controlled	July 6, 2001
Jurisdiction	Acres
USFWS	9,008
Total Acres	9,008
Date Contained	July 6, 2001

PART B - NATURE OF PLAN

I. Type of Plan (check one box below)

	Emergency Stabilization
XX	Rehabilitation
	Both Emergency Stabilization and Rehabilitation

II. Type of Action (check one box below)

XX	Initial Submission
	Updating or Revising the Initial Submission
	Supplying Information of Accomplishment to Date on Work
	Different Phase of Project
	Final Accomplishment Report (To Comply with the Closure of the 9262 Account)

PART C - EMERGENCY STABILIZATION AND REHABILITATION ASSESSMENT

Rehabilitation Objectives

- Rehabilitate former native vegetation by killing post-fire exotic *Melaleuca* regeneration.

PART D - TEAM ORGANIZATION, MEMBERS, AND RESOURCE ADVISORS

I. Approval Authorities

Activities Requiring Regional/State/Headquarters Approval Emergency Stabilization and Rehabilitation (charged to EFR)	Status	Cost
Kill <i>Melaleuca</i> regenerating in area burned by the Section 3 wildfire	P	\$497,876
Subtotal		

Status: C=Completed,; O=Ongoing; P=Planned

Total Emergency Stabilization and Rehabilitation Costs	
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II. Burned Area Emergency Stabilization and Rehabilitation (ESR) Team Members: *(List of technical specialists used to develop the plan)*

Position	Team Member (Agency)
Team Leader	Mark Musaus (USFWS)
Public Information	Serena Rinker (USFWS)
Operations	
NEPA Compliance & Planning	Bruce Arrington (USFWS)
Hydrologist	Mike Waldon (USFWS, Everglades Program Team)
Soil Scientist	
Geologist	
Cultural Resources/Archeologist	
Vegetation Specialist	William Thomas, Jr. (USFWS)
Wildlife Biologist	Laura Brandt, PhD. (USFWS)
GIS Specialist	Dawn Greenlee (USFWS)
Documentation/Computer Specialist	
Photographer	

PART E - SUMMARY OF ACTIVITIES AND COSTS

The summary of activities and cost table below identifies emergency stabilization and rehabilitation costs charged or proposed for funding from Suppression Operations, Emergency Fire Rehabilitation, agency operation, and other funding sources. Expenditures are displayed in the total cost column. They are coded with the appropriate cost authority. The total cost of the rehabilitation effort to date, excluding the costs absorbed by the fire account (fire crews, labor, and associated overhead) is displayed as either Suppression Operations (F), Emergency Fire Rehabilitation (EFR), Emergency Watershed Protection (EWP), or Agency Operations/Other (O/OP) or other.

Fire Name: Arthur R. Marshall Loxahatchee National Wildlife Refuge, Section 3 Fire (41560-9261-4025)

Ignited by lightning on afternoon of June 25, 2001, 1500 hours and declared out July 6, 2001 at 9008 acres.

Specification Cost Summary

Account	Dollars	Dollars
Fire Suppression Activity Damage Rehabilitation (F)		
Emergency Fire Rehabilitation (EFR)		\$0
Emergency Stabilization	\$	
Rehabilitation	\$	\$497,876
Emergency Watershed Protection (EWP)		
Agency Operations/Other (OP/O)		
Funding Summary - Estimated Total		\$497,876

PART E - SUMMARY OF REHABILITATION ACTIVITIES - COST SUMMARY TABLE - LNWR
 Section 3 Fire

Spec #	Title	Unit	Unit Cost	# of Units	Cost by Funding Source		Implementation Method	Specification Total
					EFR	OP/O		
	Invasive Species Weed Control (Melaleuca Eradication for LNWR Section 3 Fire)	acre	\$ 111.72	4,326	\$ 483,301		c (contract)	\$ 483,301
	41560-9261-4025-FY'01							
TOTAL COST					\$ 483,301	\$ 0		\$ 483,301

COST: EFR=Emergency Fire Rehabilitation, OP/O=Agency Operations Funding, Other **METHOD:** FC=Crew Assigned to Fire, C=Contract, EFC=Emergency Fire Contract, P=Agency Personnel

PART F - INDIVIDUAL TREATMENT SPECIFICATIONS

SPECIFICATION TITLE:	Invasive Species Weed Control	AGENCY:	USFWS
PART E LINE ITEM:	LNWR Section 3 Fire Melaleuca Eradication	FISCAL YEAR(S) (list each year):	2002 or 2003

I. WORK TO BE DONE (describe or attach exact specifications of work to be done):

<p>Number and Describe Each Task:</p> <p>A. General Description: Eradicate, using private contractors, invasive species (melaleuca) infestations contained within the LNWR Section 3 Fire Burn perimeter to prevent further invasion and to maintain native plant species diversity; Utilize Integrated Pest Management (IPM) techniques (herbicides, physical and biological controls, and public awareness) according to strategies identified in the refuge's Exotic Plant Control Plan to contain and prevent additional spread within the burned area.</p> <p>B. Location/(Suitable) Sites: Water Conservation Area 1 (LNWR) southwestern marsh interior (See Section 3 Fire ArcView map)</p> <p>C. Design/Construction Specifications:</p> <ol style="list-style-type: none"> 1. Use private contractors (initial control) to eradicate, using herbicides, all melaleuca (adults, saplings, seedlings) within the Section 3 Fire burn perimeter. 2. Follow-up treatments will include using prescribed fire for seedling control around fire-affected treated melaleuca; the refuge receives alternate funding for long-term melaleuca eradication. <p>D. Purpose of Treatment Specifications: protect the ecological integrity of northern Everglades flora and fauna and for the long-term protection of endangered and threatened species including the snail kite and wood stork.</p> <p>E. Treatment Effectiveness Monitoring Proposed: see monitoring specs. – SRF aerial exotics flights and GPS & GIS mapping.</p>

II. LABOR, MATERIALS AND OTHER COST:

<p>? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).</p>	COST/ITEM
TOTAL PERSONNEL SERVICE COST	
<p>? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.</p>	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
<p>? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):</p> <p>Invasive Species (Melaleuca) contract X 1 ea. X \$ 111.72/acre X 4,326 acres X 1 year</p>	COST/ITEM
	\$483,301
TOTAL MATERIALS AND SUPPLY COST	
<p>? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):</p>	COST/ITEM
TOTAL TRAVEL COST	
<p>? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):</p>	COST/ITEM
TOTAL CONTRACT COST	\$483,301

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	acre(s)	\$111.72	4,326.0	\$483,301	EFR	EFC
FY 2						
FY 3						
TOTAL	acres	\$111.72	4,326.0	\$483,301	EFR	EFC

FUNDING SOURCE

F - Suppression Operations

EFR - Emergency Fire Rehabilitation

EWP - Emergency Watershed Protection

OP/O - Agency Operations/Other

METHODS

P - Agency Personnel Services

C - Contract (long-term)

EFC - Emergency Fire Contract (short-term)

FC - Incident Management Crew Assignment

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	C
2. Documented cost figures from similar project work obtained from local agency sources.	C
3. Estimate supported by cost guides from independent sources or other federal agencies	C
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within ESR Plan Accomplishment Report (for Rehabilitation treatments quote (include page number, approving officials name, and date approved for review and auditing purposes) pertinent passages from approved land management plans: See ArcView map of LNWR Section 3 Fire (41560-9261-4025)

PART G - POST-REHABILITATION REQUIREMENT¹

The following are post-rehabilitation, implementation, operation, maintenance, monitoring, and evaluation actions beyond three years to ensure the effectiveness of initial investments. Estimated annual cost and funding source is indicated.

Emergency Stabilization

Nothing to Report.

Rehabilitation

1. Optimally, prescribed fire (year 3 to 4 dependent on sawgrass rejuvenation) will be used to control seedlings established due to the 9,008 acre fire (Section 3 Fire).
2. Long-term funding has been identified for refuge invasive species eradication and will be provided by the FWS and will be matched by the Florida Department of Environmental Protection through a cooperative agreement (currently being developed).

¹ Non-9262 funding

Number and Describe Each Task:

A. General Description: Monitor invasive species (melaleuca) eradication efforts and document additional spread or declines, and native vegetation recovery within the LNWR Section 3 Fire area of Water Conservation Area 1.

B. Location/(Suitable) Sites: Refer to LNWR Section 3 Fire area GIS map in southwestern portion of Water Conservation Area 1.

C. Design/Construction Specifications:

1. Conduct short-term monitoring of invasive species populations and eradication efforts through inter-agency aerial Surveillance and Reconnaissance Flights (SRF) every two years.

2. Map, using GPS and GIS software, eradication efforts, melaleuca spread or declines, and native species recovery for short-term and long-term periods within the LNWR Section 3 Fire area.

D. Purpose of Treatment Specifications: To protect the ecological integrity of the last remaining remnants of northern Everglades-type habitat, specifically to document recovery of the sawgrass community which has been invaded by melaleuca, and to protect and restore habitat for T & E species such as the snail kite and wood stork.

E. Treatment Effectiveness Monitoring Proposed: See monitoring design/construction (part I., C.)

II. LABOR, MATERIALS AND OTHER COST:

? PERSONNEL SERVICES: (Grade @ Cost/Hours X # Hours X # Fiscal Years = Cost/Item): Do not include contract personnel costs here (see contractor services below).	COST/ITEM
USFWS – GS-9 Prescribed Fire Specialist X \$142/day X 5 days/year X 3 years	\$2,130
TOTAL PERSONNEL SERVICE COST	
? EQUIPMENT PURCHASE, LEASE AND/OR RENT (Item @ Cost/Hour X # of Hours X #Fiscal Years = Cost/Item): Note: Purchases require written justification that demonstrates cost benefits over leasing or renting.	COST/ITEM
TOTAL EQUIPMENT PURCHASE, LEASE OR RENTAL COST	
? MATERIALS AND SUPPLIES (Item @ Cost/Each X Quantity X #Fiscal Years = Cost/Item):	COST/ITEM
USFWS, SFWMD, NPS – 1 ea. SRF Aerial Exotics Survey Flight X 1 year	\$12,446
TOTAL MATERIALS AND SUPPLY COST	
? TRAVEL COST (Personnel or Equipment @ Rate X Round Trips X #Fiscal Years = Cost/Item):	COST/ITEM
TOTAL TRAVEL COST	
? CONTRACT COST (Labor or Equipment @ Cost/Hour X #Hours X #Fiscal Years = Cost/Item):	COST/ITEM
TOTAL CONTRACT COST	
	\$14,576

SPECIFICATION COST SUMMARY

FISCAL YEAR	UNIT	UNITS COST	# OF UNITS	COST	FUNDING SOURCE	METHOD
FY 1	mapping	\$710.00	survey	\$710	EFR	p
FY 2	mapping	\$710.00	survey	\$710	EFR	p
FY 3	map, SRF	\$13,155.50	survey	\$13,156	EFR	c
TOTAL		\$14,575.50		\$14,576	EFR	p, c

FUNDING SOURCE

F - Suppression Operations

EFR - Emergency Fire Rehabilitation

EWP - Emergency Watershed Protection

OP/O - Agency Operations/Other

METHODS

P - Agency Personnel Services

C - Contract (long-term)

EFC - Emergency Fire Contract (short-term)

FC - Incident Management Crew Assignment

SOURCE OF COST ESTIMATE

1. Estimate obtained from 2-3 independent contractual sources.	
2. Documented cost figures from similar project work obtained from local agency sources. (Aerial SRF Flight)	c
3. Estimate supported by cost guides from independent sources or other federal agencies (GPS, GIS Mapping)	p
4. Estimates based upon government wage rates and material cost.	
5. No cost estimate required - cost charged to Fire Suppression Account	

P = Personnel Services, E = Equipment M = Materials/Supplies, T = Travel, C = Contract, F = Suppression

III. RELEVANT DETAILS, MAPS AND DOCUMENTATION INCLUDED IN THIS REPORT:

List Relevant Documentation and Cross-Reference Location within ESR Plan Accomplishment Report (for Rehabilitation treatments quote (include page number, approving officials name, and date approved for review and auditing purposes) pertinent passages from approved land management plans:

PART G - POST-REHABILITATION REQUIREMENT²

The following are post-rehabilitation, implementation, operation, maintenance, monitoring, and evaluation actions beyond three years to ensure the effectiveness of initial investments. Estimated annual cost and funding source is indicated.

Emergency Stabilization

Nothing to Report.

Rehabilitation

1. Monitor LNWR Section 3 Fire, 9008 acres, (41560-9261-4025) for invasive species (melaleuca) eradication and invasion, and native plant species recovery.

2. Use frequent prescribed fire to maintain low levels of melaleuca. Burn frequently enough that melaleuca will not develop seeds (\$6,000/year).

2. Long-term Monitoring

A. Map invasive species eradication efforts and document new invasive species (melaleuca) invasions, native species recovery, and short-and long-term impacts to T & E species (\$ 2,130 -- EFR, p= agency personnel).

B. Map and document invasive species (melaleuca) populations, control efforts, and invasion or declines within the Section 3 Fire burn area using inter-agency SRF surveys (\$ 12,445.50 -- EFR, c = contract).

PART H - CONSULTATIONS

U.S. Fish and Wildlife Service, Vero Beach Office, Section 7 Consultation.

Robert Frakes, Contaminants Coordinator

National Park Service

Tony Pernas, Invasive Plant Vegetation Specialist (Melaleuca Specialist)

South Florida Water Management District

Francois Laroche, Senior Environmental Scientist (Melaleuca Specialist)

² Non-9262 funding

PART I - REVIEW AND APPROVAL

United States Fish and Wildlife Service; A.R.M. Loxahatchee National Wildlife Refuge

I. Suppression Operations Funding Approval (check one box below):

G Approved

G Approved with Revision (see attached)

G Disapproved

Date

II. Emergency Fire Rehabilitation (9262) Funding Approval (check one box below):

G Approved

G Approved with Revision (see attached)

G Disapproved

Region 4 ,US Fish and Wildlife Service,

Date

Regional Fire Management Coordinator concurrence that the plan fits the technical definition for use of Emergency Fire Rehabilitation finding. *(U.S. Fish and Wildlife Service Only)*

Regional Fire Management Coordinator, Region 4

Date

III. Agency Operational Base Funding Approval (check one box below):

G Approved

G Approved with Revision (see attached)

G Disapproved

Specify Title and Jurisdiction (Region/State), Date

III. Emergency Fire Rehabilitation Funding Approval (check one box below):

G Approved

G Approved with Revision (see attached)

G Disapproved

Specify Title and Jurisdiction (Headquarters), Date

APPENDIX I - ESR FIRE DAMAGE ASSESSMENT REPORTS

SECTION 3 FIRE VEGETATION DAMAGE ASSESSMENT REPORT

The Section 3 fire burned into an area which had previously burned in a May 1989 wildfire. The dense melaleuca on the northern and eastern edges of the Section 3 fire were a direct result of that 1989 fire (Appendix V, Figure 1). The CCP states that fire "...would generate a massive seedfall which would allow the tree to become quickly established in adjacent areas. The raging wildfire during the drought of 1989-1990 contributed to the exponential spread of melaleuca in the refuge interior." (A.R.M. Loxahatchee National Wildlife Refuge Comprehensive Conservation Plan, page 35, 2000)

The ESR vegetation and GIS specialists flew the fire via helicopter to map the extent of melaleuca burned by the fire. The eastern and northern portions of the Section 3 fire burned into dense melaleuca. Reproductive melaleuca density was over 50 trees/100 acres over 1,800 acres of the area burned. Although small patches of vegetation were unburned by the fire, vegetation over almost the entire area was top-killed by the fire. Following the 1989 wildfire, melaleuca top-killed by fire resprouted and new plants were established following fire stimulated seed dispersal.

I. Recommendations

A. Management

Initial efforts following the Section 3 Fire will focus on the eradication of all melaleuca within the burn perimeter, primarily using herbicides, and preventing further invasion of melaleuca within the sawgrass community. Seedlings generated from the mass seed releases which occurred as the result of this fire will be controlled using prescribed fire three to four years post-herbicide control. The National Park Service (T. Pernas, pers. comm.) and South Florida Water Management District (F. Laroche, pers. comm.) have had success using prescribed fire for melaleuca seedling control following chemical treatments.

1. Initial invasive species (melaleuca) eradication contract/control using herbicides within burn perimeter of LNWR Section 3 Fire (41560-9261-4025); (\$ 483,300.72 – EFR/C)
2. Invasive species (melaleuca) control will be conducted using Integrated Pest Management (IPM) techniques (herbicides, biological controls and physical controls [prescribed fire]) and will follow strategies outlined in LNWR's Exotic Plant Control Plan and that strategy successfully implemented and developed within the 'Melaleuca Management Plan for South Florida' by the Florida Exotic Pest Plant Council.

B. Specification Monitoring (specification related)

Invasive plant species (melaleuca) eradication efforts, increases, and/or declines and native plant species recovery will be documented using GPS and GIS mapping software and by conducting, every two

years, an inter-agency SRF exotics flights. These flights have been conducted since the early 1990s by the FWS, NPS and the SFWMD to document invasive species populations and to monitor control efforts.

C. Management (non-specification related)

All future management decisions and efforts will be based upon those issues deemed to be of highest priority (water quality, invasive species, research, T & E species, etc) upon refuge lands. To achieve these goals, refuge management will be guided by directives and strategies proposed or developed within the recently approved (2000) Arthur R. Marshall Loxahatchee NWR Comprehensive Conservation Plan.

II. Consultations

1. DEP–Bureau of Invasive Plant Management (BIPM)
Jackie Smith (aquatics and uplands) 791-4720
Wellington, FL
2. Miami-Dade Parks & Recreation
Joe Maguire, SEIPWG Coordinator (305) 257-0933
Miami, FL (305) 750-6230 pager
3. SFWMD–Vegetation Management
Dan Thayer–Chief of Operations 682-6129
West Palm Beach, FL
4. SFWMD–Vegetation Management
Gordon Baker–Perimeter Canal Maintenance 682-6130
West Palm Beach, FL Aerial Spraying
5. SFWMD–Vegetation Management
Francois LaRoche, Senior Environmental Scientist 682-6193
West Palm Beach, FL Melaleuca Control & Plans
6. SFWMD–Vegetation Management
Amy Ferriter, Senior Environmental Scientist 682-6097
West Palm Beach, FL Lygodium and Brazilian pepper Control
7. USDA/UFL
Gary Buckingham, Research & Biocontrols (352) 372-3505, ext. 124
Gainesville, FL Lygodium (fern moth)
Luke Karsarjian, Assistant & State Botanist, Rare Ferns
8. Palm Beach County Extension Service (561) 233-1725
Core/Aquatics Exam & Pesticide Licenses
559 No. Military Trail
West Palm Beach, FL 33415

9. Florida Dept. of Agriculture & Consumer Services
Pesticide Certification Office (850) 488-6838
CEU information

10. FWS–Tennessee NWR, Duck River Unit
Whit Lewis, Pesticide Use Proposal (931) 535-2465
Regional Coordinator
550 Refuge Lane
New Johnsonville, TN 37134

11. FWS-South Florida Field Office
Robert Frakes, Contaminants Coordinator
(561) 562-3909 x242
fax: (561) 562-4288
Vero Beach, FL

APPENDIX II - ENVIRONMENTAL COMPLIANCE

Federal, State, and Private Lands Environmental Compliance Responsibilities

All projects proposed in the Section 3 Fire Burned Area Emergency Stabilization and Rehabilitation (ESR) Plan that are prescribed, funded, or implemented by Federal agencies on Federal, State, or private lands are subject to compliance with the National Environmental Policy Act (NEPA) in accordance with the guidelines provided by the Council on Environmental Quality (CEQ) Regulations (40 CFR 1500-1508); and with the Arthur R. Marshall Loxahatchee National Wildlife Refuge Comprehensive Conservation Plan (2000). This Appendix documents the ESR Team considerations of NEPA compliance requirements for prescribed rehabilitation and monitoring actions described in this plan for all jurisdictions affected by the Section 3 Fire burned area emergency.

Impacts of herbicide on the following listed species were considered: Snail kite, wood stork, peregrine falcon, bald eagle, indigo snake, Florida panther. Section 7 evaluation of the effects of the Arsenal determined that herbicide use will not negatively affect these species (Section 3 Fire ESR Project Section 7 Evaluation, August 2, 2001).

Related Plans and Cumulative Impact Analysis

The Arthur R. Marshall Loxahatchee National Wildlife Refuge Comprehensive Conservation Plan (September, 2000) was reviewed and it was determined that actions proposed in the Section 3 Fire ESR Plan within the boundary of the Arthur R. Marshall Loxahatchee National Wildlife Refuge are consistent with the management objectives established in the Comprehensive Conservation Plan. The Comprehensive Conservation Plan NEPA compliance process specifically addresses:

- The importance of treating exotic melaleuca for wildlife, fire hazard reduction, and the maintenance of the Everglades ecosystem.

Cumulative Impact Analysis

Cumulative effects are the environmental impacts resulting from the incremental impacts of a proposed action when added to other past, present, and reasonably foreseeable future actions, both Federal and non-Federal. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time. The emergency protection and rehabilitation treatments for areas affected by the Section 3 Fire, as proposed in the Section 3 Fire ESR Plan, do not result in an intensity of impact (i.e. major ground disturbance, etc.) that would cumulatively constitute a significant impact on the quality of the environment. The treatments are consistent with the above jurisdictional management plans and associated environmental compliance documents.

Arsenal, Arsenal has been approved for use at A.R.M. Loxahatchee NWR every year since 1987. The use of Arsenal on refuge lands must be approved on a yearly basis by submission of pesticide use proposals (PUPs) through the regional pesticide use coordinator at Tennessee National Wildlife Refuge, Duck River Unit. Arsenal use has been approved for 2001 in January, 2001. Arsenal has been approved for use at A.R.M. Loxahatchee NWR every year since 1987.

Statement of Compliance for the Section 3 Fire Burned Area Emergency Stabilization and Rehabilitation Plan.

This section documents consideration given to the requirements of specific environmental laws in the development of the Section 3 Fire ESR Plan. Specific consultations initiated or completed during development and implementation of this plan are also documented. The following executive orders and legislative acts have been reviewed as they apply to the Section 3 Fire ESR Plan:

- National Historic Preservation Act (NEPA).
- Executive Order 11988. Flood plain Management.
- Executive Order 11990. Protection of Wetlands.
- Executive Order 12372. Intergovernmental Review.
- Executive Order 12892. Federal Actions to Address Environmental Justice in Minority and Low-income Populations.
- Endangered Species Act.
- Secretarial Order 3127. Federal Contaminated
- Clean Water Act.
- Clean Air Act.

NEPA Checklist: If any of the following exception applies, the ESR Plan cannot be Categorically Excluded and an Environmental Assessment (EA) is required.

- | | | |
|--------------------------|-------------------------------------|--|
| (Yes) | (No) | |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Adversely affect Public Health and Safety |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Adversely affect historic or cultural resources, wilderness, wild and scenic rivers aquifers, prime farmlands, wetlands, flood plains, ecologically critical areas, or Natural Landmarks. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Have highly controversial environmental effects. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Have highly uncertain environmental effects or involve unique or unknown environmental risks. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Establish a precedent resulting in significant environmental effects. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Relates to other actions with individually insignificant but cumulatively significant environmental effects. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Adversely effects properties listed or eligible for listing in the National Register of Historic Places |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Adversely affect a species listed or proposed to be listed as Threatened or Endangered. |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | Threaten to violate any laws or requirements imposed for the "protection of the environment" such as Executive Order 11988 (Flood plain Management) or Executive Order 11990 (Protection of Wetlands). |

National Historic Preservation Act

Ground Disturbance:

- None
- Ground disturbance did occur and an archeologist survey, required under section 110 of the NEPA will be prepared. A report will be prepared under contract as specified by the ESR Plan.

A NEPA Clearance Form:

- Is required because the project may have affected a site that is eligible or on the national register. The clearance form is attached. SHPO has been consulted under Section 106 (see Cultural Resource Assessment, Appendix I).
- Is not required because the ESR Plan has no potential to affect cultural resources (initial of cultural resource specialist).

Other Requirements

(Yes) (No)

- Does the ESR Plan have potential to affect any Native American uses? If so, consultation with affiliated tribes is needed.
- Are any toxic chemicals, including pesticides or treated wood, proposed for use? If so, local agency integrated pest management specialists must be consulted. (The use of Arsenal on refuge lands must be approved on a yearly basis by submission of pesticide use proposals (PUPs) through the regional pesticide use coordinator at Tennessee National Wildlife Refuge, Duck River Unit. Section 7 Evaluation (August 2, 2001) found no negative impact of the herbicide treatment on endangered and threatened species. Arsenal has been approved for use at A.R.M. Loxahatchee NWR every year since 1987.)

I have reviewed the proposals in the Section 3 Fire Burned Area Emergency Stabilization and Rehabilitation Plan in accordance with the criteria above and have determined that the proposed actions would not involve any significant environmental effect. Therefore it is categorically excluded from further environmental (NEPA) review and documentation. ESR Team technical specialists have completed necessary coordination and consultation to insure compliance with the National Historic Preservation Act, Endangered Species Act, Clean Water Act and other Federal, State and local environment review requirements.

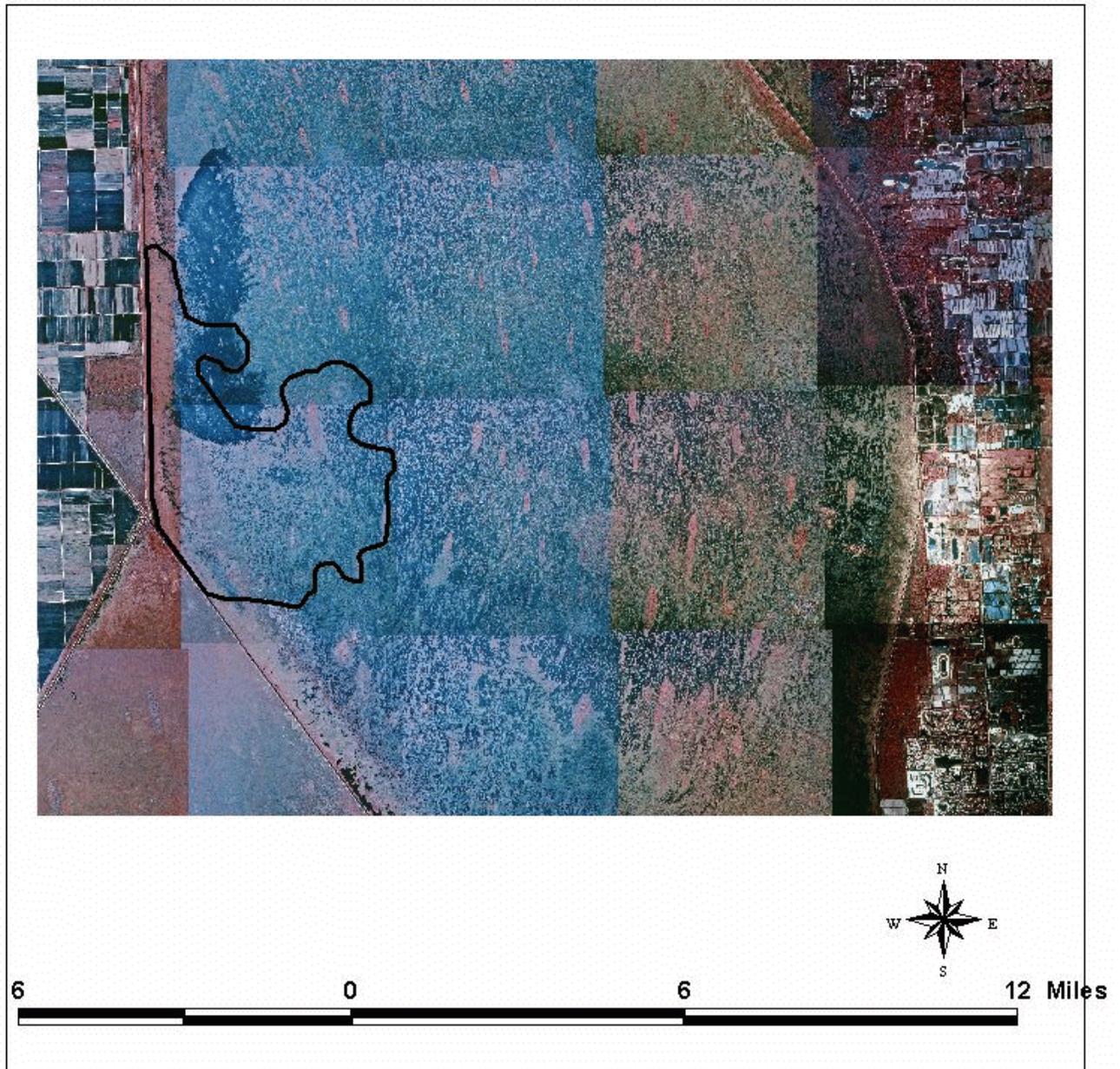
ESR Team Environmental Protection Specialist

Date

Project Leader, A.R.M. Loxahatchee National Wildlife Refuge

Date

Figure 1. Section 3 Fire Perimeter



**Figure 2. Section 3 Fire Progression
June 25 - June 27, 2001.**

A.R.M. Loxahatchee National Wildlife Refuge, WCA1

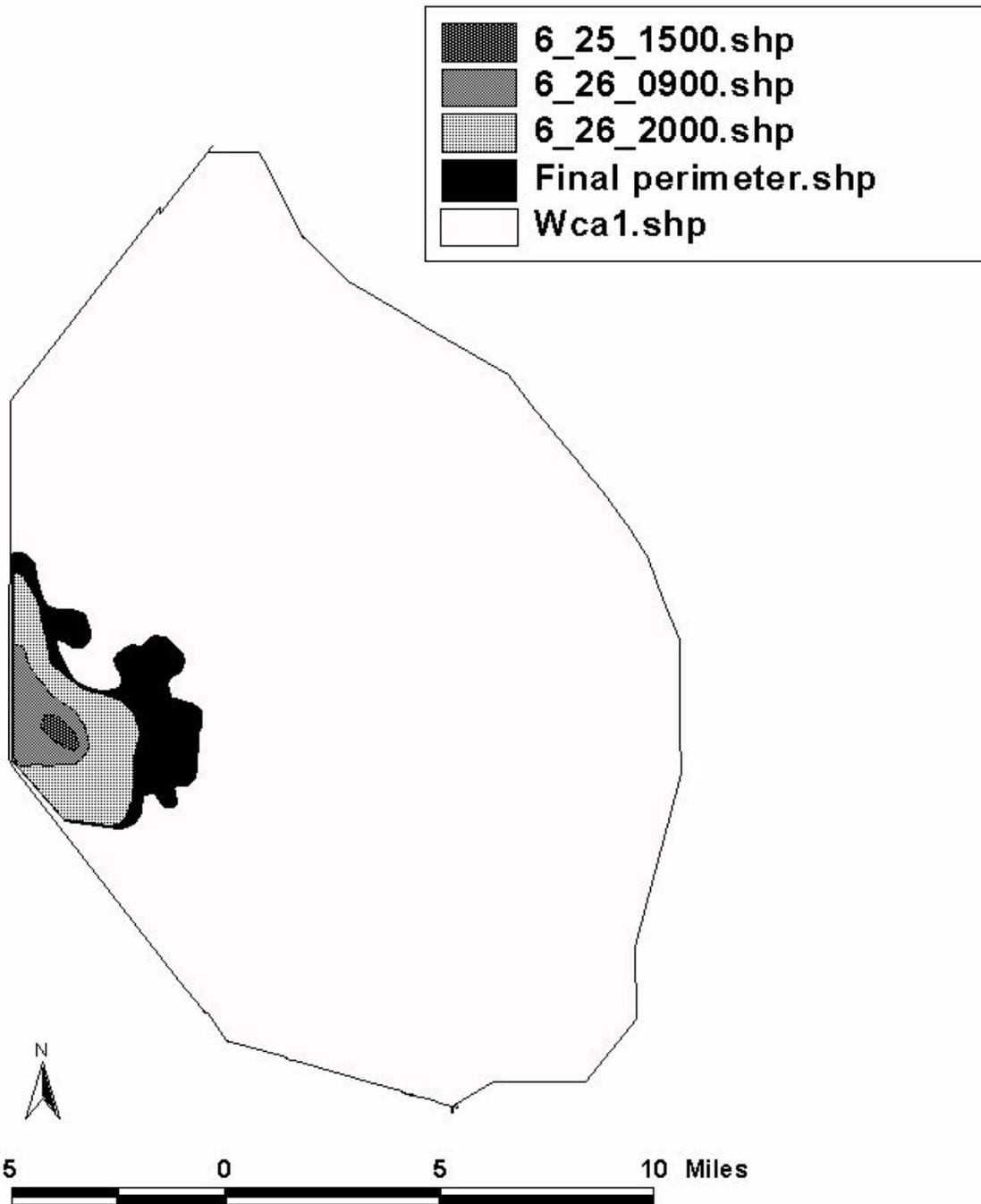


Figure 3: Suppression Impacts, None

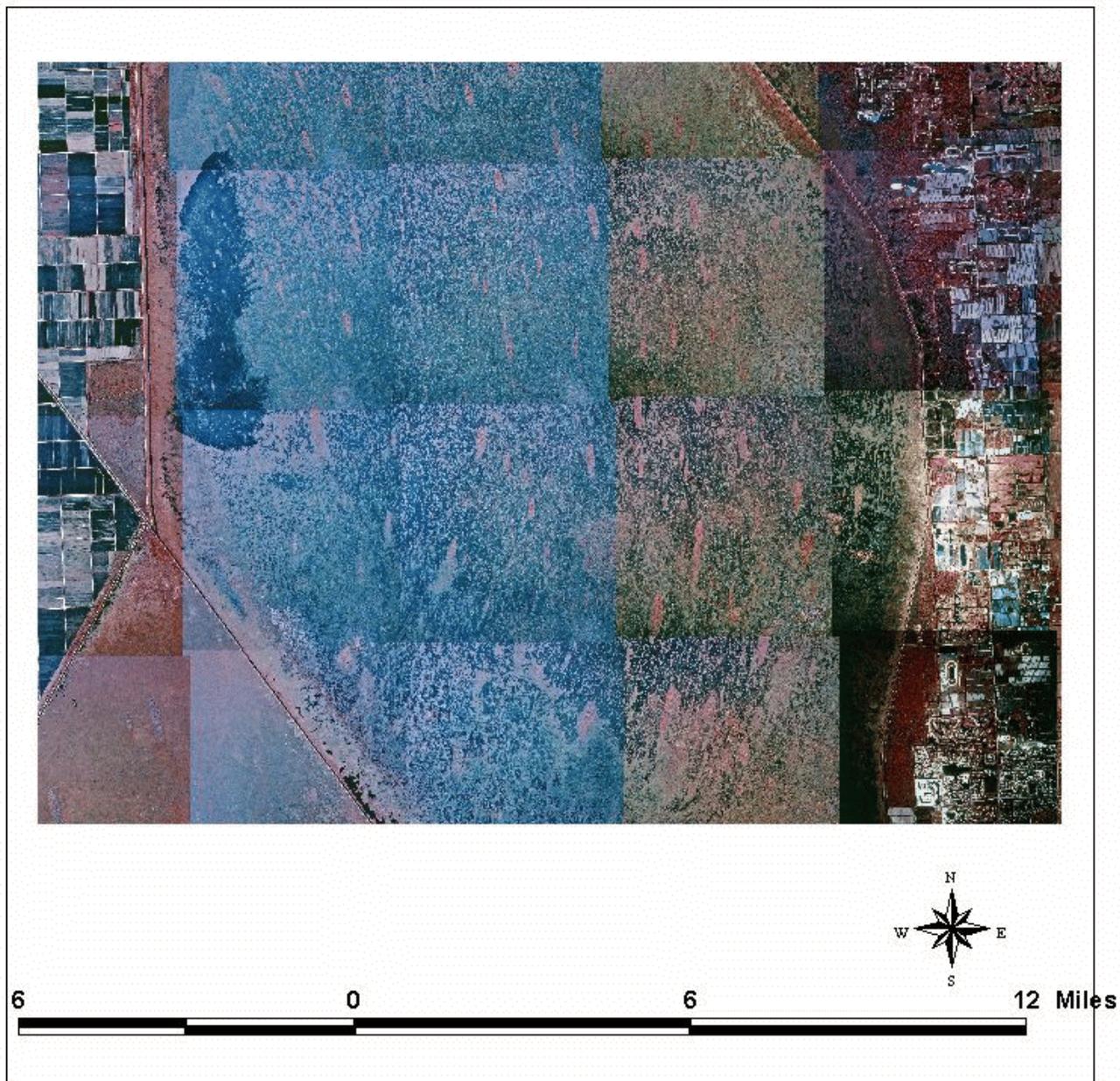


Figure 4. Section 3 Fire Area Resource Management Jurisdiction

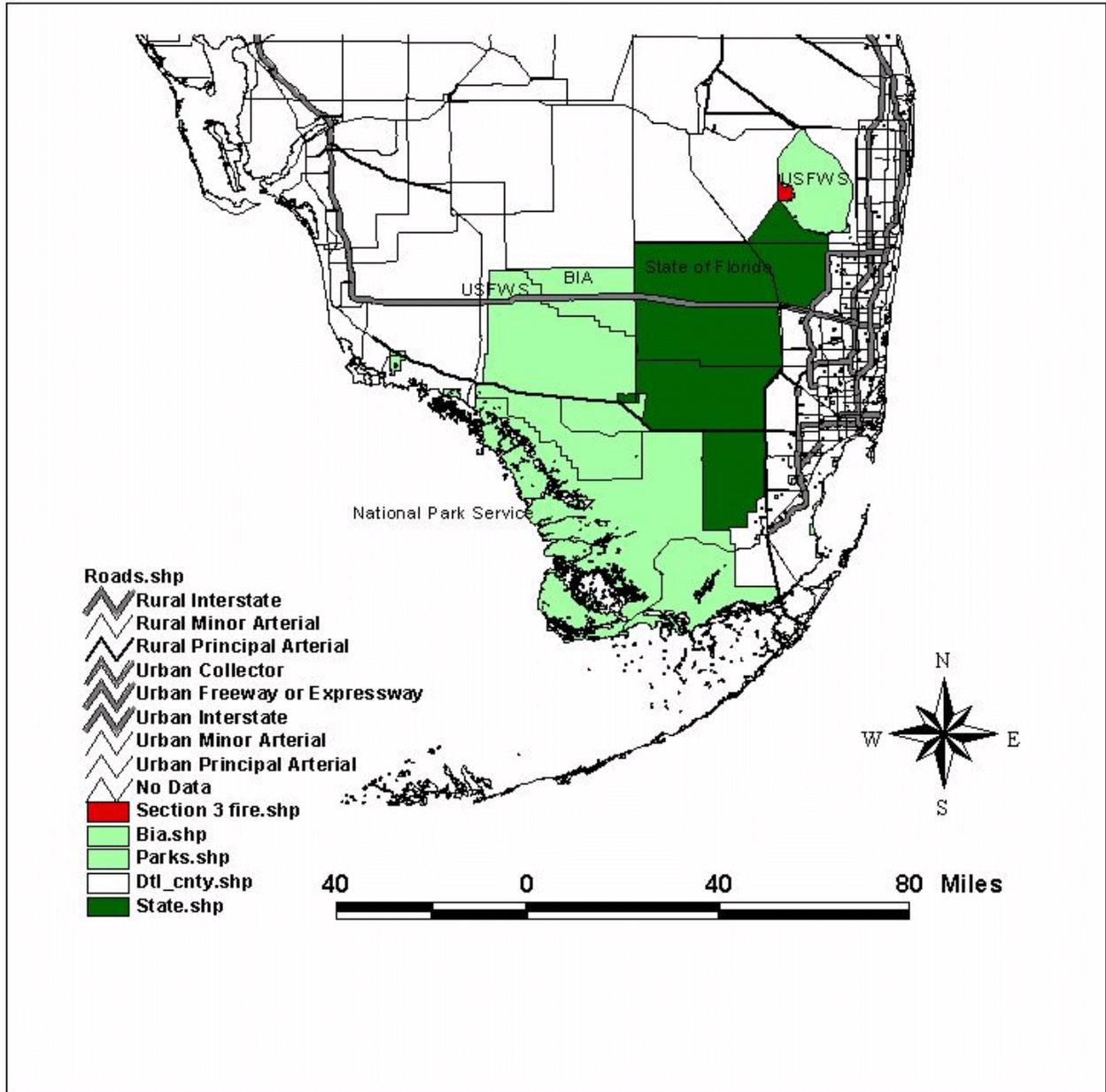


Figure 5. Dominant vegetation burned in the Section 3 Fire.

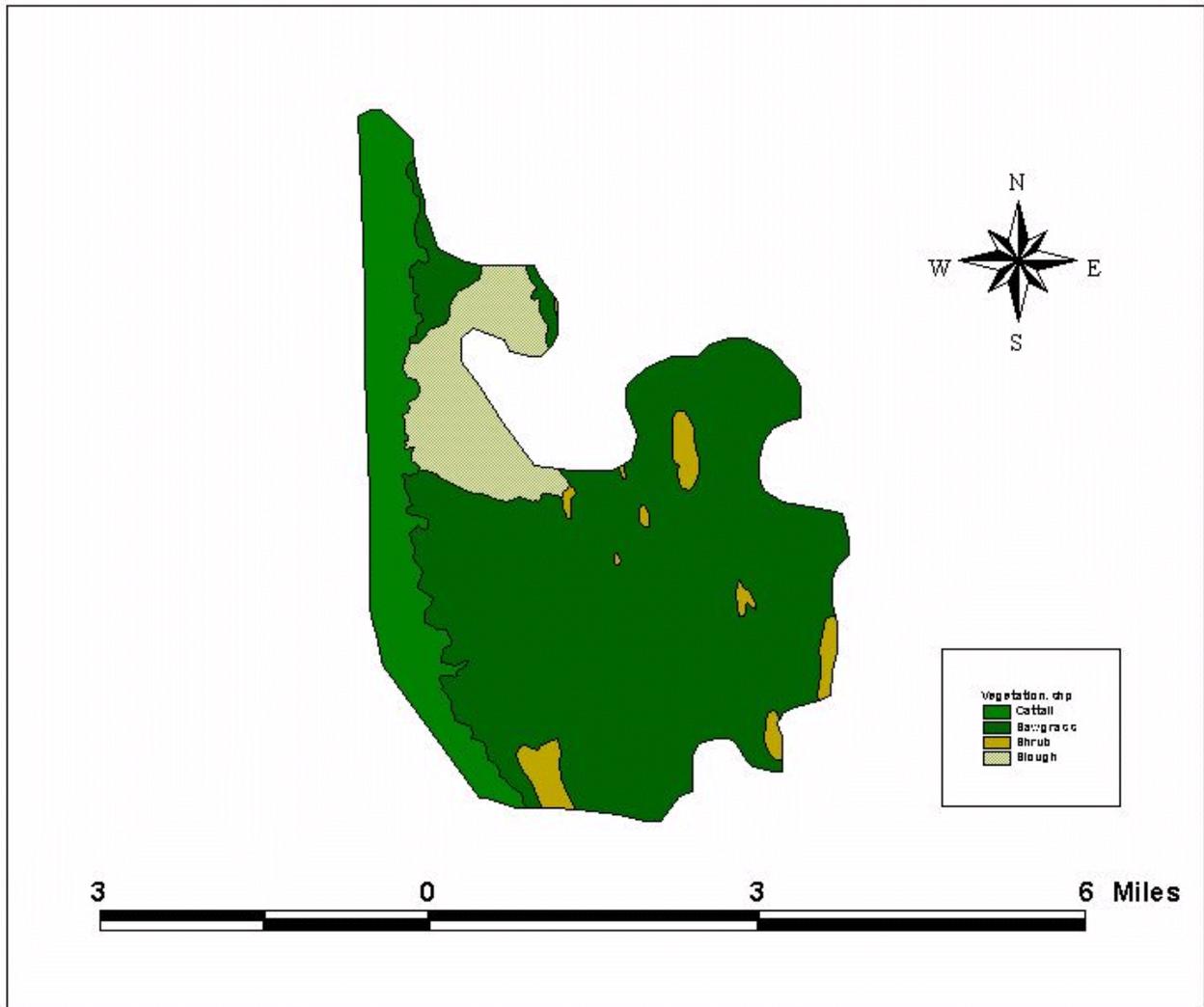
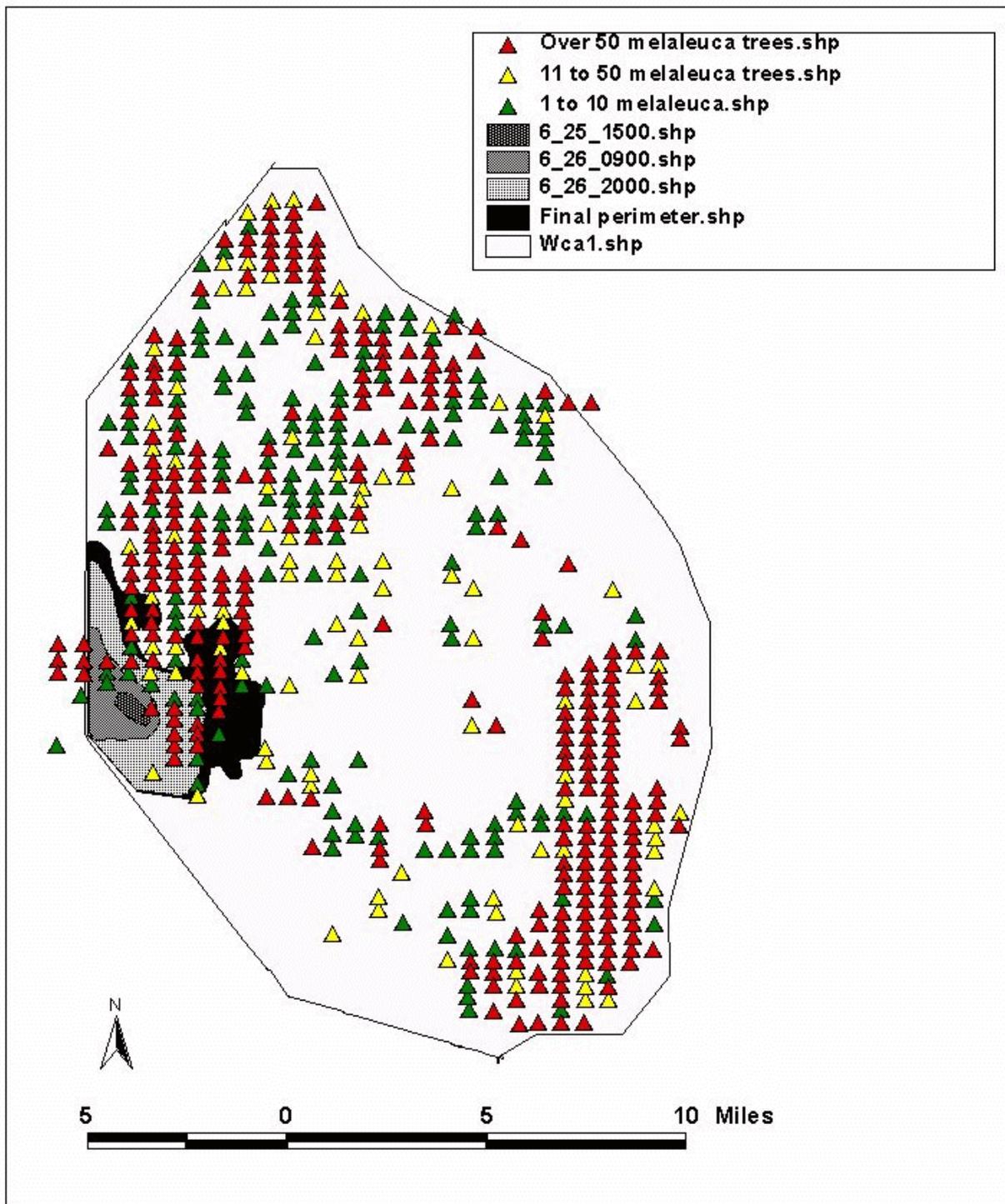


Figure 6. Pre-fire Melaleuca Trees per 100 Acres.
Section 3 Fire progression.
A.R.M. Loxahatchee National Wildlife Refuge, WCA1



APPENDIX IV - PHOTO DOCUMENTATION



Figure 1. Trees in photo are *Melaleuca*. Burned *Melaleuca* dispersed their seeds when heated by the fire. Plants greater than 4 feet in height will resprout.



Figure 2. Burned cattail and sawgrass along western edge of fire.

Appendix V Figure 1. Section 3 Fire and historical wildfire areas which resulted in dense melaleuca infestation.

