US Fish and Wildlife
Fire Management Plan

E.B. Forsythe National Wildlife Refuge

2018

1.0 INTRODUCTION, POLICY, & LAND MANAGEMENT PLANNING

- Purpose of the Fire Management Plan (FMP)

  The US Fish and Wildlife Service (FWS) wildland fire management programs must follow national wildland fire management policy, such as that contained in FWS Management Policies, Director's Orders, and Reference Manuals. Policy pertinent to FWS wildland fire can be found in the Fire Management Handbook at http://www.fws.gov/fire/handbook/ and Interagency Standards for Fire and Aviation (Red Book) at http://www.nifc.gov/policies/pol_ref_redbook.html.

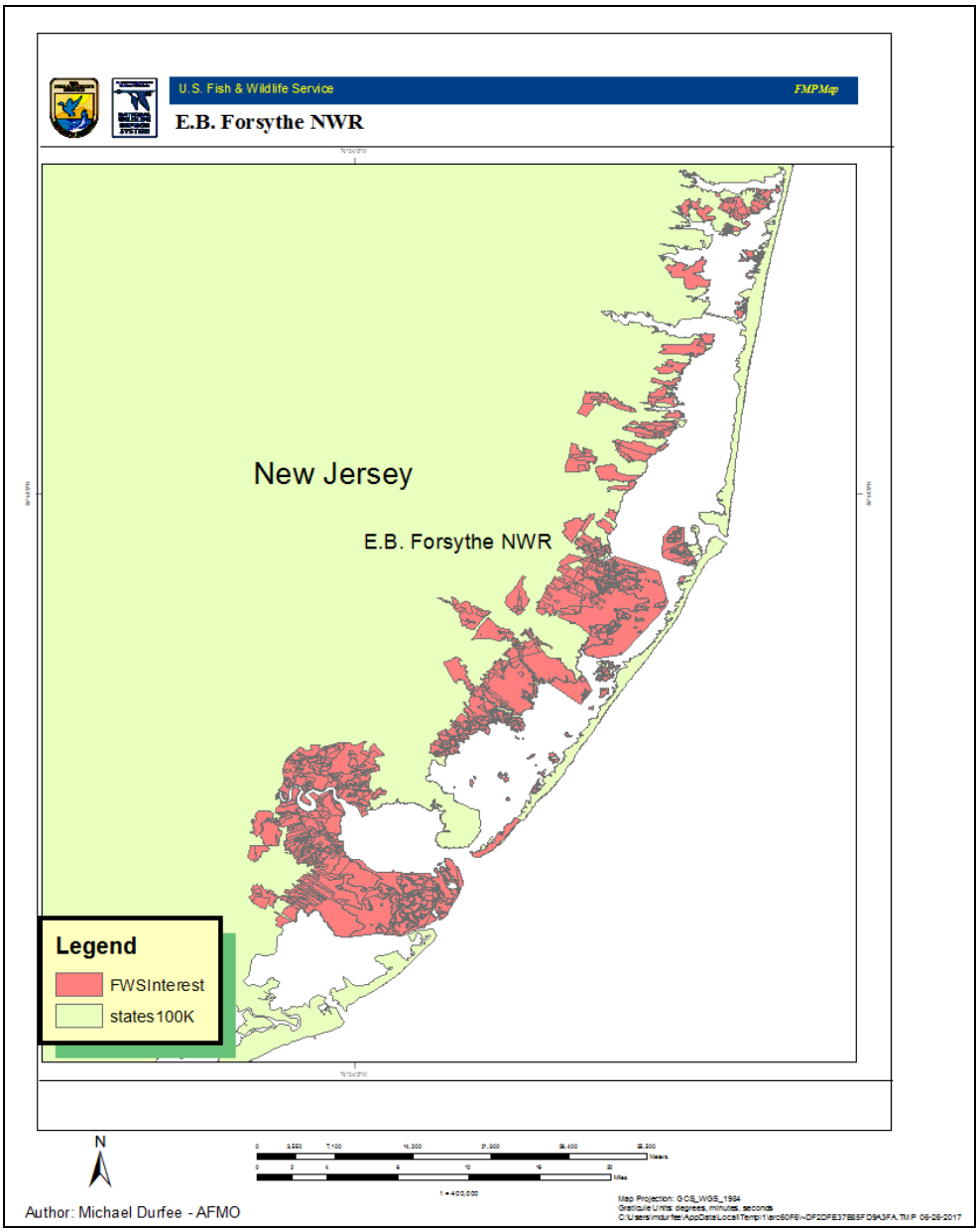
  The E.B. Forsythe National Wildlife Refuge (refuge) Fire Management Plan (FMP) is a strategic plan that defines a program of work to manage wildland fire, (includes prescribed fire and wildfire), as well as mechanical/chemical fuel treatments, and is based on direction contained in refuge planning documents and in concert with the National Cohesive Wildland Fire Management Strategy. More information on the strategy can be found on the Forests and Rangelands website at https://www.forestsandrangelands.gov/strategy/documents/strategy/CSPhaseIIINationalStrategyApr2014.pdf

  This FMP provides for firefighter and public safety as a first priority, and includes goals, objectives and strategies for managing wildland fire on refuge lands. The FMP addresses values to be protected and is consistent with the refuge resource management objectives and environmental laws and regulations such as the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA) and state preservation acts, the Clean Air Act, the Endangered Species Act, the Wilderness Act, and other applicable federal and state laws.

- General Description of E.B Forsythe NWR - Fire Management Unit (FMU)

  The E.B Forsythe NWR FMU (Figure 1) is a comprised of many units along 26 miles of the New Jersey coast from Brick Township in Ocean County (north) to Galloway Township in Atlantic County (south). These units are combined into a single FMU based on the similarity in biotic composition, wildlife management goals and objectives, fire management objectives and strategies, and proximity. The FMU is located in a mixture of rural and suburban communities. The topography flat to lowland and upland mixed forest swamps, river bottoms, and coastal marsh.

Commented [TV1]: 50 miles



Vicinity Map of E.B. Forsythe Fire Management Unit

- Program Organization
  E.B. Forsythe is included as a refuge in the Mid-Atlantic Fire Management Zone Organization (From 2015 Region 5 Staffing Plan):
  All positions identified are proposed and may not all be filled due to budget considerations.
  Currently filled -
  1 -- ZFMO, GS-11/12 – Chesapeake Marshlands NWRC – Cambridge, MD
  1 – AFMO/OPS/PFS, GS-7/9 - (Currently Stationed at Wallkill River NWR as GS-11 AFMO)
  1 – Lead Technician, GS-6 - Chesapeake Marshlands NWRC – Cambridge, MD
  2 – Fire Technicians, 1-PFT, 1-career seasonal (13/13), GS-5 - Chesapeake Marshlands NWRC – Cambridge, MD (1-13/13 - Currently Stationed at Wallkill River NWR)

  Proposed (based on regional priority and/or funding)
  2 – FF Equipment Operators, WG8 - Chesapeake Marshlands NWRC – Cambridge, MD
  2 -4 – Firefighters, temporary (1039), GS-4/5 (optional—if funding allows)

- Environmental Compliance
  As required by the National Environmental Policy Act (NEPA), the FWS has procedures for assessing environmental effects of specific actions. For actions not categorically excluded, an environmental assessment (EA), and, if necessary, an environmental impact statement (EIS) will be prepared before making any land use decision, including fire management actions (516 DM 1-6).

  Current FMP compliance is approved under EA completed for E.B. Forsythe NWR FMP in 1999 and the approved Comprehensive Conservation Plan (CCP) in 2004. The refuge manager has determined that the activities envisioned in this FMP update are similar in scope and effect as those covered by previous documents, and therefore new EAs are not necessary. Additional and updated NEPA compliance for the FMPs is being completed in conjunction with the stations' Comprehensive Conservation Plans updates.

  Other major compliance documents pertinent to this FMP are: Endangered Species Act of 1973 (ESA), the National Historic Preservation Act of 1966 (NHPA), and the Archeological Resources Protection Act of 1979 (ARPA).

  All FMP actions and decisions comply with Section 106 of the National Historic Preservation Act (NHPA) as per the terms of the working agreement between the Refuge and the New Jersey State Historic Preservation Offices.

- Resource Management Planning
  The Refuge completed their Comprehensive Conservation Plan in 2004. For more information about the CCP: (https://www.fws.gov/refuge/Edwin_B_Forsythe/what_we_do/finalccp.html).
  This FMP is being updated as a management document intended to provide on-the-ground guidance to protect resources and human life from unwanted fire and use fire as a tool to accomplish refuge resource and fire management objectives.

Commented [TV2]: This may change. We are in the final year of the 15 year shelf-life of our current CCP. We may need to do a separate EA for fire management onb the refuge above the EA needed for the new CCP. To be determined at a future time.

Commented [TV3]: The document was approved in 2004. It was completed about 1 ½ years prior.

- Collaborative Planning
  The Refuge relies on the state agencies, New Jersey Forest Fire Service and local Volunteer Fire Departments VFDs. These agencies and VFD's provide resources for initial attack response and other fire and emergency assistance through agreements. The Refuge and the region fire program will continue to support and foster these relationships by encouraging collaborative meetings for training and information sharing and requesting their input into the fire management planning and decision-making process.

  A Memorandum of Understanding (MOU) and Annual Operating Plan (AOP) exist with the NJFFS to provide suppression and support on FWS lands. The AOP, separate from the MOU, will specify operating procedures, which includes provisions for reimbursement of costs.

  The Refuge is a participant in the Mid-Atlantic Interstate Forest Fire Protection Compact (MAIFFPC) these organizations are interagency wildland fire protection organizations. The New Jersey, Pennsylvania, Ohio, Maryland, Delaware, West Virginia, and Virginia are within the MAIFFPC. The purpose of the Compact is to promote effective prevention and control of wildfires by developing and integrating forest fire plans, developing and maintaining effective wildfire suppression programs in each of the member states, providing mutual aid for fire suppression and training efforts, acting as a liaison between various fire control agencies and by facilitating the mobilization of firefighting resources during periods of emergency.

  Interagency cooperation is fostered to meet National Fire Plan goals and specific agency fire program budget needs. The Refuge is within the New Jersey FPU (EA-001-NJ). Federal partners (National Park Service) work collaboratively with the FWS to implement this plan and meet National Fire Plan goals for wildland fire protection, landscape restoration, and hazard fuel mitigation measures.

- Communication and Education
  Public Information capabilities are typically addressed through the Refuge Visitor Services and the Regional Public Affairs Office. Fire Management concerns are addressed in a cohesive strategy developed through the strength of our many federal, state, local partners and working teams within the MAIFFPC.

Commented [TV4]: (VFD's)

Commented [TV5]: If we could cite the year that these agreements were made, that would be good.

2.0 FIRE MANAGEMENT GOALS and OBJECTIVES

- Goals
  The goals of the fire management program support the goals and objectives of the Refuges and the principles outlined in the USDA/DOI National Fire Plan, 10 Year Comprehensive Strategy, and Cohesive Strategy:
  - Conduct all fire management programs in a manner consistent with applicable laws, policies and regulations.
  - Ensure firefighter and public safety is the highest priority of all fire and fuels management activities.
  - Suppress all wildland fires in a safe and cost effective manner consistent with resources and values at risk.

- The Incident Commander, working in collaboration with the Refuge Manager or resource advisor, will determine the appropriate level of suppression and tactics to be employed based on considerations of human safety, actual and potential fire behavior, values to be protected, access, and expected suppression costs.
- Utilize prescribed fire and non-fire (mechanical/chemical) treatments to reduce hazardous fuel loadings where appropriate while maintaining habitat and controlling the encroachment of invasive species.
- Protect sensitive biological communities from the effects of wildfire.
- Utilize Minimum Impact Suppression Tactics (MIST) whenever feasible, commensurate with firefighter safety and resources to be protected to minimize opportunities for invasive species introductions when utilizing heavy equipment on wildfires, or when assessing rehabilitation and restoration needs following wildfire occurrence.
- Maintain agreements with the state fire agencies and local volunteer fire departments to promote cooperative prevention and suppression activities. Provide assistance to local or federal cooperators under the "closest resources" principles in accordance with FWS policy.
- Educate employees and the public about the scope and effect of wildland fire management, including fuels management, resource protection, prevention, hazard/risk assessment, mitigation and rehabilitation, and fire's role in ecosystem management.
- Identify fire management research needs, work with partners to develop proposals and obtain funding, and apply research results to fire planning through the adaptive management process.

- Objectives
  - Strive to contain 95% of all fires within 24 hours or less
  - Provide for firefighter and public safety.
  - Acquire resources for a maximum response time of one half hour from time fire is reported.
  - Employ minimum impact strategies and tactics when possible, with special consideration given to protecting sensitive habitat and biological communities from suppression activities and fire encroachment.
  - Utilize prescribed fire and non-fire (mechanical/chemical) treatments to reduce hazardous fuel loadings where appropriate while maintaining habitat and controlling the encroachment of invasive species.
  - Develop in coordination with collaborative agencies an effective fire prevention strategy to prevent human-caused wildland fires.
  - Prepare and present programs to educate the public regarding fire management practices and prevention.

3.0 WILDLAND FIRE OPERATIONAL GUIDANCE

The fire management program includes the following strategies:

- Wildland Fire – Full Suppression.
- Prescribed Fire - Intentionally igniting fire under carefully controlled conditions and according to an approved plan, to achieve a management objective.

- Non-Fire - Reduction of fuel accumulations around structures or other values at risk by mechanical or chemical treatments.

Wildland fire use is not considered an appropriate fire management strategy due to urban interface, fuel type, and low frequency of natural caused fire.

- Preparedness
  The Zone FMO should meet with refuge managers, state fire agencies annually, preferably prior to fire season, to review the respective agreements. This may include contact information and fire suppression policies and procedures. The Zone FMO should annually review and update fire management activities and plans. This FMP will serve as an alternative to a Community Wildfire Protection Plan (CWPP).

  General preparedness actions:
  - Arduous duty fire qualified personnel coordinate with Zone FMO or regional medical standards program manager to schedule an annual medical examination.
  - Fire qualified personnel complete fitness testing, attend the annual refresher, and are issued full personal protective equipment (PPE).
  - Insure the zone cache maintains proper firefighting tools, equipment, and limited personal protective equipment (PPE) at Blackwater or Wallkill River NWRs.

- Management of Wildfires
  All wildfires will receive an appropriate full suppression action based upon the values at risk and the safety of fire personnel and human life. All suppression actions taken will occur with the goal of minimizing site disturbance.

- Fuels Treatments
  The Refuge utilizes fuel treatments as a tool to accomplish annual work goals and support resource and fire management objectives. The fuels treatment program is used to reduce and maintain appropriate hazard fuel levels, maintain a sustainable ecosystem through controlling undesirable vegetation, improve the overall health and vigor of desirable vegetation, and recycle crucial soil nutrients.

  The Zone FMO submits funding requests and completion reports for fuels treatment projects using the National Fire Plan Operations and Reporting System (NFPORS) program.

  All fuels treatments must comply with NEPA requirements within: (a) an approved CCP/FMP or planning documents and the accompanying environmental document adequately discuss the action; or (b) a categorical exclusion covers the activity. (621 FW 2)

  Site-specific treatment objectives are developed to guide project operations. Objectives describe what a treatment must accomplish in order to meet a resource management objective.

  Fuel treatment objectives may include:
  - Reduce fuels to protect values at risk, and to:
  - Maintain fuel loadings within natural range of variability (determined by fuel type) to

Commented [TV6]: Would the treatment of phragmites (mowing/spraying) now be considered as fuel treatments? It used to be in the past. Also, we have not submitted treatment updates into a fire database for many years. Need access to this site.

achieve a desired future fire regime condition class 1 or 2.

- Establish defensible space along wildland-urban interface boundaries and around refuge improvements and structures.
- Protect habitat from undesirable wildland fire encroachment.
- Aid in control of invasive plants and weeds that contribute to the fuel load.
- Reinvigorate rank, decadent or overgrown plant communities, setting back succession and recycling nutrients into soil.

- Post Fire Response – BAER/ES/BAR

  Wildland fires can cause damage to natural and cultural resources as well as to facilities. The preferred method of repair is through the natural recovery process. This may not be possible in all cases. For those situations, rehabilitation and restoration efforts will be undertaken to protect and sustain ecosystems, public health, safety, and to help communities protect infrastructure. Specific program guidance for Burned Area Emergency Stabilization and Rehabilitation (ESR) is found in Departmental Manual Part 620 Chapter 3 (620 DM 3), the Interagency Burned Area Emergency Response Guidebook, and the Interagency Standards for Fire and Fire Aviation Operations.

- Prevention

  A fire prevention program can be much more effective when resources and program elements are coordinated and shared among local partners and cooperators. Cooperative fire prevention programs should include public education and the development and coordinated release of news stories to the local media.

  The objective of fire prevention activities is to prevent human-caused fires and encourage homeowners to implement mitigation measures around private property.

  This objective will be accomplished by:

  - Making employees aware of precautions to prevent an unwanted ignition.
  - Informing visitors of fire danger through personal contact and posted signs.
  - Carrying suppression tools and the appropriate PPE in vehicles during the fire season.
  - Implementing trail and/or area closures during periods of extreme fire danger.
  - Coordinating with partner agencies during periods of extreme fire danger,
  - Seeking opportunities for fuels mitigation projects to reduce the risk of fire moving onto and off of units and potentially posing a threat to surrounding communities or unit structures.

  Prevention Program Goals are to:

  - Reduce the likelihood of both human-caused and unwanted naturally-ignited wildland fire ignitions that could result in unacceptable loss.
  - Decrease the frequency of human-caused fires.
  - Investigate all human-caused wildland fires at the earliest possible time.
  - Reduce emergency suppression costs.
  - Reduce fire size and intensity by developing programs such as fuels reduction/modification.
  - Establish cost-effective prevention programs at the national, regional and refuge levels.

Commented [TV7]: We currently have boxes with this information stated on doorknob hang tags.

- Integrate and coordinate prevention program with area wildland fire protection organizations.

- Air Quality/Smoke Management
  Visibility and clean air are values to protect. Full consideration will be given them in fire management planning and operations. Smoke can have serious health and safety effects, especially on those who already have respiratory problems. Reduced visibility on highways has contributed to numerous fatalities across the United States, especially in areas with ambient conditions of high humidity.

  The State of New Jersey is required by the Clean Air Act to develop and implement State Implementation Plans (SIPS) to ensure compliance with National Ambient Air Quality standards (NAAQS) for ozone. The open burning permit issued by designated fire and resource agencies includes the air quality permit. The permit outlines and specifies conditions under which a project can be ignited.

  Smoke management practices include minimizing particulate emissions, wind-borne dispersion and dilution of particulates, and avoiding impacts to smoke-sensitive sites. Smoke management will be incorporated into prescribed fire planning and, to the extent possible, in the management of wildfires. Sensitive areas will be identified and precautions taken to safeguard visitors and refuge neighbors. When prescribed burning is adjacent to roads and highways, close attention will be paid to wind speed and direction. Burns will be postponed if wind conditions do not meet prescriptive elements within a Prescribed Burn Plan.

- Data Sources, Reports and Systems
  Wildland fire reporting follows guidelines established by FWS policy and the Redbook Chapter 4. The primary record is an electronic wildland fire report and is a permanent record of all wildland fires on FWS lands and/or fire responses by the FWS. The Fire reports include descriptive and statistical information such as fire name, date, location, cause, resources dispatched, fire size, times, basic narrative, etc.

  The ZFMO will ensure that data is input into the Fire Management Information System (FMIS) system (or other system as developed) used for reporting wildland fire information and the park will follow all needed protocols for keeping and maintaining fire records.

  Fuels planning and funding requests are developed and tracked within the NFPORS national database.

4.0 MONITORING AND EVALUATION

- Monitoring the Fire Management Plan
  Information obtained from monitoring and evaluations is used to update the FMP as well as other refuge management plans. Revision of this FMP with regional review and concurrence is required every five years and following completion of a new (or significantly revised) CCP or habitat management plan.

Commented [TV8]: Our CCP, I believe, will start the re-writing process next year; we have a current HMP that is waiting for final RO approval.

- Annual Fire Management Plan Update
  This plan will be reviewed annually in order to incorporate changes, additions and updates as needed. This review/update requires the involvement of the Refuge Manager and their approval. It is recommended that the update process be accomplished each year.

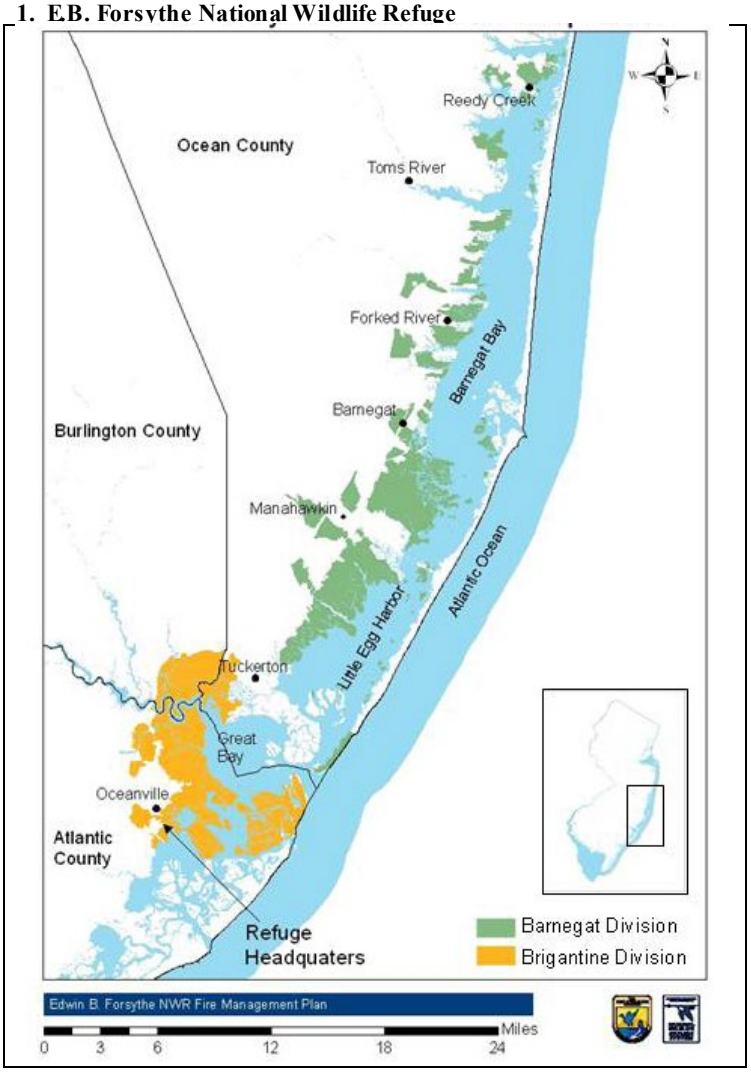
- Science, Climate Change
  Science
  Fire research has been minimal within the refuges to date. Research focused on adjacent but similar lands has generated and will continue to generate results that can be applied to the refuges fire management program.

  Climate Change
  There may be potential impacts from climate change leading to pattern variability of daily/monthly weather with possible increased temperatures, increased or decreased precipitation and possible changes in fuel parameters and over time fuel types.

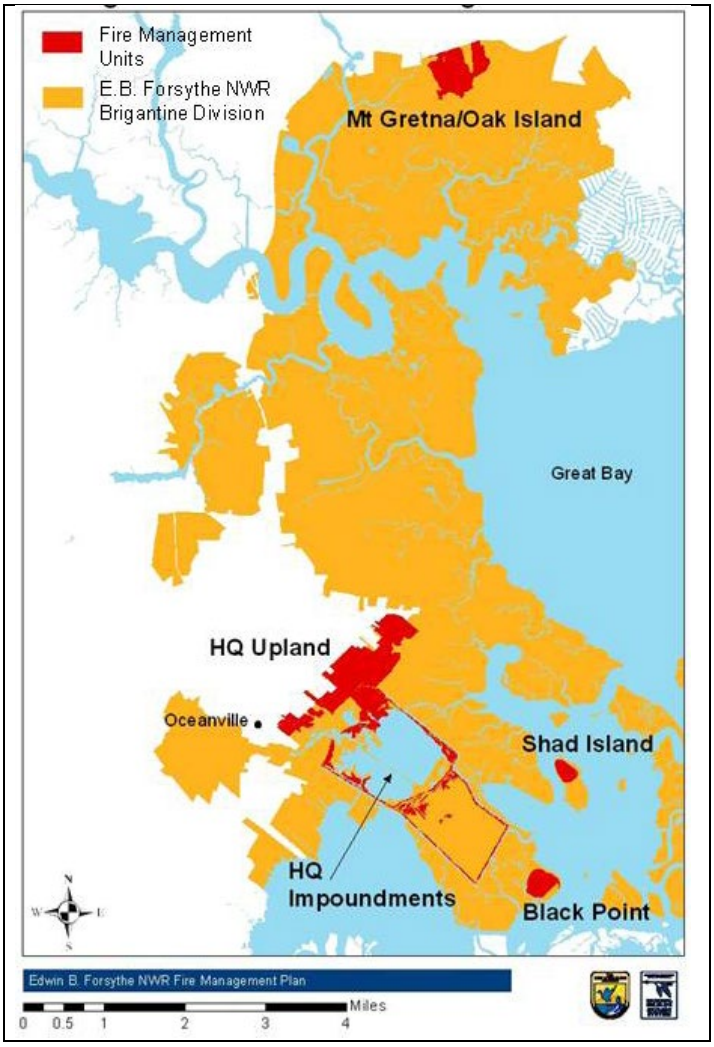
APPENDICES

Appendix A. Maps

1. E.B. Forsythe National Wildlife Refuge



2. Brigantine Division



Commented [TV9]: These FMU's seriously need to be reconsidered and redrawn. As an FMU, Shad Island and Black Point should be removed. The initial thought of making them FMU's was to reduce the phrag fuel loads. But even if a wildfire did occur, the fire isn't going anywhere in which lives or property are in danger.

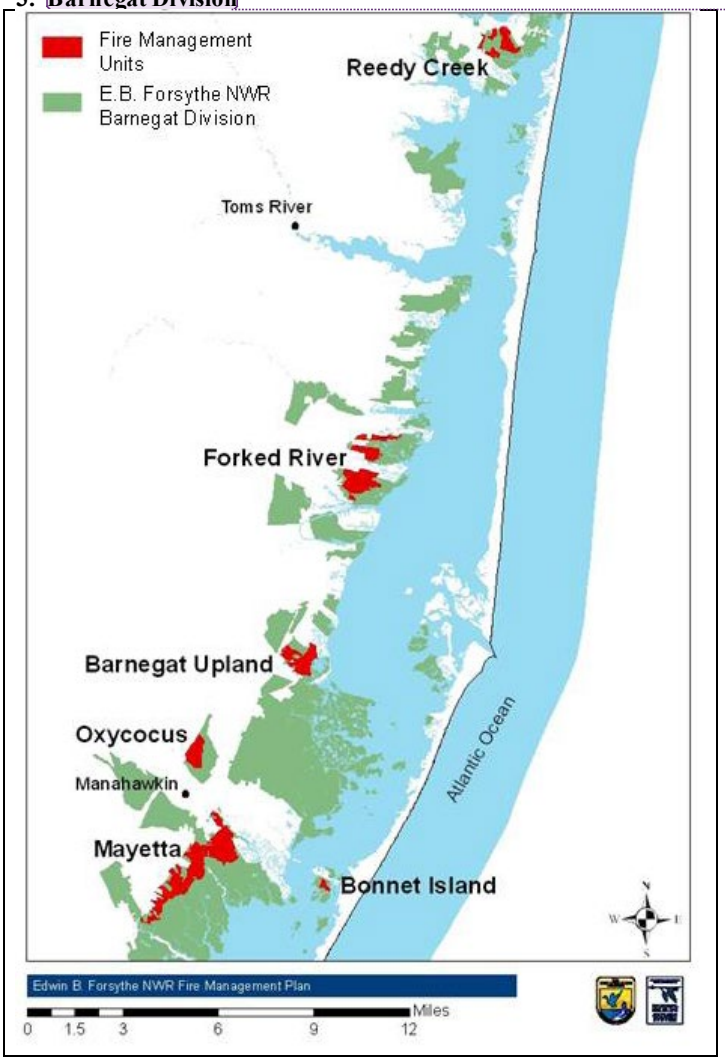
Not so sure about Oak Island. The uplands has a significant interface with phragmites so this probably could stay as an FMU. We have had large marsh fires south of Oak Island and fortunately, they didn't get into our uplands. And it's New Gretna, not Mt Gretna.

The HQ uplands includes the Early Successional areas, Uplands, Pollinator Field, and Urban Interface. The FMU's were established before the ES fields were created. It may be a good management strategy to reduce the HQ upland acreage and focus on burning the small slash piles and debris found in the ES areas.

The pollinator field would be a good one to burn after we did herbicide treatments to reduce the invasive plants (primarily Chinese bushclover). Problem is I don't know what the seed bank is for the bush clover, so unless the herbicide treatments are highly effective, burning the field may not cure our invasive problems.

HQ Impoundments are mostly the dikes and phragmite islands within the pools. I don't foresee us burning this anytime soon, but I would like to keep this as an FMU.

3. Barnegat Division



Commented [TV10]: Because of the very high urban interface at Reedy Creek, prescribed fire would be a very complicated process. I honestly don't see the refuge conducting any type of burning anytime soon. Prescribed fire can be done, but it need to be well planned out. For now, I would keep this as a FMU.

Most of the other FMU locations are still relevant, especially Forked River which has a high urban interface component. Barnegat Upland FMU also includes portions of the Barnegat Impoundments.

Bonnet Island is now a restored public use area. This FMU can be removed from future fire planning.

Fire Management Unit Acres

Management Unit Name	Acres
Reedy Creek	334.0
Forked River	754.1
Barnegat Uplands	406.1
Oxycocus	263.7
Mayetta	1441.1
Bonnet Island	40.8
New Gretna/Oak Island	192.0
Headquarters Uplands	10.6
Headquarters Impoundments	243.6
Shad Island	33.4
Black Point	62.3

Commented [TV11]: Remove

Commented [TV12]: Possibly remove.

Commented [TV13]: Remove

Commented [TV14]: Remove

Delegation of Authority -

Fire Behavior Characteristics –

Fire behavior outputs were from the BEHAVE program. In this model, fires are assumed to be spreading as a series of steady state ignitions through uniform fuels under uniform weather conditions. Spread is also assumed to be from surface fire only. Rate of spread (ROS) is expressed in chains per hour (1 chain=66 ft), and flame lengths (FL) are at the head of the fire. Mid-flame wind (MFW) is the resulting effect of wind directly on the flaming front and the 1-hr timelag fuel moisture (TLFM) is for 0 – ¼ inch diameter fuels (grasses, needle & leaf litter, woody twigs, etc.). BEHAVE inputs to Northern Forest Fire Lab (NFFL) models in Table 3 are based on 2 PM fire weather readings at the E.B. Forsythe NWR weather station #305803 during normal fire season.

Fire Behavior Outputs by NFFL Fuel Model, E.B. Forsythe NWR using: Temp. 55-70 F; RH 25-35%; MFW 5-6 mph; 1-hr TLFM 6%; Slope 0-10%

	FIRE BEHAVIOR OUTPUTS*		
	ROS (ch/hr)	FL (ft)	Remarks
1	94	5	Limit of control with hand tools
3	119	14	High resistance to control over wetlands
5	22	6	Beyond direct attack with hand tools
8	4	1	Low resistance to control
9	9	3	Low/moderate resistance to control

Fuel models represented are representative may not be completely accurate for specific areas of the FMU. Thus, each model represents, given the most accurate inputs possible, a range of fire behavior to expect.

Appendix D. Fire Danger and Staff Readiness

1. Staffing Guideline - Staffing Classes are determined by using the Keetch - Byram Drought Index and Energy Release Component generated using the Remote Automated Fire Weather Station at E.B. Forsythe NWR N. J (US Fish and Wildlife Service). Fuel Model G is used.

Fuel Model G -

Adjective Class	KBDI	BI
Low	<49	<10
Moderate	50-149	11-15
High	150-354	16-31
Very High	355-474	31-37
Extreme	475+	38+

PREPAREDNESS ACTIONS	STAFFING LEVELS		
	Low and Medium	High	Very High and Extreme
FIRE PREVENTION ACTIVITIES			
Post fire danger signs at high public use areas			X
Restrict vehicles to paved/gravel parking areas, remain within boats and close select trails and public use areas			X
MISCELLANEOUS EMERGENCY PRESUPPRESSION ACTIONS			
Notify Zone FMO and open emergency preparedness account			X
Inform FWS and interagency resources as needed			X