

DRAFT-FINAL
ENVIRONMENTAL ASSESSMENT
for
Implementation of the
Integrated Natural Resources Management Plan
at the
Townsend Bombing Range, McIntosh and Long Counties, Georgia
MARINE CORPS AIR STATION (MCAS) BEAUFORT

JANUARY 2016



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Abstract

Designation:	Environmental Assessment (EA)
Title of Proposed Action:	Implementation of the Integrated Natural Resources Management Plan at the Townsend Bombing Range, McIntosh and Long Counties, Georgia
Project Location:	Townsend Bombing Range, McIntosh and Long Counties, Georgia
Lead Agency for the EA:	Department of the Navy
Cooperating Agency:	N/A
Affected Region:	McIntosh and Long Counties, Georgia
Action Proponent:	Marine Corps Air Station Beaufort
Point of Contact:	Mr. William Drawdy United States Marine Corps Marine Corps Air Station Beaufort Building 601; Floor 2, Room 216 Beaufort, SC 29904 william.drawdy@usmc.mil
Date:	January 2016

The Department of the Navy along with Marine Corps Air Station Beaufort has prepared this Environmental Assessment in accordance with the National Environmental Policy Act, as implemented by the Council on Environmental Quality Regulations and Navy regulations for implementing the National Environmental Policy Act. The Proposed Action would implement the 2017 Integrated Natural Resources Management Plan at the Townsend Bombing Range, McIntosh and Long Counties, Georgia, consistent with the military use of the property and the goals and objectives established in the Sikes Act Improvement Act. The goal of this Integrated Natural Resources Management Plan is to implement an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission; integrates and coordinates all natural resources management activities; provides for sustainable multipurpose uses of natural resources; and provides for public access to Installation lands for use of natural resources, subject to safety and military security considerations. This EA evaluates the potential environmental impacts associated with the No-Action Alternative and two action alternatives, Alternatives 1 and 2, on the following resource areas: air quality, water resources, geological resources, cultural resources, biological resources, socioeconomics, and environmental justice.



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EXECUTIVE SUMMARY

1
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Proposed Action

The Proposed Action is to implement an Integrated Natural Resources Management Plan (INRMP) at the Townsend Bombing Range (TBR), McIntosh and Long Counties, Georgia, consistent with the military use of the property and the goals and objectives established in the Sikes Act Improvement Act (SAIA). The goal of the INRMP is to implement an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission; integrates and coordinates all natural resources management activities; provides for sustainable multipurpose uses of natural resources; and provides for public access to Installation lands for use of natural resources, subject to safety and military security considerations. The projects outlined in the INRMP will be recommended for implementation if they are feasible and consistent with the project's intent, the Department of the Navy's (Navy) ecosystem goals, and the military mission, and if they maintain the quality of the natural environment, which is in the public interest.

The lead agency is the United States Marine Corps (Marine Corps) Air Station Beaufort (MCAS Beaufort), located at Building 601, Floor 2, Room 216, Beaufort, South Carolina 29904. There are no cooperating agencies associated with this implementation Environmental Assessment (EA).

Purpose of and Need for the Proposed Action

The purpose of the Proposed Action is to implement an ecosystem-based conservation program that provides for conservation and rehabilitation of sustainable natural resources in a manner that is consistent with the military mission and provides access to natural resources, subject to safety and military security considerations. The need for the Proposed Action is to comply with the SAIA, as well as Chief of Naval Operations guidelines for installations that contain significant natural resources.

Alternatives

Alternatives were developed that address and support the four INRMP goals identified for TBR:

- Goal 1 Preserve access to air and land to meet military readiness requirements
- Goal 2 Protect and maintain natural resources within the TBR through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices
- Goal 3 Manage and provide for multiple uses when appropriate, including sustainable yield of all renewable resources, scientific research, education, and recreation
- Goal 4 Provide access to installation lands, where practicable, provided such access does not conflict with military readiness and does not harm sensitive natural resources on TBR

The Navy is considering two action alternatives that meet the purpose and need for the Proposed Action, as well as a No Action Alternative. Alternative 1 (Preferred Alternative) supports a medium-intensity management scenario that would comply with all the mandatory requirements described in the INRMP (conserve, restore, and enhance habitats supporting rare species and species listed as threatened, endangered, or candidate species under the Endangered Species Act; invasive plant species removal; sensitive species surveys; and annual INRMP updates) and would also incorporate the stewardship initiatives considered reasonable and achievable at TBR.

Alternative 2 supports a low-intensity management scenario that would involve meeting all the mandatory requirements (invasive plant species removal, sensitive species surveys, and annual INRMP

1 updates) for compliance with laws, regulations, permits, Executive Orders, and Department of Defense
2 policy. No stewardship initiatives (managing forestland for various components including forest
3 products, wildlife habitat, aesthetics, and recreation) would be considered for low-intensity
4 management. Long-term ecosystem sustainability might not be achievable under this alternative.

5 Under the No Action Alternative, the INRMP would not be finalized and implemented, and the natural
6 resources present at TBR would not be accordingly managed. However, since the preparation and
7 implementation of an INRMP has been mandated by the United States (U.S.) Congress through the SAIA,
8 the No Action Alternative is not a viable alternative. It will serve as a baseline against which the impacts
9 of the Proposed Action and alternatives will be evaluated.

10 The implementation of various alternatives would assist MCAS Beaufort in achieving no net loss to the
11 military mission. The alternatives and the projects identified in the INRMP focus on controlling invasive
12 species, identifying sensitive bird, reptile, and amphibian species and their habitats; forest management
13 to include silviculture and forest protection; and regular updates of the INRMP. Pertinent natural
14 resource issues relative to the military mission include ecosystem management toward maintaining
15 forest buffers via natural firebreaks around TBR, as well as preservation of sensitive species and their
16 habitats while managing invasive species on TBR.

17 **Summary of Environmental Resources Evaluated in the EA**

18 Council on Environmental Quality (CEQ) regulations, National Environmental Policy Act (NEPA), and Navy
19 instructions for implementing NEPA specify that an EA should address those resource areas potentially
20 subject to impacts. In addition, the level of analysis should be commensurate with the anticipated level
21 of environmental impact.

22 As a result of the recent completion of the 2013 MCAS Environmental Impact Statement supporting a
23 significant range expansion at TBR, consultations and/or coordination with various Federal and state
24 regulatory agencies were performed in support of wetlands, threatened and endangered species,
25 protected migratory birds, historic properties and archaeological sites, and coastal zone protection. In
26 addition to the range expansion activities, natural resources management activities, including firebreak
27 construction and maintenance, as well as prescribed fires, were also addressed.

28 The following resource areas have been addressed in this EA: air quality, water resources, geological
29 resources, cultural resources, biological resources, socioeconomics, and environmental justice. Because
30 potential impacts were considered to be negligible or nonexistent, the following resources were not
31 evaluated in this EA: land use, visual resources, airspace, noise, infrastructure, transportation, public
32 health and safety, and hazardous materials and wastes.

33 **Summary of Potential Environmental Consequences of the Action Alternatives and Major Mitigating 34 Actions**

35 **Air Quality:** Prescribed burning is the largest source of air emissions and potential impact on air quality
36 at TBR. Under the TBR prescribed fire program, an estimated 8,650 acres of land would be subject to
37 prescribed burning on an annual basis. The potential carbon monoxide-equivalent greenhouse gas
38 emissions associated with prescribed fires under Alternative 1 and 2 are estimated to be a maximum of
39 7,224 tons per year, which falls well below the CEQ threshold of 25,000 metric tons. Therefore,
40 implementation of the Proposed Action would not result in significant impacts on air quality.

41 **Water Resources:** Water resources at TBR include groundwater, surface water, wetlands, and
42 floodplains. Direct impacts on surface waters are associated with the construction and maintenance of

1 firebreaks. Indirect impacts on streams include conversion impacts on vegetation adjacent to the
2 stream. Herbicide applications would be implemented in strict compliance with manufacturer's
3 guidelines and U.S. Environmental Protection Agency's regulations; thus, no impacts on groundwater
4 quality would be expected. Activities that could affect the surface waters and floodplains include
5 operations that clear the woody debris and blockages in the streams, rivers, canals, and ditches on TBR.
6 Maintenance of protective buffer strips or corridors around wetlands and along streams would achieve
7 a no net loss of wetlands and maintain wetland habitat quality.

8 Although these impacts are similar for Alternatives 1 and 2, Alternative 2 would not include the
9 geographic information system (GIS) Database Management stewardship project, thus resulting in an
10 incomplete inventory of the range's water resources, including the location of all wetlands, and thereby
11 potentially allowing some remaining woody debris and blockages in surface waters on TBR and
12 deterioration of natural features and systems, rather than the desired maintenance, preservation, and
13 enhancement of ecosystems. Implementation of the Proposed Action would not result in significant
14 impacts on water resources.

15 **Geological Resources:** Geological resources include topography, geology, and soils of TBR. Direct
16 impacts on geological resources (soils) are the same for Alternatives 1 and 2, and are primarily
17 associated with the construction and maintenance of firebreaks. Timber improvement projects,
18 particularly mechanical improvements to remove invasive species and prescribed burns, would
19 potentially impact soils; however, best management practices would be implemented on a project- and
20 site-specific basis to minimize or eliminate soil erosion and consequent sedimentation. There would be
21 no direct impacts on six soil types designated as prime farmland. Therefore, implementation of the
22 Proposed Action would not result in significant impacts on geological resources (soils).

23 **Cultural Resources:** Cultural resources considered at TBR included the presence of archaeological
24 resources, historic built resources, and traditional cultural properties. A total of 29 archaeological
25 resources and six built resources were identified within the area of potential effect. No traditional
26 cultural properties or sacred sites were identified. The archaeological and architectural resources
27 located on or adjacent to TBR would be avoided during implementation of any INRMP projects that have
28 the potential for ground disturbance (e.g., prescribed burns and firebreak construction/maintenance).
29 Therefore, implementation of the Proposed Action would not result in significant impacts on cultural
30 resources.

31 **Biological Resources:** Biological resources at TBR include living, native, or naturalized plant and animal
32 species and the habitats within which they occur. The biological resources are summarized by terrestrial
33 vegetation, aquatic habitats and vegetation, and terrestrial wildlife. The threatened, endangered, and
34 candidate species that are likely to occur on TBR include the American alligator (*Alligator*
35 *mississippiensis*, Federally threatened by similarity of appearance), eastern indigo snake (*Drymarchon*
36 *couperi*, Federally threatened), frosted flatwoods salamander (*Ambystoma cingulatum*, Federally
37 threatened), gopher tortoise (*Gopherus polyphemus*, Federal Candidate as threatened), red-cockaded
38 woodpecker (*Picooides borealis*, Federally endangered), striped newt (*Notophthalmus perstriatus*, Federal
39 Candidate as threatened), and the wood stork (*Mycteria Americana*, Federally endangered). Various
40 proactive management measures would be implemented, including timber stand improvement,
41 nuisance wildlife management, invasive plant species control, and land/fire management. These
42 mandatory stewardship initiatives would increase the biodiversity and value of the vegetation
43 communities on TBR and facilitate improved forest management to include silviculture and forest
44 protection. Wildlife species are expected to benefit from the removal or control of invasive plant and

1 animal species. Timber stand improvement (and prescribed burn) projects could temporarily affect
2 migratory birds, depending upon the season in which the activity occurs. Fishes could be impacted by
3 prescribed burns and applications of herbicides for invasive plant species control. Temporary impacts on
4 threatened and endangered terrestrial species could occur from smoke and habitat disturbances
5 associated with prescribed burn and firebreak construction and management activities. There would be
6 no significant impacts on threatened, endangered, or candidate species, and no formal consultation
7 between the Navy and U.S. Fish and Wildlife Service would be required.

8 While these impacts are similar for Alternatives 1 and 2, Alternative 2 would not include the GIS
9 Database Management stewardship project, thus resulting in an incomplete inventory of the range's
10 biological resources, including the location of all the natural ecological communities, sensitive and
11 regionally important plants, preponderance of invasive plant areas, and aquatic habitats and vegetation
12 on TBR. This could lead to deterioration of natural features and systems rather than the desired
13 maintenance, preservation, and enhancement of ecosystems. Construction and management activities
14 associated with firebreaks would result in the same natural resources impacts as described for
15 Alternative 1. Therefore, implementation of the Proposed Action would not result in significant impacts
16 on biological resources.

17 **Socioeconomics:** Socioeconomics of TBR discusses potential impacts on population demographics,
18 employment characteristics, schools, and the housing occupancy status. Implementation of the INRMP
19 projects could involve limited additional activities related to personnel conducting sensitive species and
20 bird surveys, removing invasive plants, construction and maintenance of firebreaks, and conducting
21 prescribed burns. These activities could provide minor temporary positive, direct impacts in the region,
22 including increased revenues to local businesses if local contractors are utilized and increased revenues
23 to retail establishments, hotels, and restaurants if contractors from outside the region are used to
24 conduct the surveys, remove invasive plants, construct the firebreaks, and perform the prescribed
25 burns. Therefore, implementation of the Proposed Action would not result in significant impacts on the
26 socioeconomics of the local area or region.

27 **Environmental Justice:** Environmental Justice is defined by the U.S. Environmental Protection Agency as
28 the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or
29 income with respect to the development, implementation, and enforcement of environmental laws,
30 regulations, and policies. Analyses have demonstrated that there would be no disproportionate impacts
31 on any concentration of minority, low-income, or children populations within the region of influence.
32 Implementation of the Proposed Action would, therefore, not cause disproportionately high or adverse
33 human health or environmental effects on any minority, low-income populations, or children.

34 Table ES-1 provides a tabular summary of the potential impacts on the resources associated with each of
35 the alternative actions analyzed.

36 **Public Involvement**

37 The public and regulatory agencies will have the opportunity to comment on the Draft-Final EA and
38 provide feedback. The Draft-Final EA will be made available on the Navy's website, and the public
39 comment period for the EA will be advertised in the Darien, Georgia newspaper. The U.S. Fish and
40 Wildlife Service (USFWS) and the Georgia Department of Natural Resources (GADNR) are anticipated to
41 provide input and feedback on the Draft-Final INRMP.

Table ES-1. Summary of Potential Impacts on Resource Areas

Resource Area	No Action Alternative	Alternative 1: Medium-Intensity Management Alternative (Preferred Alternative)	Alternative 2: Low-Intensity Management Alternative
Air Quality	No change to baseline air quality. Prescribed fires would contribute an estimated 919 tons per year (tpy) of carbon monoxide (CO) (CEQ threshold = 25,000 tpy).	Prescribed fires would contribute an estimated 7,224 tpy of CO (CEQ threshold = 25,000 tpy).	Same as Alternative 1.
Water Resources	No change to baseline water resources (groundwater, surface waters, floodplains, and wetlands); beneficial improvements would not be realized as stream blockages would not be removed and buffer corridors around wetlands would not be established.	No impacts on groundwater. Beneficial improvements to surface waters and floodplains would occur from the removal of woody debris and stream blockages. Buffer strips or corridors around wetlands would help to achieve no net loss of wetlands and maintain wetland habitat quality.	Similar to Alternative 1; however, without the GIS framework and database project, TBR would retain an incomplete inventory of the range's wetlands locations whereby potentially allowing some remaining woody debris and stream blockages to exist.
Geological Resources	No change to baseline geological resources (geology, topography, or soils).	Timber improvement projects, particularly mechanical improvements to remove invasive species and prescribed burns would impact soils. No direct impacts on soil types designated as prime farmland.	Same as Alternative 1.
Cultural Resources	No change to baseline cultural resources.	No impacts on cultural resources; as archaeological and architectural resources located on or adjacent to TBR would be avoided during implementation of any INRMP projects.	Same as Alternative 1.

Table ES-1. Summary of Potential Impacts on Resource Areas

Resource Area	No Action Alternative	Alternative 1: Medium-Intensity Management Alternative (Preferred Alternative)	Alternative 2: Low-Intensity Management Alternative
Biological Resources	No change to biological resources. Timber stand improvements, nuisance wildlife management, invasive plant species control, and land/fire management would not occur.	Mandatory stewardship initiatives would increase the biodiversity and value of the vegetation communities on the TBR and facilitate improved forest management to include silviculture and forest protection. Timber stand improvements (and prescribed burn) projects could temporarily affect migratory birds, depending upon the season in which the activity occurs. Fishes could be impacted by prescribed burns and applications of herbicides for invasive plant species control. Erosion and sedimentation from burned areas and stormwater runoff containing herbicides would adversely affect water quality. Temporary impacts on threatened and endangered terrestrial species could occur from smoke and habitat disturbances associated with prescribed burn and firebreak construction and management activities.	Similar to Alternative 1; however, without the GIS framework and database project, TBR would retain an incomplete inventory of the range's natural resources and therefore would not support a range-wide comprehensive conservation effort.
Socioeconomics	No change to baseline socioeconomics of the local area or region.	INRMP projects could provide minor temporary positive, direct impacts on the region, including increased revenues to local businesses if local contractors are utilized.	Same as Alternative 1.
Environmental Justice	No change to baseline environmental justice conditions.	There would be no disproportionately high or adverse human health or environmental effects on any minority, low-income populations, or children.	Same as Alternative 1.

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Draft-Final
Environmental Assessment
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Implementation of the Integrated Natural Resources Management
Plan
at the
Townsend Bombing Range, McIntosh and Long Counties, Georgia

TABLE OF CONTENTS

Executive Summary.....ES-1

Abbreviations and Acronyms.....v

1 PURPOSE OF AND NEED FOR THE PROPOSED ACTION1-1

 1.1 Introduction 1-1

 1.2 Location..... 1-1

 1.3 Purpose of and Need for the Proposed Action 1-4

 1.4 Scope of Environmental Analysis 1-5

 1.5 Key Documents 1-5

 1.6 Relevant Laws and Regulations..... 1-5

 1.7 Public and Agency Participation and Intergovernmental Coordination 1-6

2 PROPOSED ACTION AND ALTERNATIVES2-1

 2.1 Proposed Action..... 2-1

 2.2 Screening Factors 2-1

 2.3 Alternatives Carried Forward for Analysis 2-2

 2.3.1 No Action Alternative 2-2

 2.3.2 Medium-Intensity Management (Alternative 1; Preferred Alternative) 2-2

 2.3.3 Low-Intensity Management (Alternative 2) 2-6

 2.4 Alternatives Considered but Not Carried Forward for Detailed Analysis 2-6

 2.4.1 High-Intensity Management 2-6

 2.5 Selection of the Preferred Alternative (Alternative 1)..... 2-7

3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES3-1

 3.1 Air Quality 3-2

 3.1.1 Regulatory Setting 3-2

1	3.1.2	General Conformity	3-3
2	3.1.3	Greenhouse Gases	3-3
3	3.1.4	Affected Environment.....	3-5
4	3.1.5	Environmental Consequences	3-5
5	3.2	Water Resources	3-7
6	3.2.1	Regulatory Setting	3-8
7	3.2.2	Affected Environment.....	3-9
8	3.2.3	Environmental Consequences	3-15
9	3.3	Geological Resources	3-16
10	3.3.1	Regulatory Setting	3-16
11	3.3.2	Affected Environment.....	3-16
12	3.3.3	Environmental Consequences	3-17
13	3.4	Cultural Resources	3-21
14	3.4.1	Regulatory Setting	3-21
15	3.4.2	Affected Environment.....	3-22
16	3.4.3	Environmental Consequences	3-23
17	3.5	Biological Resources.....	3-24
18	3.5.1	Regulatory Setting	3-24
19	3.5.2	Affected Environment.....	3-25
20	3.5.3	Environmental Consequences	3-46
21	3.6	Socioeconomics.....	3-48
22	3.6.1	Regulatory Setting	3-48
23	3.6.2	Affected Environment.....	3-48
24	3.6.3	Environmental Consequences	3-50
25	3.7	Environmental Justice	3-51
26	3.7.1	Regulatory Setting	3-51
27	3.7.2	Affected Environment.....	3-51
28	3.7.3	Environmental Consequences	3-53
29	3.8	Summary of Potential Impacts on Resources and Impact Avoidance and Minimization .	3-53
30	4	CUMULATIVE IMPACTS	4-1
31	4.1	Definition of Cumulative Impacts.....	4-1
32	4.2	Scope of Cumulative Impacts Analysis.....	4-2
33	4.3	Past, Present, and Reasonably Foreseeable Actions	4-2
34	4.3.1	Past Actions	4-3
35	4.3.2	Present and Reasonably Foreseeable Actions.....	4-4

1 4.4 Cumulative Impacts Analysis 4-5

2 4.4.1 Air Quality 4-5

3 4.4.2 Water Resources..... 4-6

4 4.4.3 Geological Resources..... 4-7

5 4.4.4 Cultural Resources 4-7

6 4.4.5 Biological Resources 4-8

7 4.4.6 Socioeconomics 4-9

8 4.4.7 Environmental Justice..... 4-9

9 **5 OTHER CONSIDERATIONS REQUIRED BY NEPA 5-1**

10 5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations . 5-1

11 5.2 Irreversible or Irretrievable Commitments of Resources 5-2

12 5.3 Relationship between Short-Term Use of the Environment and Long-Term Productivity. 5-3

13 **6 REFERENCES 6-1**

14 **7 LIST OF PREPARERS 7-1**

List of Appendices

17 Appendix A. Coastal Consistency Determination

List of Figures

20 Figure 1-1. Townsend Bombing Range Project Vicinity Map 1-2

21 Figure 1-2. Townsend Bombing Range Project Area Map 1-3

22 Figure 3-1. Surface Water Map..... 3-12

23 Figure 3-2. Wetland Map 3-13

24 Figure 3-3. Floodplain Map 3-14

25 Figure 3-4. Topography Map..... 3-18

26 Figure 3-5. Soils Map..... 3-19

27 Figure 3-6. Terrestrial Habitat and Vegetation Map..... 3-27

List of Tables

1			
2	Table ES-1	Summary of Potential Impacts on Resource Areas.....	ES-5
3	Table 2-1.	Summary of Recommended Projects	2-3
4	Table 3-1.	General Conformity <i>de minimis</i> levels.....	3-4
5	Table 3-2.	Prescribed Fire Emissions	3-6
6	Table 3-3.	Description of Aquifers under TBR	3-10
7	Table 3-4.	Threatened and Endangered Species Known to Occur or Potentially Occurring and	
8		Critical Habitat Present in ROI	3-24
9	Table 3-5.	Sensitive or Regionally Important Plants.....	3-32
10	Table 3-6.	Sensitive or Regionally Important Wildlife	3-37
11	Table 3-7.	Birds of Conservation Concern, Southeastern Coastal Plain	3-41
12	Table 3-8.	Protected and Candidate Species Potentially Occurring on TBR.....	3-42
13	Table 3-9.	Population Characteristics of the Region	3-49
14	Table 3-10.	Educational Attainment of the Region and the United States	3-49
15	Table 3-11.	Housing Characteristics of the Region and the United States.....	3-49
16	Table 3-12.	Minority and Poverty Characteristics of the Region.....	3-51
17	Table 3-13.	Income and Poverty Characteristics of the Region and the United States.....	3-52
18	Table 3-14.	Population Under 18 Years of Age for the Region and the United States.....	3-52
19	Table 3-15.	Summary of Potential Impacts on Resource Areas.....	3-54
20	Table 3-16.	Impact Avoidance And Minimization Measures	3-56
21	Table 4-1.	Cumulative Action Evaluation	4-2
22	Table 5-1.	Principal Federal and State Laws Applicable to the Proposed Action	5-1
23			

Abbreviations and Acronyms

Acronym	Definition	Acronym	Definition
amsl	above mean sea level	NO _x	Nitrogen oxide
APE	Area of Potential Effect	NPDES	National Pollutant Discharge Elimination System
BCT	Brigade Combat Team	NRCS	Natural Resources Conservation Service
BMP	best management practice	NRHP	National Register of Historic Places
CEQ	Council on Environmental Quality	Pb	lead
CFR	Code of Federal Regulations	PGM	precision-guided munitions
CO	carbon monoxide	PM ₁₀	particulate matter less than or equal to 10 microns in diameter
CO ₂	carbon dioxide	PGM	precision-guided munitions
CWA	Clean Water Act	PM _{2.5}	particulate matter less than or equal to 2.5 microns in diameter
CZMA	Coastal Zone Management Act	ROI	Region of Influence
DoD	United States Department of Defense	RTE	Rare, Threatened, or Endangered
EA	Environmental Assessment	SAIA	Sikes Act Improvement Act
EO	Executive Order	SO ₂	sulfur dioxide
ESA	Endangered Species Act	SWAP	State Wildlife Action Plan
FEMA	Federal Emergency Management Agency	SWPPP	Stormwater Pollution Prevention Plan
FLAG	Federal Land Managers' Air Quality Related Values Work Group	TBR	Townsend Bombing Range
FR	Federal Register	TCPs	traditional cultural properties
GA ANG	Georgia Air National Guard	tpy	tons per year
GADNR	Georgia Department of Natural Resources	U.S.	United States
GCMP	Georgia Coastal Management Program	U.S.C.	United States Code
GFC	Georgia Forestry Commission	USACE	U.S. Army Corps of Engineers
GHG	greenhouse gas	USDA	U.S. Department of Agriculture
GIS	geographic information system	USEPA	U.S. Environmental Protection Agency
INRMP	Integrated Natural Resources Management Plan	USFWS	U.S. Fish and Wildlife Service
MBTA	Migratory Bird Treaty Act	USGS	U.S. Geological Survey
MCAS	Marine Corps Air Station	USMC	U.S. Marine Corps
NAAQS	National Ambient Air Quality Standards	USNVC	U.S. National Vegetation Classification
NAS	Naval Air Station	VOC	Volatile Organic Compounds
Navy	Department of Navy		
NEPA	National Environmental Policy Act		
NHPA	National Historic Preservation Act		
NO ₂	nitrogen dioxide		

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1 Purpose of and Need for the Proposed Action

2 1.1 Introduction

3 The United States (U.S.) Department of the Navy (Navy) has prepared this Environmental Assessment
4 (EA) to evaluate the implementation of the Integrated Natural Resources Management Plan (INRMP) at
5 the Townsend Bombing Range (TBR), McIntosh and Long Counties, Georgia. The intent of this EA is to
6 assess and disclose the known and potential environmental consequences, both beneficial and adverse,
7 of the proposed implementation of the INRMP and the specific projects identified in it. The 2015 INRMP
8 revision for implementation recently updated the former 2006 “Integrated Natural Resources
9 Management Plan for the Townsend Bombing Range, McIntosh and Long Counties, Georgia”
10 (Department of the Navy [DON], 2006). The 2015 INRMP revision followed the guidance provided in the
11 “Handbook for Preparing, Revising, and Implementing Integrated Natural Resources Management Plans
12 on Marine Corps Installations” (Marine Corps Air Station [MCAS], 2007).

13 The Sikes Act Improvement Act (SAIA), 16 United States Code (U.S.C.) § 670 et seq., as amended,
14 requires the Secretary of Defense to conduct a program to provide for the conservation and
15 rehabilitation of natural resources on military installations. To facilitate this program, the SAIA requires
16 the Secretaries of the military departments to prepare and implement INRMPs for each military
17 installation in the U.S. unless the absence of significant natural resources on a particular installation
18 makes preparation of a plan for the installation inappropriate. The U.S. Marine Corps (USMC) has
19 acquired land adjacent to TBR to support new modernization requirements. The land expansion
20 provides the USMC with the required danger zones to be contained within the range boundary and
21 lands under exclusive military use and control (Figures 1-1 and 1-2). This land area was increased to
22 ensure the containment of the danger zones, while simultaneously allowing for the employment of
23 realistic tactics, techniques, and procedures. The protection of the public from the hazards associated
24 with the proposed training is of utmost importance. The assessment of this land acquisition and
25 expansion was addressed in the “Environmental Impact Statement for the Proposed Modernization and
26 Expansion of Townsend Bombing Range, Georgia” (MCAS, 2013).

27 To comply with the SAIA, Marine Corps Installations Command (MCICOM), Marine Corps Air Station
28 (MCAS Beaufort), have prepared an INRMP for the expanded TBR (MCAS, 2016). The INRMP is a long-
29 term planning document intended to guide the installation commander in the management of natural
30 resources to support the installation mission, while protecting and enhancing installation resources for
31 multiple use, sustainable yield, and biological integrity. The primary purpose of the INRMP is to ensure
32 that natural resources conservation measures and military operations on the Installation are integrated
33 and consistent with stewardship initiatives and legal requirements.

34 1.2 Location

35 TBR is located in McIntosh and Long Counties in southeastern, coastal Georgia, 71 nautical miles
36 southwest of MCAS Beaufort, between Darien and Ludowici, Georgia, off Highway 57. TBR was initially
37 leased for military training beginning in the 1940s. The Navy operated TBR until 1972, when it was
38 closed along with the closure of Naval Air Station Glynco in Brunswick, Georgia. The former 5,183-acre
39 use of TBR began in 1981 when the range was leased from Union Camp and reopened. The USMC
40 purchased the land in 1991.



Figure 1-1. Townsend Bombing Range Project Vicinity Map

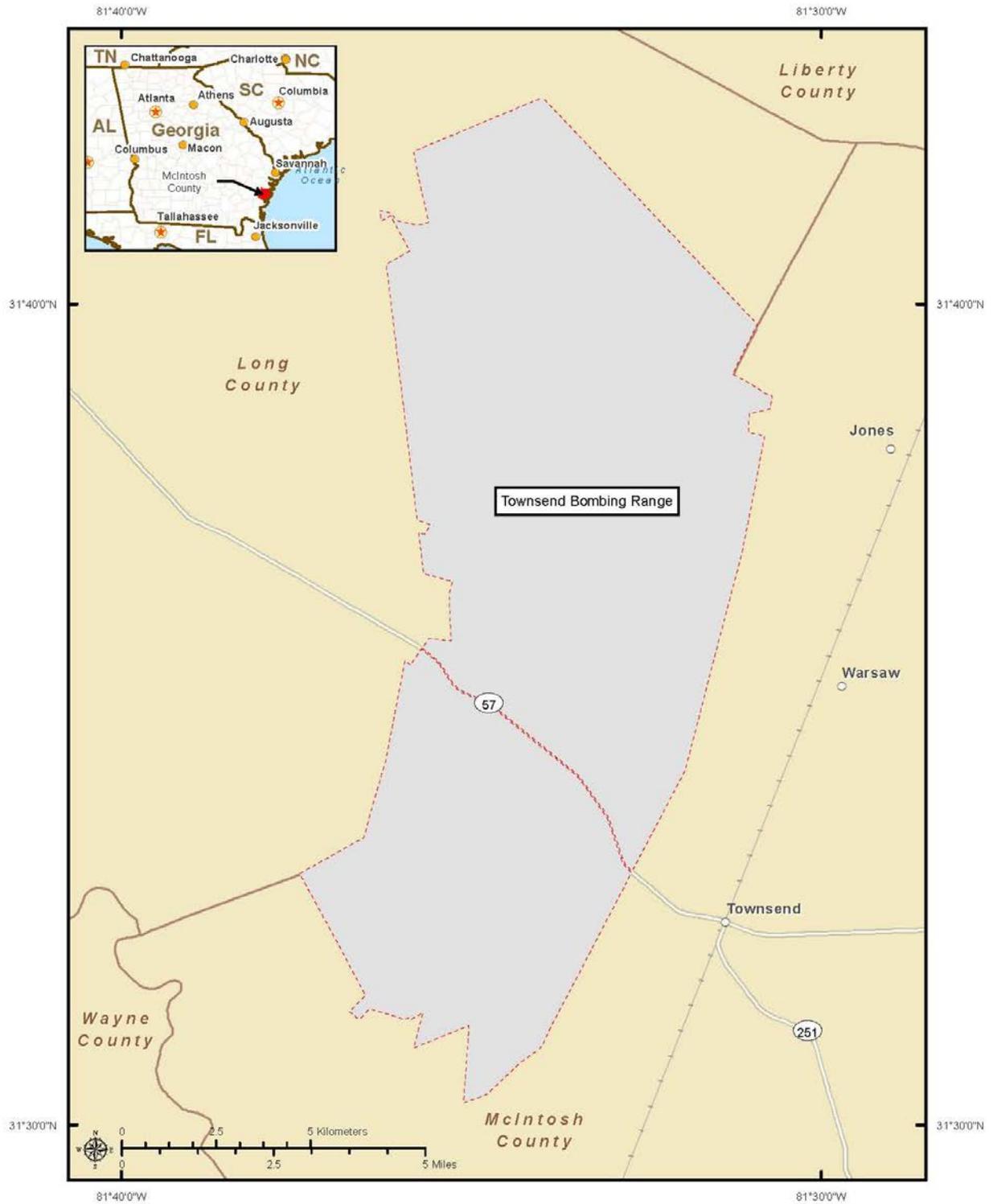


Figure 1-2. Townsend Bombing Range Project Area Map

1 After a recent land acquisition, TBR now comprises a 33,813-acre Federal property owned by the USMC.
2 TBR is the primary air-to-ground training range for USMC aviation units stationed at MCAS Beaufort,
3 South Carolina. In addition to being an essential training asset to USMC aviation units, the Navy, U.S. Air
4 Force, Georgia Air National Guard, and U.S. Army also train at TBR. TBR is routinely used by all services
5 to train air crews (e.g., pilots, navigators) to meet their air combat proficiency requirements. The
6 training range is used for “inert” (containing no explosives) air-to-ground ordnance including guns,
7 rockets, and bombs, as well as low-angle strafing training (shooting at large “bulls-eye” targets set up on
8 the range), and close air support training exercises. Inert ordnance sometimes will have a small spotting
9 charge that activates upon impact to help score how well the ordnance was delivered on the target but
10 it does not contain explosives. Munitions that contain explosives are prohibited in training at TBR;
11 tracers and flares are also not allowed.

12
13 Flight controllers direct aircraft to the TBR target area where inert munitions are delivered to simulated
14 military targets during training. Highly sophisticated scoring equipment locates the proximity of the
15 munitions’ impact to the target. This training is for developing and maintaining skills critical for wartime
16 missions and conducting training with various weapons. USMC aviators must train and be highly skilled
17 in multiple mission areas, which include the delivery of precision-guided munitions (PGMs) and use of
18 air-to-ground weapons against a range of target types. PGMs are a modern class of weapons that allows
19 USMC aviators to attack specific threats and isolated targets.

20 Although very accurate, PGMs are released to their target from much greater distances and altitudes
21 than other ordnance. To train as they fight, USMC aviators must practice releasing PGMs from combat
22 distances, altitudes, and airspeeds. If a PGM were to malfunction (either the guidance or a mechanical
23 system), its potential impact area would be much larger than the ordnance released from lower
24 altitudes and shorter distances. Therefore, the weapon danger zones, which are also informally referred
25 to as safety zones at TBR, must be sized to ensure that any errant bomb would safely land within TBR.
26 The 33,813-acre Federal TBR property meets this requirement.

27 The EA will help provide an independent, unbiased analysis and comparison of various alternatives
28 supporting the Proposed Action. The EA will assist MCICOM in making an informed decision that is based
29 on an analysis of all direct, indirect, and cumulative environmental effects that may result from the
30 project alternatives. The EA sets forth the basis for required environmental documentation in
31 accordance with the National Environmental Policy Act (NEPA) of 1969; the Council on Environmental
32 Quality (CEQ) regulations implementing NEPA (40 Code of Federal Regulations [CFR] 1500-1508);
33 Environmental Readiness Program Manual (Office of the Chief of Naval Operations M-5090.1),
34 Environmental and Natural Resources Protection Manual; relevant sections of Chief of Naval Operations
35 Supplemental Environmental Planning Policy letter N45/N4U732460 of September, 23, 2004; and all
36 appropriate Executive Orders (EOs).

37 **1.3 Purpose of and Need for the Proposed Action**

38 The purpose of the Proposed Action is to implement an ecosystem-based conservation program that
39 provides for conservation and rehabilitation of sustainable natural resources in a manner that is
40 consistent with the military mission and provides access to natural resources, subject to safety and
41 military security considerations.

42 The need for the Proposed Action is to comply with the SAIA, as well as MCICOM guidelines for
43 installations that contain significant natural resources, as well as to provide capabilities for training and

1 equipping combat-capable military forces ready to deploy worldwide. In this regard, the Proposed
2 Action furthers the USMC's execution of its congressionally mandated roles and responsibilities under
3 10 U.S.C. Section 5063.

4 **1.4 Scope of Environmental Analysis**

5 This EA includes an analysis of potential environmental impacts associated with the action alternatives
6 and the No Action Alternative. The environmental resource areas analyzed in this EA include air quality,
7 water resources, geological resources, cultural resources, biological resources, socioeconomics, and
8 environmental justice. The study area for each resource analyzed may differ due to how the Proposed
9 Action interacts with or impacts the resource. For instance the study area for geological resources may
10 only include the construction footprint of a building, whereas the noise study area would expand out to
11 include areas that may be impacted by airborne noise.

12 **1.5 Key Documents**

13 Key documents are sources of information incorporated into this EA. Documents are considered to be
14 key because of similar actions, analyses, or impacts that may apply to this Proposed Action. CEQ
15 guidance encourages incorporating documents by reference. Documents incorporated by reference in
16 part or in whole include the following:

- 17 • *Integrated Natural Resources Management Plan at the Townsend Bombing Range, McIntosh and*
18 *Long Counties, Georgia* (MCAS, 2016). The INRMP is a long-term planning document intended to
19 guide the installation commander in the management of natural resources to support the
20 installation mission, while protecting and enhancing installation resources for multiple use,
21 sustainable yield, and biological integrity. The primary purpose of the INRMP is to ensure that
22 natural resources conservation measures and military operations on the installation are
23 integrated and consistent with stewardship initiatives and legal requirements.
- 24 • *Environmental Impact Statement for the Proposed Modernization and Expansion of the Townsend*
25 *Bombing Range, Georgia* (MCAS, 2013). This document assesses USMC's acquisition of land
26 adjacent to TBR to support new modernization requirements. The land expansion provides the
27 USMC with the required danger zones to be contained within the range boundary and lands
28 under exclusive military use and control.

29 **1.6 Relevant Laws and Regulations**

30 The Navy has prepared this EA based upon Federal and state laws, statutes, regulations, and policies
31 that are pertinent to the implementation of the Proposed Action, including the following:

- 32 • NEPA (42 U.S.C. sections 4321-4370h), which requires an environmental analysis for major
33 Federal actions that have the potential to significantly impact the quality of the human
34 environment
- 35 • CEQ Regulations for Implementing the Procedural Provisions of NEPA (40 CFR parts 1500-1508)
- 36 • Navy regulations for implementing NEPA (32 CFR part 775), which provides Navy policy for
37 implementing CEQ regulations and NEPA
- 38 • Clean Air Act (42 U.S.C. section 7401 et seq.)
- 39 • Clean Water Act (33 U.S.C. section 1251 et seq.)

- 1 • Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)
- 2 • National Historic Preservation Act (54 U.S.C. section 306108 et seq.)
- 3 • Endangered Species Act (16 U.S.C. section 1531 et seq.)
- 4 • Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (16 U.S.C. section
- 5 1801 et seq.)
- 6 • Migratory Bird Treaty Act (16 U.S.C. section 703-712)
- 7 • Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)
- 8 • EO 11988, Floodplain Management
- 9 • EO 11990 Protection of Wetlands
- 10 • EO 12088, Federal Compliance with Pollution Control Standards
- 11 • EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-
- 12 income Populations
- 13 • EO 13045, Protection of Children from Environmental Health Risks and Safety Risks
- 14 • EO 13423, Strengthening Federal Environmental, Energy, and Transportation Management
- 15 • EO 13175, Consultation and Coordination with Indian Tribal Governments
- 16 • EO 13693, Planning for Federal Sustainability in the Next Decade

17 A description of the Proposed Action's consistency with these laws, policies, and regulations, as well as
18 the names of regulatory agencies responsible for their implementation, is presented in Chapter 5 (Table
19 5-1).

20 **1.7 Public and Agency Participation and Intergovernmental Coordination**

21 Regulations from the CEQ (40 CFR part 1506.6) directs agencies to involve the public in preparing and
22 implementing their NEPA procedures. The Navy published a Notice of Availability of the Draft-Final EA
23 for three consecutive days in the *Darien News*. The notice described the Proposed Action, solicited
24 public comments on the Draft-Final EA, provided dates of the public comment period, and announced
25 that a copy of the Draft-Final EA would be available for review on the Navy's website for 30 days.

26 The Navy coordinated with the U.S. Fish and Wildlife Service and the GADNR regarding Alternative 1, the
27 Preferred Alternative. A Coastal Consistency Determination was prepared and submitted to Georgia
28 Coastal Management Program of the Coastal Resources Division, Georgia Department of Natural
29 Resources.

2 Proposed Action and Alternatives

2.1 Proposed Action

The Proposed Action is to implement an Integrated Natural Resources Management Plan (INRMP) at the Townsend Bombing Range (TBR), McIntosh and Long Counties, Georgia, consistent with the military use of the property and the goals and objectives established in the Sikes Act Improvement Act (SAIA). The goal of the INRMP is to implement an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission; integrates and coordinates all natural resources management activities; provides for sustainable multipurpose uses of natural resources; and provides access to installation lands for use of natural resources subject to safety and military security considerations. The projects outlined in the INRMP will be recommended for implementation if they are feasible and consistent with the project's intent, the Department of the Navy's (Navy) ecosystem goals, and the military mission, and if they maintain the quality of the natural environment, which is in the public interest.

Under the SAIA, the decision to implement such a conservation program is based on whether the installation contains significant natural resources. Since the TBR property contains wetlands; rare, threatened, and endangered (RTE) species; and other natural resources, Marine Corps Air Station (MCAS) Beaufort is required to prepare and implement an INRMP. The Proposed Action is the implementation of the INRMP, including all mandatory and stewardship projects.

2.2 Screening Factors

The National Environmental Policy Act's (NEPA) implementing regulations provide guidance on the consideration of alternatives to a Federally proposed action and require rigorous exploration and objective evaluation of reasonable alternatives. Only those alternatives determined to be reasonable and to meet the purpose and need require detailed analysis.

Implementation of an INRMP is a Federal mandate, authorized and funded by the United States (U.S.) Congress. The INRMP will require annual reviews and updates, at which time numerous alternatives will be analyzed to provide conservation and rehabilitation of sustainable natural resources consistent with the military mission and provide military personnel access to natural resources, subject to safety and military security considerations. Complete revisions/updates will be required on a 10-year basis.

In order to identify and consider potentially applicable variations in intensity for natural resources management at the Townsend Bombing Range (TBR), McIntosh and Long Counties, Georgia, the issues corresponding to each of the management objectives were examined, and levels of management activity were assigned appropriately to the three alternative scenarios considered in this environmental assessment (EA). These three alternatives address and support the four INRMP goals identified for TBR:

Goal 1 Preserve access to air and land to meet military readiness requirements

Goal 2 Protect and maintain natural resources within the TBR through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices

Goal 3 Manage and provide for multiple uses when appropriate, including sustainable yield of all renewable resources, scientific research, education, and recreation

Goal 4 Provide public access to Installation lands, where practicable, provided such access does not conflict with military readiness and does not harm sensitive natural resources on TBR

1 The implementation of various alternatives would assist MCAS Beaufort in achieving no net loss to the
2 military mission. The alternatives and the projects identified in the INRMP focus on controlling invasive
3 species; identifying sensitive bird, reptile, and amphibian species and their habitats; rehabilitation of
4 former forest lands; and regular updates of the INRMP. Pertinent natural resource issues relative to the
5 military mission include ecosystem management toward maintaining forest buffers via natural
6 firebreaks around TBR, as well as preservation of sensitive species and their habitats while managing
7 invasive species on TBR.

8 As recommended by Navy guidance, this EA will address a “programmatic” approach to the alternatives
9 development so that specific projects can be modified, added, or deleted as more detailed information
10 is developed. Analysis in the EA will focus on evaluation and comparison of alternative plans in terms of
11 the five management objectives (forest management, fish and wildlife management, land management,
12 management of outdoor recreational opportunities, and training), rather than on the individual projects
13 that have been identified. Those projects are identified in Table 2-1, provide a framework for reviewing
14 ongoing activities, and will assist in reviewing changes for unforeseen projects or modifications in the
15 future. Again, it is important to emphasize that the analysis in this EA will evaluate plans/programs and
16 will not evaluate in detail potential impacts of conducting a project-specific action.

17 **2.3 Alternatives Carried Forward for Analysis**

18 Based on the reasonable alternative screening factors and meeting the purpose and need for the
19 Proposed Action, two action alternatives were identified and will be analyzed within this EA.

20 **2.3.1 No Action Alternative**

21 Under the No Action Alternative, the Proposed Action would not occur. Under the No Action Alternative,
22 the INRMP would not be finalized and implemented, and the natural resources present at TBR would
23 not be managed accordingly. Only management for Federally listed threatened and endangered species
24 would occur, along with periodic INRMP updates. However, since the preparation and implementation
25 of an INRMP has been mandated by the U.S. Congress through the SAIA, the No Action Alternative is not
26 a viable alternative. The No Action Alternative would not meet the purpose of and need for the
27 Proposed Action; however, as required by NEPA, the No Action Alternative is carried forward for analysis
28 in this EA and provides a baseline for measuring the environmental consequences of the action
29 alternatives.

30 **2.3.2 Medium-Intensity Management (Alternative 1; Preferred Alternative)**

31 The Medium-intensity management Alternative would comply with all the mandatory requirements
32 described in the INRMP (conserve, restore, and enhance habitats supporting rare species and species
33 listed as threatened, endangered, or candidate species under the Endangered Species Act; invasive plant
34 species removal; sensitive species surveys; and annual INRMP updates) and would also incorporate a
35 stewardship initiative considered to be reasonable and achievable at TBR (Geographic Information
36 System [GIS] database maintenance). It would integrate the maintenance of forest buffers with other
37 program elements by developing site-specific maintenance plans including necessary best management
38 practices in and around each target, manage conditions in the forest buffers, and adapt management as
39 necessary to avoid and minimize potential adverse effects. This stewardship initiative would be
40 implemented to meet the management objectives of integrating land management, forest
41 management, and wildlife management by providing for a comprehensive natural resources inventory.

Table 2-1. Summary of Recommended Projects

Project Number	Project Description	INRMP Goal (Section)	Scheduled Implementation (FY)	Alternatives		
				NA ^a	1	2
1	Firebreak Construction and Maintenance	Land and Forest Management (Sections 5.1 and 5.2)	2016		✓	✓
2	Wildland Fire Management Plan	Forest Management (Section 5.2)	2016		✓	✓
3	Wetlands Delineation Survey	Land Management (Section 5.1)	2016		✓	✓
4	Invasive Species Management	Fish and Wildlife Management (Section 5.3)	2016		✓	✓
5	Frosted Flatwoods Salamander Management	Fish and Wildlife Management (Section 5.3)	2016	✓	✓	✓
6	Threatened, Endangered, Candidate, and Rare Species Management	Fish and Wildlife Management (Section 5.3)	2016	✓	✓	✓
7	Migratory Bird Surveys	Fish and Wildlife Management (Section 5.3)	2016		✓	✓
8	Prescribed Burn	Land and Forest Management (Sections 5.1 and 5.2)	2016		✓	✓
9	GIS Database Maintenance	Training (Section 5.5)	2016		✓	
10	Forest Management	Forest Management (Section 5.2)	2016		✓	✓
11	Forest Inventory	Forest Management (Section 5.2)	2016		✓	✓
12	Pest Management	Fish and Wildlife Management (Section 5.3)	2016		✓	✓
13	Update/Revise INRMP	N/A	2022	✓	✓	✓

2 Source: GSRC 2015

3 Notes: ^a = No Action

1 The costs to implement the stewardship initiatives would be considered moderate, and the USMC would
2 be reasonably likely to obtain the necessary funding to effectively accomplish the natural resources
3 goals and objectives of the Proposed Action within the planning period. Additionally, increased
4 stewardship efforts would be expected to result in long-term ecosystem sustainability at TBR.

5 **2.3.2.1 Firebreak Construction and Maintenance (Mandatory)**

6 A project such as this would delineate areas to be maintained as firebreaks and areas around
7 infrastructure to be maintained with reduced fuel loads to reduce fire risk to infrastructure for the
8 expanded TBR lands. Firebreaks are a necessary part of a fire management program. Existing features
9 such as roads and streams may be used as firebreaks, but oftentimes such features are not present.
10 Where existing features do not occur, man-made firebreaks must be established and maintained.
11 Construction of additional firebreaks may be deemed necessary to subdivide stands into manageable
12 burn units.

13 **2.3.2.2 Wildland Fire Management Plan (Mandatory)**

14 A project such as this would maintain firebreaks and areas of reduced fuel load for the expanded TBR
15 lands, maintain readiness to respond to wildland fires, and respond to wildland fires as they occur. The
16 project would also evaluate firebreaks and buffers for effectiveness as often as practicable and adapt
17 design and location as necessary, evaluate wildland fire hazard potential to prescribe and adapt
18 management as necessary, and develop partnerships and opportunities for collaboration in the
19 management of wildland fires.

20 **2.3.2.3 Wetlands Delineation Surveys (Mandatory)**

21 A project such as this would perform and maintain a current wetland delineation and jurisdictional
22 determination for the expanded TBR lands. The areas of likely development should be verified by the
23 U.S. Army Corps of Engineers (USACE) as often as necessary to maintain the USACE's jurisdictional
24 determination; other areas will only require a planning level delineation. The project would complete a
25 jurisdictional wetlands determination for the remainder of TBR as soon as practical and have the USACE
26 evaluate the wetland map and re-approve or redo the wetlands map. The project would review the
27 extent and quality of wetlands every 5 years and adapt management accordingly. Updates to the
28 Geographic Information System (GIS) layer of wetlands boundaries as maps would be revised.

29 **2.3.2.4 Invasive Species Management (Mandatory)**

30 A project such as this would maintain a register of existing and potential invasive species infestations
31 that includes species' locations, appearance, habitats and ecology, and control methods. The project
32 would identify and delineate areas vulnerable to infestation (e.g., target areas, roadways, firebreaks,
33 and other disturbed areas) for monitoring and control. The project would survey vulnerable areas as
34 needed to monitor occurrence, distribution, and abundance of invasive species; high-priority species
35 include those plants classified as Category 1 or Category 2 by the Georgia Exotic Pest Plant Council
36 (2006). The project would continue to develop and implement control recommendations identified in
37 the 2004 Invasive Species Report.

38 **2.3.2.5 Frosted Flatwoods Salamander Management (Mandatory)**

39 A project such as this would monitor for known and suspected frosted flatwoods salamander
40 (*Ambystoma cingulatum*) populations in accordance with the 2001 Biological Assessment, the Draft

1 Flatwoods Salamander Recovery Plan, and the March 28 through April 8, 2011, protected species
2 surveys. The project would survey suitable habitats on TBR for the occurrence of unknown potential
3 frosted flatwoods salamander breeding sites on a recurring basis. The project would use prescribed
4 burns to maintain suitability of habitats for frosted flatwoods salamanders, identify and implement
5 measures to reduce predatory fish access to frosted flatwoods salamander breeding sites, and review
6 results of surveys and prescribed burns with cooperating agencies and adapt management as necessary.

7 **2.3.2.6 Threatened, Endangered, Candidate, and Rare Species Management (Mandatory)**

8 A project such as this would survey for potentially occurring RTE and candidate species (INRMP Table 2-
9 4) as Likely or Possible Residents or Migrants. The project would review results of surveys and
10 monitoring with cooperating agencies on an annual basis and improve management as necessary.
11 Numerous natural community and habitats improvements would be included in this project, including
12 prescribed burning in pitcher plant and longleaf pine habitats, non-fire brush removal, and limiting
13 access to sensitive areas, among others.

14 **2.3.2.7 Neotropical Migratory Bird Surveys (Mandatory)**

15 A project such as this would monitor and conduct surveys (utilizing Federal or local biologists) during the
16 spring and fall migrations for neotropical migratory birds annually, as well as any particular breeding
17 season, with an emphasis on painted buntings (*Passerina ciris*) and grassland sparrows (*Ammodramus*
18 *humeralis*). The project would conduct searches for winter grassland sparrows the year following burns
19 in open pine stands with a grass/forb ground cover, and identify and count (to the extent practicable)
20 any migratory birds that are unavoidably *taken* during military readiness activities. Any *takes* would be
21 reported up the chain of command and to the U.S. Fish and Wildlife Service. (Note that *take* (the noun)
22 is defined as kill, harm, or harass.).

23 **2.3.2.8 Prescribed Burn (Mandatory)**

24 A project such as this would conduct prescribed burns to mimic natural fire regimes to the extent
25 practical, while controlling fuel loads and invasive species, promoting vegetation composition and
26 structure suitable for target species, and creating a diversity of conditions across the landscape. The
27 project would evaluate effectiveness of individual prescribed burns for controlling invasive species,
28 establishing and maintaining desirable species and vegetation structure, and avoiding unintended or
29 unanticipated effects on natural resources. The project would review prescribed burn data annually,
30 assess program adequacy, schedule and adapt management prescriptions as appropriate, and ensure
31 integration with other program elements.

32 **2.3.2.9 GIS Database Maintenance (Stewardship)**

33 A project such as this would develop and maintain a GIS framework and database that is compatible
34 with the system employed by MCAS Beaufort. The project would inventory all natural resources data for
35 incorporation into the GIS database with continuous maintenance and updates.

36 **2.3.2.10 Forest Management (Mandatory)**

37 A project such as this would establish an effective prescribed burning program to reduce fuel buildup
38 and wildfire potential; prepare adequate means for quick response and effective wildfire suppression;
39 thin stands to reduce overstocked conditions; maintain productive growth rates and tree vigor; conduct

1 sanitation cuts for removal of high risk and diseased stems; and initiate final harvests with appropriate
2 reforestation activity to balance the age class distribution and increase species composition diversity.

3 **2.3.2.11 Forest Inventory (Mandatory)**

4 A project such as this would provide periodic monitoring of forest stands to obtain measurements on
5 health, species composition, size, basal area, and volume, allowing managers to plan and schedule
6 projects to thin stands to reduce overstocked conditions; maintain productive growth rates and tree
7 vigor; conduct sanitation cuts for removal of high-risk and diseased stems; and initiate final harvests
8 with appropriate reforestation activity to balance the age class distribution and increase species
9 composition diversity.

10 **2.3.2.12 Pest Management (Mandatory)**

11 A project such as this would provide forest protection, including surveillance for insect and disease
12 problems, evaluation of those problems, and treatment when necessary. The normal treatment for such
13 problems is the harvest of affected trees along with a buffer area. Forest protection also includes the
14 protection of scenic values during harvesting of trees.

15 **2.3.2.13 Update/Revise INRMP (Mandatory)**

16 A project such as this would ensure that the INRMP would be reviewed on an annual basis and regularly
17 (every 5 years) revised to address species management to prevent impacts on the mission or delays to
18 target area construction projects. Data from species surveys would be incorporated into this INRMP as
19 soon as possible upon completion of surveys. INRMP updates would document survey results and add
20 newly listed species and their habitat requirements, as well as management actions herein that benefit
21 and conserve the species and their habitats.

22 **2.3.3 Low-Intensity Management (Alternative 2)**

23 Low-intensity management would involve meeting all the mandatory requirements (e.g. invasive plant
24 species removal, sensitive species surveys, and annual INRMP updates) for compliance with laws,
25 regulations, permits, and DoD policy, as identified in Alternative 1. No stewardship initiatives (GIS
26 framework and database providing for a comprehensive natural resources inventory at TBR) would be
27 considered for low-intensity management. Long-term ecosystem sustainability might not be achievable
28 under this alternative.

29 **2.4 Alternatives Considered but Not Carried Forward for Detailed Analysis**

30 The following alternatives were considered but were not carried forward for detailed analysis in this EA,
31 as they did not meet the purpose of and need for the project and did not satisfy the reasonable
32 alternative screening factors presented in Section 2.2.

33 **2.4.1 High-Intensity Management**

34 High-intensity management would be the most proactive alternative. It would include the requirements
35 of Alternative 1 and would identify aggressive stewardship initiatives, which require a high initial
36 investment to implement. This level of intensity would generally go well beyond the funding levels that
37 have been approved historically to implement natural resources management plans at the Installation.
38 Although the implementation and management of these stewardship projects would benefit natural
39 resources on the Installation, it is unlikely that they would have effects large enough in scale to

1 significantly enhance the chances of recovery of listed species or threatened ecosystems, especially
2 given the relatively large size (33,813 acres) of the range. Baseline data on the effectiveness of high-
3 intensity management would need to be gathered and demonstrate strong benefits relative to the
4 increased costs prior to investing uncharacteristically high levels of funding. Consequently, this
5 alternative is not considered viable at this time and has been eliminated from further consideration.

6 **2.5 Selection of the Preferred Alternative (Alternative 1)**

7 Alternative 1, medium-intensity management, has been identified as the Preferred Alternative for the
8 development and adoption of an INRMP at TBR because it would

- 9 • comply with the letter and spirit of the SAIA (as amended),
- 10 • comply with other laws, regulations, permits, and DoD policy,
- 11 • meet the commitment of the USMC to manage its natural resources as a Federal lands steward
12 and as expressed in its mission statement,
- 13 • satisfy the management goals and objectives that were identified for TBR as part of the INRMP
14 process, and
- 15 • provide an achievable standard for measuring long-term sustainability.

16 Upon implementation of the INRMP, numerous projects, such as those discussed in the following
17 paragraphs, would be conducted during the subsequent 10-year period. Projects that are considered
18 mandatory in their funding priority include surveys for RTE species, migratory bird surveys, invasive
19 plant species removal, and annual updates to the INRMP. RTE surveys were conducted March 28 and
20 April 6, 2011, for Federally protected species including the eastern indigo snake (*Drymarchon couperi*),
21 frosted flatwoods salamander, and wood stork (*Mycteria americana*), the striped newt (*Notophthalmus*
22 *perstriatus*), which is a candidate species proposed for Federal listing, and the Federal candidate species
23 and state-listed gopher tortoise (*Gopherus polyphemus*). The goal of these surveys was to identify RTE
24 species and habitats and incorporate those findings into an adaptive management process that
25 improves potential or suitable habitat and enhances the populations of RTE species that occur on TBR.

26 Annual reviews and updates of the INRMP would identify specific projects and new rare species to be
27 added to the INRMP or implemented in subsequent years and would incorporate any additional lands
28 acquired. Other resource-specific projects might be identified during these reviews that are not
29 addressed in this EA or might require additional or supplemental NEPA documentation.

30 Projects that are considered mandatory initiatives include managing forestland for various components,
31 including forest products, wildlife habitat, aesthetics, and recreation. Under the Preferred Alternative,
32 these projects would be implemented annually, primarily to benefit RTE species and their habitats (by
33 revegetating areas formerly inhabited by invasive plant species) and to manage invasive species and
34 limit their establishment and spread (by controlling invasive plant species) on TBR and downstream
35 waterbodies.

36 In addition to incorporating compliance-driven and stewardship commitments for maintaining and
37 enhancing the quality of ecosystems on the Installation, the INRMP would integrate the various
38 management efforts to enhance these benefits, while maintaining compatibility with the USMC's
39 military mission. The mandatory measures identified in the plan are tailored toward achieving the
40 desired results with respect to INRMP goals and are within the range for which the USMC's could

1 reasonably expect to obtain the necessary funding over the course of the planning period (see Table 2-
2 1).

3 Compared to Alternative 1 (Preferred Alternative), Alternative 2 (Low-Intensity Management
4 Alternative) represents a less certain scenario for maintaining the long-term achievement of natural
5 resources management goals and objectives at TBR. Even though measures for regulatory compliance
6 would be in place, the approach of “minimal stewardship” under Alternative 2 would not provide a
7 comprehensive GIS framework and database compatible with the system employed by MCAS Beaufort.
8 Without this GIS framework and database, TBR would retain an incomplete electronic inventory of the
9 range’s natural resources, thereby potentially allowing the establishment of additional invasive species
10 and deterioration of natural features and systems rather than the desired maintenance, preservation,
11 and enhancement of ecosystems. Consequently, Alternative 1 is the Preferred Alternative.

3 Affected Environment and Environmental Consequences

This chapter presents a description of the environmental resources and baseline conditions that could be affected from implementing any of the alternatives and an analysis of the potential direct and indirect effects of each alternative.

All potentially relevant environmental resource areas were initially considered for analysis in this Environmental Assessment (EA). In compliance with National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ), and 32 Code of Federal Regulation (CFR) part 775 guidelines, this discussion of the affected environment (i.e., existing conditions) focuses only on those resource areas potentially subject to impacts. Additionally, the level of detail used in describing a resource is commensurate with the anticipated level of potential environmental impact.

“Significantly,” as used in NEPA, requires considerations of both context and intensity. Context means that the significance of an action must be analyzed in several contexts such as society as a whole (e.g., human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of a proposed action. For instance, in the case of a site-specific action, significance would usually depend on the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant (40 CFR part 1508.27). Intensity refers to the severity or extent of the potential environmental impact, which can be thought of in terms of the potential amount of the likely change. In general, the more sensitive the context, the less intense a potential impact needs to be in order to be considered significant. Likewise, the less sensitive the context, the more intense a potential impact would be expected to be.

This section includes air quality, water resources, geological resources (geology, topography, and soils), biological resources (vegetation, wildlife and aquatic resources and rare, threatened, and endangered species), cultural resources, public health and safety, hazardous materials and wastes, socioeconomics, and environmental justice.

The potential impacts on the following resource areas are considered to be negligible or non-existent, so they were not analyzed in detail in this EA:

Land Use: The proposed implementation of the Integrated Environmental Natural Resources Management Plan (INRMP) would not affect the use of Townsend Bombing Range (TBR) as a military training range. The training mission would be the primary focus of TBR, and no activities included in the INRMP may jeopardize that mission.

Visual Resources: The proposed implementation of the INRMP would not affect any components of the natural environment as perceived through the visual sense (i.e., aesthetic resources).

Airspace: The proposed implementation of the INRMP would not affect any components of the airspace.

Noise: The proposed implementation of the INRMP would not affect nor be affected by the noise environment at TBR.

Infrastructure: The proposed implementation of the INRMP would not affect any components of infrastructure including utilities (including water distribution, wastewater collection, stormwater collection, solid waste management, energy, and communications), and facilities.

1 **Transportation:** All on-range roads are owned and managed by United States (U.S.) Marine Corps
2 (USMC). These roads provide for vehicle circulation through a series of largely unpaved dirt roads
3 totaling approximately 24 miles. The proposed implementation of the INRMP would not affect the on-
4 range roads at TBR.

5 **Public Health and Safety:** The proposed implementation of the INRMP would not conduct or support
6 any activities, occurrences, or operations that have the potential to affect the safety, well-being, or
7 health of members of the general public. However, properly managed prescribed burns would be
8 conducted.

9 **Hazardous Materials and Wastes:** The proposed implementation of the INRMP would not contribute
10 any components of hazardous materials, hazardous waste, toxic substances, and contaminated sites.

11 **3.1 Air Quality**

12 This discussion of air quality includes criteria pollutants, standards, sources, permitting, and greenhouse
13 gases (GHGs). Air quality in a given location is defined by the concentration of various pollutants in the
14 atmosphere. A region's air quality is influenced by many factors, including the type and amount of
15 pollutants emitted into the atmosphere, the size and topography of the air basin, and the prevailing
16 meteorological conditions.

17 Most air pollutants originate from human-made sources, including mobile sources (e.g., cars, trucks,
18 buses) and stationary sources (e.g., factories, refineries, power plants), as well as indoor sources (e.g.,
19 some building materials and cleaning solvents). Air pollutants are also released from natural sources
20 such as volcanic eruptions and forest fires.

21 **3.1.1 Regulatory Setting**

22 **Criteria Pollutants and National Ambient Air Quality Standards**

23 The principal pollutants defining the air quality, called "criteria pollutants," include carbon monoxide
24 (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone, suspended particulate matter less than or
25 equal to 10 microns in diameter (PM₁₀), fine particulate matter less than or equal to 2.5 microns in
26 diameter (PM_{2.5}), and lead (Pb). CO, SO₂, Pb, and some particulates are emitted directly into the
27 atmosphere from emissions sources. Ozone, NO₂, and some particulates are formed through
28 atmospheric chemical reactions that are influenced by weather, ultraviolet light, and other atmospheric
29 processes.

30 Under the Clean Air Act, the U.S. Environmental Protection Agency (USEPA) has established National
31 Ambient Air Quality Standards (NAAQS) (40 CFR part 50) for these pollutants. NAAQS are classified as
32 primary or secondary. Primary standards protect against adverse health effects; secondary standards
33 protect against welfare effects, such as damage to farm crops and vegetation and damage to buildings.
34 Some pollutants have long-term and short-term standards. Short-term standards are designed to
35 protect against acute, or short-term, health effects, while long-term standards were established to
36 protect against chronic health effects.

37 Areas that are and have historically been in compliance with the NAAQS are designated as attainment
38 areas. Areas that violate a Federal air quality standard are designated as nonattainment areas. Areas
39 that have transitioned from nonattainment to attainment are designated as maintenance areas and are
40 required to adhere to maintenance plans to ensure continued attainment.

1 The Clean Air Act requires states to develop a general plan to attain and maintain the NAAQS in all areas
2 of the country and a specific plan to attain the standards for each area designated nonattainment for a
3 NAAQS. These plans, known as State Implementation Plans, are developed by state and local air quality
4 management agencies and submitted to USEPA for approval.

5 **3.1.2 General Conformity**

6 The USEPA General Conformity Rule applies to Federal actions occurring in nonattainment or
7 maintenance areas when the total direct and indirect emissions of nonattainment pollutants (or their
8 precursors) exceed specified thresholds. The emissions thresholds that trigger requirements for a
9 conformity analysis are called *de minimis* levels. *De minimis* levels (in tons per year [tpy]) vary by
10 pollutant and also depend on the severity of the nonattainment status for the air quality management
11 area in question.

12 A conformity applicability analysis is the first step of a conformity evaluation and assesses if a Federal
13 action must be supported by a conformity determination. This is typically done by quantifying applicable
14 direct and indirect emissions that are projected to result due to implementation of the Federal action.
15 Indirect emissions are those emissions caused by the Federal action and originating in the region of
16 interest but that can occur at a later time or in a different location from the action itself and are
17 reasonably foreseeable. The Federal agency can control and will maintain control over the indirect
18 action due to a continuing program responsibility of the Federal agency. Reasonably foreseeable
19 emissions are projected future direct and indirect emissions that are identified at the time the
20 conformity evaluation is performed. The location of such emissions is known and the emissions are
21 quantifiable, as described and documented by the Federal agency based on its own information and
22 after reviewing any information presented to the Federal agency. If the results of the applicability
23 analysis indicate that the total emissions would not exceed the *de minimis* emissions thresholds, then
24 the conformity evaluation process is completed (Table 3-1).

25 **3.1.3 Greenhouse Gases**

26 GHGs are gas emissions that trap heat in the atmosphere. These emissions occur from natural processes
27 and human activities. Scientific evidence indicates a trend of increasing global temperature over the
28 past century due to an increase in GHG emissions from human activities. The climate change associated
29 with this global warming is predicted to produce negative economic and social consequences across the
30 globe.

31 Revised draft guidance from CEQ, dated December 18, 2014, recommends that agencies consider both
32 the potential effects of a proposed action on climate change, as indicated by its estimated GHG
33 emissions, and the implications of climate change for the environmental effects of a proposed action.
34 The guidance also emphasizes that agency analyses should be commensurate with projected GHG
35 emissions and climate impacts, and should employ appropriate quantitative or qualitative analytical
36 methods to ensure that useful information is available to inform the public and the decision-making
37 process in distinguishing between alternatives and mitigations. It recommends that agencies consider
38 25,000 metric tons of carbon dioxide equivalent emissions on an annual basis as a reference point below
39 which a quantitative analysis of GHGs is not recommended unless it is easily accomplished based on
40 available tools and data.

41 The USEPA issued the Final *Mandatory Reporting of Greenhouse Gases Rule* on September 22, 2009.
42 GHGs covered under the Final *Mandatory Reporting of Greenhouse Gases Rule* are carbon dioxide (CO₂),

1 methane, nitrogen oxide (NO_x), hydrofluorocarbons, perfluorocarbons, sulfur hexafluoride, and other
 2 fluorinated gases including nitrogen trifluoride and hydrofluorinated ethers. Each GHG is assigned a
 3 global warming potential. The global warming potential is the ability of a gas or aerosol to trap heat in
 4 the atmosphere. The global warming potential rating system is standardized to CO₂, which has a value of
 5 one.

Table 3-1. General Conformity *de minimis* levels

Pollutant	Area Type	tpy
Ozone (Volatile Organic Compounds [VOC] or NO _x)	Serious nonattainment	50
	Severe nonattainment	25
	Extreme nonattainment	10
	Other areas outside an ozone transport region	100
Ozone (NO _x)	Marginal and moderate nonattainment inside an ozone transport region	100
	Maintenance	100
Ozone (VOC)	Marginal and moderate nonattainment inside an ozone transport region	50
	Maintenance within an ozone transport region	50
	Maintenance outside an ozone transport region	100
Carbon monoxide, SO ₂ and NO ₂	All nonattainment and maintenance	100
PM ₋₁₀	Serious nonattainment	70
	Moderate nonattainment and maintenance	100
PM _{2.5} Direct emissions, SO ₂ , NO _x (unless determined not to be a significant precursor), VOC, or ammonia (if determined to be significant precursors)	All nonattainment and maintenance	100
Lead (Pb)	All nonattainment and maintenance	25

6 Source: Department of Navy (Navy)

7 The equivalent CO₂ rate is calculated by multiplying the emissions of each GHG by its global warming
 8 potential and adding the results together to produce a single, combined emissions rate representing all
 9 GHGs. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of mobile sources and
 10 engines, and facilities that emit 25,000 metric tons (27,557 tons) or more per year of GHG emissions as
 11 carbon dioxide equivalent are required to submit annual reports to USEPA.

12 In an effort to reduce energy consumption, reduce GHGs, reduce dependence on petroleum, and
 13 increase the use of renewable energy resources, the Navy has implemented a number of renewable
 14 energy projects. The Navy has established Fiscal Year 2020 GHG emissions reduction targets of 34
 15 percent from a Fiscal Year 2008 baseline for direct GHG emissions and 13.5 percent for indirect

1 emissions. Examples of Navy-wide GHG reduction projects include energy efficient construction, thermal
2 and photovoltaic solar systems, geothermal power plants, and the generation of electricity with wind
3 energy. The Navy continues to promote and install new renewable energy projects.

4 **3.1.4 Affected Environment**

5 The existing emissions sources at TBR include fire (prescribed and wild); vehicle and equipment use;
6 inert ordnance delivery; land disturbance activities, which occur during some range maintenance
7 activities (e.g., raking the strafe pit); and aircraft operations. Of these sources, the highest levels of
8 emissions are particulates and CO emitted from prescribed and wildfires. All prescribed fires at TBR are
9 undertaken in accordance with guidance established by the Georgia Forestry Commission (GFC). This
10 guidance alleviates air quality impacts by calling for fires to be set under predetermined conditions that
11 have been chosen to reduce the drift of smoke across occupied land. Under the TBR prescribed fire
12 program, a maximum of 8,270 acres of forested area are estimated to be burned annually, and
13 approximately 380 acres of the developed areas of TBR (primarily the air-to-ground target area) would
14 be burned annually. Wildfires burn less than 1 acre per year as a result of prompt response by TBR fire
15 crews (USMC, 2007). Further, the prescribed fire program lessens the potential for wildfires and
16 therefore reduces unmanaged air emissions. However, the forested areas at TBR could be subject to
17 wildfires particularly during drought conditions.

18 **3.1.5 Environmental Consequences**

19 Effects on air quality are based on estimated direct and indirect emissions associated with the action
20 alternatives. The region of influence (ROI) for assessing air quality impacts is the air basin in which the
21 project is located, TBR. Estimated emissions from a proposed Federal action are typically compared with
22 the relevant national and state standards to assess the potential for increases in pollutant
23 concentrations. Prescribed fires are projected to be the largest emissions contributor to air quality
24 impacts at TBR.

25 **3.1.5.1 No Action Alternative**

26 Under the No Action Alternative, the Proposed Action would not occur and there would be no change to
27 baseline air quality. Annual GHG emissions would fall well below the CEQ threshold of 25,000 metric
28 tons. Therefore, no significant impacts on air quality or air resources would occur with implementation
29 of the No Action Alternative.

30 **3.1.5.2 Medium-Intensity Management Alternative (Preferred Alternative)**

31 Implementation of the Medium-Intensity Management alternative would support all the projects under
32 the five management objectives (forest management, fish and wildlife management, land management,
33 management of outdoor recreational opportunities, and training) of the TBR INRMP.

34 Prescribed burning is the largest source of air emissions at TBR and is likely to continue to be for the
35 newly acquired lands. Prescribed burning is part of the USMC's ongoing ecosystem management
36 program at TBR. Under the TBR prescribed fire program, an estimated 8,650 acres of land are subject to
37 prescribed burning on an annual basis. The potential emissions associated with prescribed fires under
38 the Medium-Intensity Management Alternative are summarized in Table 3-2.

Table 3-2. Prescribed Fire Emissions

	<i>VOC</i> (<i>tpy</i>)	<i>CO</i> (<i>tpy</i>)	<i>PM₁₀</i> (<i>tpy</i>)	<i>PM_{2.5}</i> (<i>tpy</i>)
Medium-Intensity Management Alternative	104	7,224	1,317	1,317

Source: MCAS 2013

Key: tpy = tons per year.

1 Federal land managers recognize prescribed fire as a valuable tool; they also recognize that emissions
 2 from prescribed fire can be a significant source of air pollution. Smoke particles are in the size range
 3 ($PM_{2.5}$) that plays a significant role in visibility impairment. Particulate matter is the main pollutant of
 4 concern from smoke because it can cause serious health problems, especially for people with
 5 respiratory illness (Federal Land Managers' Air Quality Related Values Work Group [FLAG], 2010). The
 6 increased use of prescribed fires may increase the frequency of air quality impacts on local residents.
 7 During prescribed fires, emissions of particulate matter and other air pollutants would likely increase
 8 ambient air pollutant concentrations in areas downwind of the fire locations. Those likely to be
 9 impacted most are those residences and other receptors located in proximity to the areas of the town of
 10 Townsend. In addition, particulate emissions may temporarily decrease visibility, which can be a concern
 11 on roads near the acquisition areas.

12 Although prescribed burning is an appreciable source of air emissions, it is a critical management tool
 13 for fire-dependent natural communities, and its benefits are well understood. It reduces naturally
 14 occurring fuels within forest areas, helping to prevent catastrophic wildfires; it provides an affordable,
 15 environmentally sound method for preparing an area for seeding or planting; it helps to control or
 16 eliminate some disease in pines or other species; it is an efficient and economical tool for improving the
 17 habitat for certain wildlife species; and it is an irreplaceable process in maintaining biological diversity
 18 and balance. Prescribed fire allows the land manager to mimic natural fire return intervals under
 19 controlled conditions where smoke management can minimize air quality impacts. The alternative is
 20 wildfires, which can be very difficult to control and may cause much more severe air quality impacts
 21 (FLAG, 2010). As one component of fire management, prescribed fire is used to alter, maintain, or
 22 restore vegetative communities; achieve desired resource conditions; and protect life, property, and
 23 values that would be degraded or destroyed by wildfire (U.S. Department of Agriculture [USDA] and U.S.
 24 Department of Interior, 2008).

25 Prescribed burning is a land management tool used for multiple landscape objectives. A modeling
 26 assessment suggests that using prescribed fire to minimize wildfires can result in a net reduction in fine
 27 particle ($PM_{2.5}$) emissions in the long-term (FLAG 2010). In the Pacific Northwest, wildfire emissions
 28 were found to be greater than prescribed fire emissions in the same airshed (Ottmar, 1996).

29 All prescribed burning at TBR would be conducted in accordance with guidance established by the GFC,
 30 the state agency responsible for the protection and conservation of Georgia's forest resources. GFC
 31 guidance alleviates air quality impacts by calling for fires to be set under predetermined conditions that
 32 have been chosen to reduce the drift of smoke across occupied land. Georgia's smoke management plan
 33 (Georgia Department of Natural Resources [GADNR], 2008) details Georgia's basic framework of
 34 procedures and requirements for managing prescriptive fires. The GADNR and the GFC developed this
 35 plan with cooperation from Federal military bases located in Georgia, the U.S. Fish and Wildlife Service
 36 (USFWS), and groups and associations representing environmental interests or private individuals in
 37 Georgia. The plan includes the following components to reduce citizen's exposure to air pollution,

1 impaired visibility, and nuisance caused by prescribed fire smoke: smoke mitigation (including avoiding
2 smoke sensitive areas, selecting good smoke dispersion conditions, and managing released emissions),
3 smoke dispersion evaluation, public notification, and air quality monitoring. In addition, the GFC offers
4 assistance with prescribed burning and writing a burn plan, provides a certification program for those
5 who practice prescribed burning, and issues burn permits.

6 Annual GHG emissions would fall well below the CEQ threshold of 25,000 metric tons (27,557 tons). This
7 limited amount of emissions would not likely contribute to global warming to any discernible extent.
8 Therefore, implementation of the Preferred Alternative would not result in significant impacts on air
9 quality.

10 **3.1.5.3 Low-Intensity Management Alternative**

11 Implementation of the Low-Intensity Management Alternative would support all the projects under the
12 five management objectives (forest management, fish and wildlife management, land management,
13 management of outdoor recreational opportunities, and training) except for the GIS Database
14 Management stewardship project identified in the TBR INRMP. Operational and prescribed burn
15 management activities would result in the same air quality impacts as described for the Preferred
16 Alternative, and thus the annual GHG emissions would fall well below the CEQ threshold of 25,000
17 metric tons (27,557 tons). Therefore, implementation of this action alternative would not result in
18 significant impacts on air quality.

19 **3.2 Water Resources**

20 This discussion of water resources includes groundwater, surface water, wetlands, and floodplains. This
21 section discusses the physical characteristics of water resources; wildlife and vegetation are addressed
22 in Section 3.4, Biological Resources.

23 Groundwater is water that flows or seeps downward and saturates soil or rock, supplying springs and
24 wells.

25 Surface water resources generally consist of wetlands, lakes, rivers, and streams. Surface water is
26 important for its contributions to the economic, ecological, recreational, and human health of a
27 community or locale. A Total Maximum Daily Load is the maximum amount of a substance that can be
28 assimilated by a water body without causing impairment. A water body can be deemed impaired if
29 water quality analyses conclude that exceedances of water quality standards occur.

30 Wetlands are jointly defined by USEPA and U.S. Army Corps of Engineers (USACE) as “those areas that
31 are inundated or saturated by surface or ground water at a frequency and duration sufficient to support,
32 and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in
33 saturated soil conditions.” Wetlands generally include “swamps, marshes, bogs and similar areas.”
34 (USACE 2008)

35 Floodplains are areas of low-level ground present along rivers, stream channels, large wetlands, or
36 coastal waters. Floodplain ecosystem functions include natural moderation of floods, flood storage and
37 conveyance, groundwater recharge, and nutrient cycling. Floodplains also help to maintain water quality
38 and are often home to a diverse array of plants and animals. In their natural vegetated state, floodplains
39 slow the rate at which the incoming overland flow reaches the main water body. Floodplain boundaries
40 are most often defined in terms of frequency of inundation (i.e., the 100-year and 500-year flood).

1 Floodplain delineation maps are produced by the Federal Emergency Management Agency and provide
2 a basis for comparing the locale of the Proposed Action to the floodplains.

3 **3.2.1 Regulatory Setting**

4 Groundwater quality and quantity are regulated under several statutes and regulations, including the
5 Safe Drinking Water Act. The Clean Water Act (CWA) establishes Federal limits, through the National
6 Pollutant Discharge Elimination System (NPDES) program, on the amounts of specific pollutants that can
7 be discharged into surface waters to restore and maintain the chemical, physical, and biological integrity
8 of the water. The NPDES program regulates the discharge of point (i.e., end of pipe) and nonpoint
9 sources (i.e., stormwater) of water pollution.

10 Waters of the United States are defined as (1) traditional navigable waters, (2) wetlands adjacent to
11 navigable waters, (3) nonnavigable tributaries of traditional navigable waters that are relatively
12 permanent where the tributaries typically flow perennially or have continuous flow at least seasonally
13 (e.g., typically 3 months), and (4) wetlands that directly abut such tributaries under Section 404 of the
14 CWA, as amended, and are regulated by USEPA and the USACE. The CWA requires that Georgia establish
15 a Section 303(d) list to identify impaired waters and establish Total Daily Maximum Loads for the
16 sources causing the impairment.

17 Wetlands are currently regulated by the USACE under Section 404 of the CWA as a subset of all “Waters
18 of the United States.” The term “Waters of the United States” has a broad meaning under the CWA and
19 incorporates deepwater aquatic habitats and special aquatic habitats, including wetlands. Jurisdictional
20 Waters of the United States regulated under the CWA include coastal and inland waters, lakes, rivers,
21 ponds, streams, intermittent streams, and “other” waters that, if degraded or destroyed, could affect
22 interstate commerce. The full regulatory definition of Waters of the United States is provided in the
23 CWA. Executive Order (EO) 11990, *Protection of Wetlands*, requires that Federal agencies adopt a policy
24 to avoid, to the extent possible, long- and short-term adverse impacts associated with destruction and
25 modification of wetlands and to avoid the direct and indirect support of new construction in wetlands
26 whenever there is a practicable alternative.

27 Section 404 of the CWA authorizes the Secretary of the Army, acting through the Chief of Engineers, to
28 issue permits for the discharge of dredge or fill into wetlands and other Waters of the United States. Any
29 discharge of dredge or fill into Waters of the United States requires a permit from the USACE.

30 Section 438 of the Energy Independence and Security Act establishes stormwater design requirements
31 for development and redevelopment projects. Under these requirements, Federal facility projects larger
32 than 5,000 square feet must “maintain or restore, to the maximum extent technically feasible, the
33 predevelopment hydrology of the property with regard to the temperature, rate, volume, and duration
34 of flow.”

35 The Georgia NPDES stormwater program requires construction site operators engaged in clearing,
36 grading, and excavating activities that disturb 1 acre or more to obtain coverage under an NPDES
37 Construction General Permit for stormwater discharges. Construction or demolition that necessitates an
38 individual permit also requires preparation of a Notice of Intent to discharge stormwater and a
39 Stormwater Pollution Prevention Plan (SWPPP) that is implemented during construction. As part of the
40 2010 Final Rule for the CWA, titled *Effluent Limitations Guidelines and Standards for the Construction
41 and Development Point Source Category*, activities covered by this permit must implement non-numeric
42 erosion and sediment controls and pollution prevention measures.

1 Section 10 of the Rivers and Harbors Act provides for USACE permit requirements for any in-water
2 construction. The USACE and some states require a permit for any in-water construction. Permits are
3 required for construction of piers, wharfs, bulkheads, pilings, marinas, docks, ramps, floats, moorings,
4 and like structures; construction of wires and cables over the water, and pipes, cables, or tunnels under
5 the water; dredging and excavation; any obstruction or alteration of navigable waters; depositing fill and
6 dredged material; filling of wetlands adjacent or contiguous to waters of the U.S.; construction of riprap,
7 revetments, groins, breakwaters, and levees; and transportation of dredged material for dumping into
8 ocean waters.

9 The National Wild and Scenic Rivers System was created by Congress in 1968 to preserve certain rivers
10 with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment
11 of present and future generations. The Wild and Scenic Rivers Act is notable for safeguarding the special
12 character of these rivers, while also recognizing the potential for their appropriate use and
13 development. It encourages river management that crosses political boundaries and promotes public
14 participation in developing goals for river protection.

15 EO 11988, *Floodplain Management*, requires Federal agencies to avoid, to the extent possible, the long-
16 and short-term adverse impacts associated with the occupancy and modification of floodplains and to
17 avoid direct and indirect support of floodplain development unless it is the only practicable alternative.
18 The flood potential of a site is usually determined by the 100-year floodplain, which is defined as the
19 area that has a 1 percent chance of inundation by a flood event in a given year.

20 The Coastal Zone Management Act (CZMA) provides assistance to states, in cooperation with Federal
21 and local agencies, for developing land and water use programs in coastal zones. Section 307 of the
22 CZMA stipulates that where a Federal project initiates reasonably foreseeable effects on any coastal use
23 or resource (land or water use, or natural resource), the action must be consistent to the maximum
24 extent practicable with the enforceable policies of the affected state's Federally approved coastal
25 management plan. The Georgia Coastal Management Program (GCMP) of the Coastal Resources
26 Division, GADNR is the lead agency for coastal management and is responsible for enforcing the State's
27 Federally approved coastal management plan. However, Federal lands, which are "lands the use of
28 which is by law subject solely to the discretion of...the Federal Government, its officers, or agents," are
29 statutorily excluded from the State's "coastal zone". If, however, the proposed Federal activity affects
30 coastal resources or uses beyond the boundaries of the Federal property (i.e., has spillover effects), the
31 CZMA Section 307 Federal consistency requirement applies. As a Federal agency, the Navy is required to
32 determine whether its proposed activities would affect the coastal zone. This takes the form of either a
33 Negative Determination or a Consistency Determination.

34 **3.2.2 Affected Environment**

35 The following discussions provide a description of the existing conditions for each of the categories
36 under water quality resources at TBR.

37 **3.2.2.1 Groundwater**

38 Contrasting geologic features and landforms of the physiographic provinces of Georgia affect the
39 quantity and quality of groundwater throughout the state. The most productive aquifers in Georgia are
40 in the Coastal Plain Physiographic Province in the southern half of the state. The Coastal Plain is
41 underlain by alternating layers of sand, clay, dolomite, and limestone that dip and thicken to the
42 southeast. Coastal Plain aquifers generally are confined, except near their northern limits where they

1 crop out or are near land surface. Aquifers in the Coastal Plain that lie beneath TBR include the surficial
2 aquifer system, Brunswick aquifer system, and the Floridan aquifer system (MCAS, 2013) (Table 3-3).

Table 3-3. Description of Aquifers under TBR

Aquifer Name	Aquifer Description	Well Characteristics		
		Depth (feet)	Yield (gallons/minute)	
			Typical Range	Typical Range
Surficial	Unconsolidated sediments and residuum; generally unconfined	11-300	2-25	75
Brunswick	Phosphatic and dolomitic quartz sand; generally confined	85-390	10-30	180
Floridan	Limestone, dolomite, and calcareous sand; generally confined	40-900	1,000-5,000	11,000

3 The surficial aquifer system is the primary source of water for domestic and livestock supply in rural
4 areas. Water-level fluctuations are caused mainly by variations in precipitation, evapotranspiration, and
5 natural drainage or discharge. Water levels generally rise rapidly during wet periods and decline slowly
6 during dry periods. Prolonged droughts may cause water levels to decline below pump intakes in
7 shallow wells, particularly those located on hilltops and steep slopes, resulting in temporary well
8 failures. Usually, well yields are restored by precipitation.

9 The Brunswick Aquifer System is not a major source of water in coastal Georgia, but is considered a
10 supplemental water supply to the Upper Floridan Aquifer. The Brunswick Aquifer System may respond
11 to pumping from the Upper Floridan aquifer as a result of the hydraulic connection between the
12 aquifers. Elsewhere, the water level mainly responds to seasonal variations in recharge and discharge.

13 The Upper and Lower Floridan aquifers supply about 50 percent of groundwater in Georgia. In and near
14 outcrop areas, the aquifers are semiconfined, and water levels in wells tapping the aquifers fluctuate
15 seasonally in response to variations in recharge rate and pumping.

16 3.2.2.2 Surface Water

17 As delineated in the national Watershed Boundary Database, most of TBR lies within the Ogeechee River
18 Basin, Ogeechee River Coastal subbasin (Hydrologic Unit Code 03060204), and a portion of TBR near the
19 western boundary lies within the Altamaha River Basin, Altamaha River subbasin (Hydrologic Unit Code
20 03070106) (USDA Natural Resource Conservation Service [NRCS], U.S. Geological Survey [USGS], and
21 USEPA, 2014). Surface waters in these basins generally flow in a southeasterly direction and terminate in
22 the Atlantic Ocean. Surface waters on TBR were identified using data from the National Hydrography
23 Dataset (USGS 2010) and on-site field surveys of target areas. TBR surface waters include intermittent
24 and perennial natural streams, ditches, man-made canals, forested sloughs, and upland depressions
25 (Figure 3-1). TBR can be delineated as three separate watersheds: Upper South Newport River, Young
26 Swamp-Buck Hill Swamp, and Snuff Box Swamp-Buffalo Swamp. The Upper South Newport River
27 watershed drains the northern portion of TBR and flows northeastward into the South Newport River,
28 which empties into Sapelo Sound near the north end of Sapelo Island.

29 The Tram Road Canal in the Young Swamp-Buck Hill Swamp watershed drains the central portion of TBR
30 and also flows southeastward into Snuff Box Swamp. Snuff Box Canal drains the portion of TBR

1 southwest of State Highway 57 as it flows southeastward into Snuffbox Swamp. Snuffbox Swamp drains
2 into Cathead Creek, which drains into the Darien River. The Darien River flows into the Rockedundy
3 River, which empties into Dobby Sound off the south tip of Sapelo Island. Some portion of the surface
4 water on the southwestern portion of TBR may drain directly into the Altamaha River. TBR also contains
5 depressions that may hold water seasonally. Some of these depressions are isolated and some have
6 been artificially connected to intermittent and permanent streams via ditches.

7 **3.2.2.3 Wetlands**

8 In general terms, wetlands are lands on which water covers the soil or is present either at or near the
9 surface of the soil or within the root zone all year or for varying periods of time during the year,
10 including the growing season. The USACE (Federal Register [FR], Section 328.3[b], 1991) and the USEPA
11 (FR, Section 230.4[t], 1991) jointly define jurisdictional wetlands as "...those areas that are inundated or
12 saturated by surface or ground water at a frequency and duration sufficient to support, and that under
13 normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil
14 conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (USACE, 2008).

15 The USACE definition relies on three key parameters – hydrology, soil, and vegetation – which must all
16 occur and meet the defined characteristics in order for a location to be classified as a wetland. The
17 current extent of jurisdictional wetlands on TBR has been estimated based on the USFWS National
18 Wetlands Inventory (NWI) and on-site field surveys (Figure 3-2).

19 Approximately 16 percent of TBR lands within McIntosh County are wetlands and approximately 23
20 percent of TBR lands within Long County are wetlands. Wetlands can be classified using the Cowardin
21 System, which is a system based on water flow (i.e., marine, estuarine, riverine, lacustrine, or
22 palustrine), vegetation physiognomy, hydrology, and salinity. Although species composition of the
23 vegetation dominating a particular wetland can be used to further subdivide any given category using
24 the Cowardin system (Cowardin et al., 1979), classification of wetlands on TBR has not been completed
25 to this detail. The habitats supported by jurisdictional wetlands are managed as terrestrial habitats and
26 are classified using the system described in the INRMP.

27 **3.2.2.4 Floodplains**

28 The Federal Emergency Management Agency (FEMA, 2009a) defines floodplains as areas subject to a 1
29 percent or greater chance of flooding in any given year (formerly referred to as the "100-year
30 floodplain"). Floodplains are low, relatively flat areas adjoining inland and coastal waters. Extensive
31 floodplain areas exist in the vicinity of TBR (Figure 3-3) because of its slight elevation above mean sea
32 level (amsl) and the relatively flat topographic relief of the land surface. Note that floodplain data are
33 not available for Long County, Georgia.

34 Current FEMA maps show that areas predicted to be subject to a 100-year flood event on TBR lie
35 between 6 feet and 14 feet amsl (National Geodetic Vertical Datum, 1988). Portions of low-lying
36 environments within TBR are within the 100-year floodplain (FEMA, 2008; FEMA, 2009b). Floodplain
37 areas are associated with Big Mortar Swamp and the floodplain of the Altamaha River. Floodplain areas
38 associated with Big Bay Swamp are predominantly within McIntosh County.

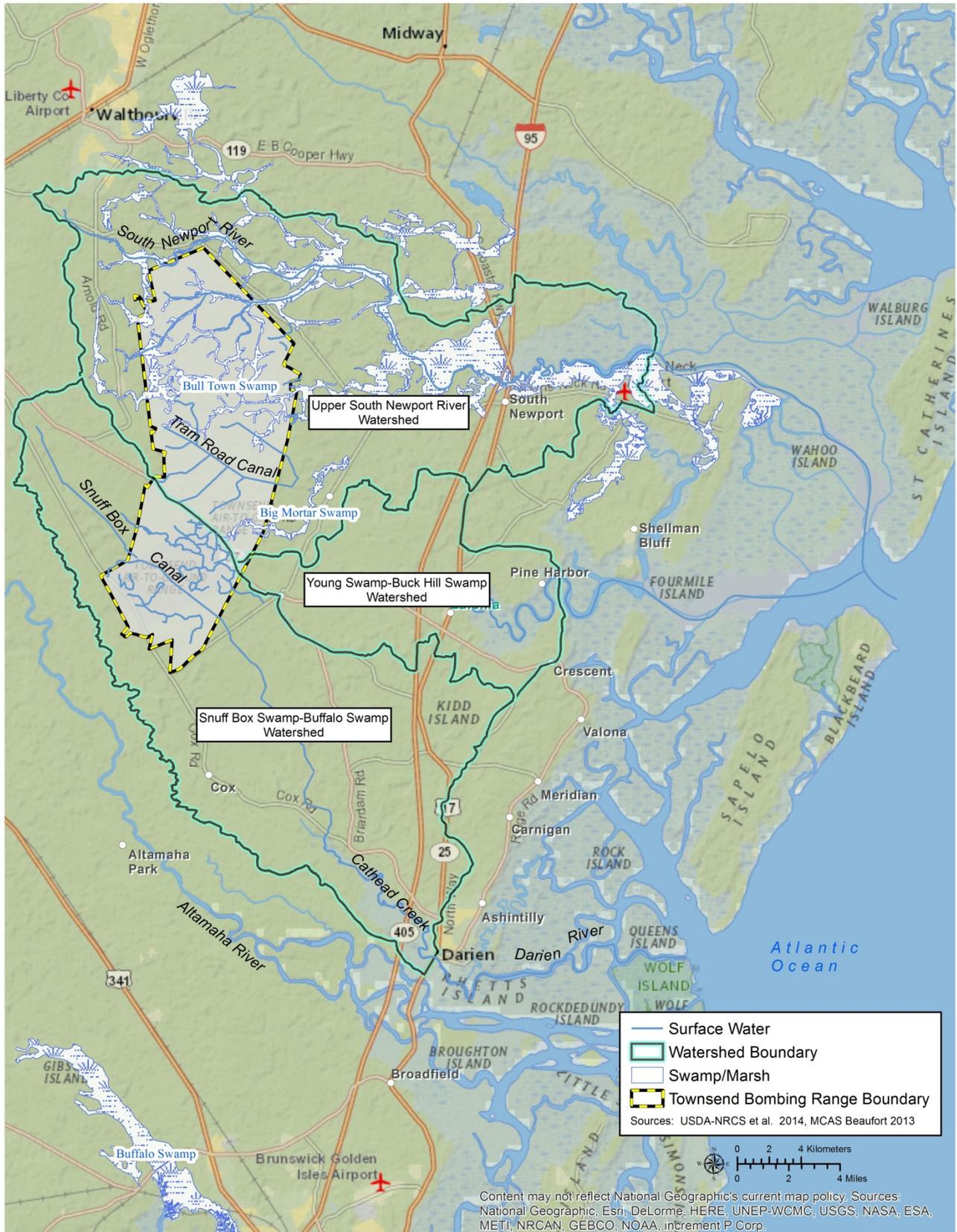


Figure 3-1. Surface Water Map



Figure 3-2. Wetland Map

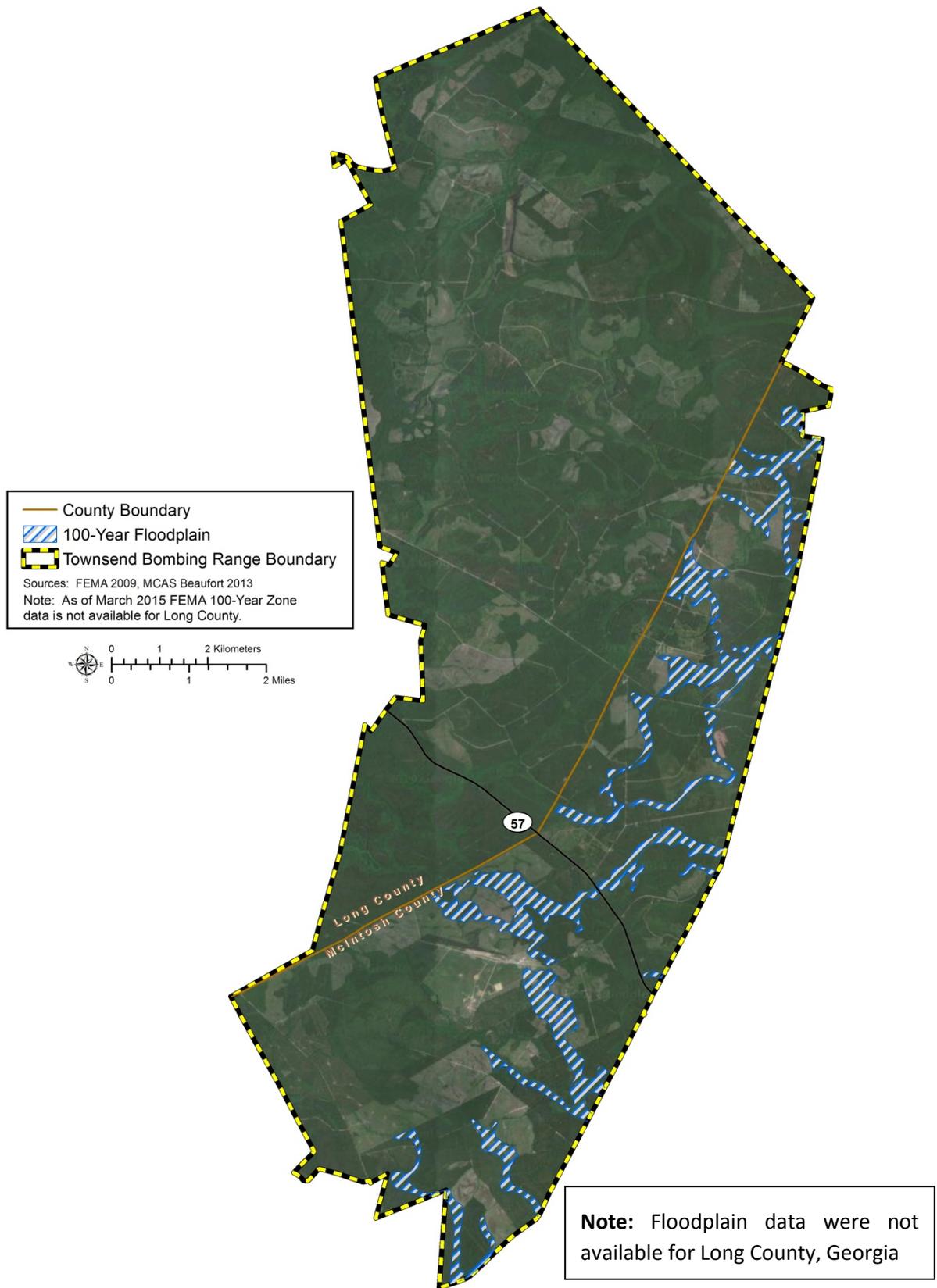


Figure 3-3. Floodplain Map

1 **3.2.3 Environmental Consequences**

2 Direct impacts on surface waters would be associated with the construction of firebreaks. Impacts
3 associated with the construction of firebreaks have been assessed in the 2013 TBR Environmental
4 Impact Statement (MCAS, 2013). Indirect impacts on streams would include conversion impacts on
5 vegetation adjacent to the stream. Currently, existing vegetation provides protection of stream function
6 as it reduces sediment runoff into the stream, provides shade to limit water temperatures, and serves as
7 habitat for riparian wildlife in the area.

8 Any non-exempt, direct or indirect impacts on surface waters would require permits from the USACE
9 under Section 404 of the CWA and under the NPDES regulated by the GA Environmental Protection
10 Division.

11 **3.2.3.1 No Action Alternative**

12 Under the No Action Alternative, the Proposed Action would not occur and there would be no change to
13 baseline water resources. Therefore, no significant impacts on water resources would occur with
14 implementation of the No Action Alternative.

15 **3.2.3.2 Medium-Intensity Management Alternative (Preferred Alternative)**

16 The activities associated with the implementation of the Preferred Alternative would not disturb or alter
17 groundwater located below TBR. Herbicide applications would be implemented in strict compliance with
18 manufacturer's guidelines and USEPA's regulations; thus, no impacts on groundwater quality would be
19 expected. None of the other activities associated with the Preferred Alternative would require ground
20 disturbances that would alter hydraulic or hydrologic flow within the aquifer or require additional
21 withdrawal from groundwater supplies.

22 Activities that could affect the surface waters and floodplains include operations that clear the woody
23 debris and blockages in the streams, rivers, canals, and ditches on TBR (e.g., removal of beaver dams).
24 Clearing streams of fallen trees and logs or removing woody debris from ditches and canals (Tram Road
25 Canal and Snuff Box Canal) would help reduce the potential for backwater flooding in the upper reaches
26 of the South Newport River. This effort is the responsibility of the operational and maintenance
27 program, but should be accomplished in concert with the Natural Resources Manager and affected
28 Federal agencies and GADNR departments. There are no projects directly related to floodplain
29 management.

30 However, no structures would be constructed and no management activity would be implemented that
31 would increase flood risks, duration, frequency, or water surface elevation within the Upper South
32 Newport River Watershed or the Snuff Box Swamp-Buffalo Swamp Watershed. Only an extremely
33 limited portion of TBR lies within the Young Swamp-Buck Hill Swamp Watershed.

34 The INRMP objectives are to achieve no net loss of wetlands and maintain wetland habitat quality while
35 supporting the training mission. Maintenance of protective buffer strips or corridors around wetlands
36 and along streams would likely occur under the Preferred Alternative. This would help ensure
37 compliance with Federal, state, and local laws, and Department of Defense (DoD) policy and instruction
38 that protect wetlands. MCAS Beaufort, in cooperation with the Marine Aircraft Group 31, would also
39 identify mitigation opportunities that could be implemented to offset future impacts, thereby reducing
40 compensatory mitigation ratios and avoiding project delays.

1 A Coastal Consistency Determination was prepared and submitted to GCMP of the Coastal Resources
2 Division, GADNR. The USMC is awaiting a Federal consistency certification from GADNR on its Coastal
3 Consistency Determination that INRMP projects are consistent to the maximum extent practicable with
4 the relevant enforceable policies of the GCMP. Analysis of effects determined that there would be no
5 impacts on the land or water uses or natural resources of the coastal zone. Therefore, implementation
6 of the Preferred Alternative would not result in significant impacts on water resources.

7 **3.2.3.3 Low-Intensity Management Alternative**

8 Implementation of the Low-Intensity Management Alternative would support all the projects under the
9 five management objectives (forest management, fish and wildlife management, land management,
10 management of outdoor recreational opportunities, and training) except for the GIS Database
11 Management stewardship project identified in the TBR INRMP. Without this GIS framework and
12 database, TBR would retain an incomplete inventory of the range's natural resources, including the
13 location of all wetlands, whereby potentially allowing some remaining woody debris and blockages in
14 the streams, rivers, canals, and ditches on TBR and deterioration of natural features and systems rather
15 than the desired maintenance, preservation, and enhancement of ecosystems. Construction and
16 management activities associated with firebreaks would result in the same water resources impacts as
17 described for the Preferred Alternative. Therefore, implementation of this action alternative would not
18 result in significant impacts on water resources.

19 **3.3 Geological Resources**

20 This discussion of geological resources includes topography, geology, and soils of TBR. Topography is
21 typically described with respect to the elevation, slope, and surface features found within a given area.
22 The geology of an area may include bedrock materials, mineral deposits, and fossil remains. The
23 principal geological factors influencing the stability of structures are soil stability and seismic properties.
24 Soil refers to unconsolidated earthen materials overlying bedrock or other parent material. Soil
25 structure, elasticity, strength, shrink-swell potential, and erodibility determine the ability for the ground
26 to support structures and facilities. Soils are typically described in terms of their type, slope, physical
27 characteristics, and relative compatibility or limitations with regard to particular construction activities
28 and types of land use.

29 **3.3.1 Regulatory Setting**

30 Consideration of geologic resources extends to prime or unique farmlands. The Farmland Protection and
31 Policy Act was enacted in 1981 in order to minimize the loss of prime farmland and unique farmlands as
32 a result of Federal actions. The implementing procedures require Federal agencies to evaluate the
33 adverse effects of their activities on farmland, which includes prime and unique farmland and farmland
34 of statewide and local importance, and to consider alternative actions that could avoid adverse effects.

35 **3.3.2 Affected Environment**

36 The following discussions provide a description of the existing conditions for each of the categories
37 under geological resources at TBR.

38 **3.3.2.1 Topography**

39 TBR is located in the Barrier Island Sequence District of the Coastal Plain Physiographic Province (Clark
40 and Zisa, 1976). The barrier island sequence consists of barrier islands, marshes, level plains, and a series

1 of terraces resulting from sea-level advances and retreats during the Pleistocene age (Krause and
2 Randolph, 1989). Within the Barrier Island Sequence District, elevations range from sea level to
3 approximately 160 feet amsl with a progression of step-like increases in elevation from east to west. The
4 topography of TBR is relatively flat, with land surface elevations ranging from 13 to 60 feet amsl (Figure
5 3-4).

6 **3.3.2.2 Geology**

7 The coastal area of Georgia is underlain by a thick sequence of unconsolidated layers of sand and clay
8 that is poorly cemented to very dense layers of limestone and dolostone (Clarke et al., 1990). These
9 deposits range in age from Paleocene to Recent, and overlie Paleozoic to Mesozoic igneous,
10 metamorphic, and sedimentary rocks (Chowns and Williams, 1983).

11 These sedimentary strata strike southwest-northeast, then dip and thicken to the southeast, and reach a
12 maximum thickness of about 5,500 feet in Camden County (Wait and Davis 1986).

13 **3.3.2.3 Soils**

14 Soils present on TBR and their characteristics were obtained from the USDA NRCS Soil Survey
15 Geographic database (NRCS, 2014) (Figure 3-5). The USDA soils descriptions are included in Appendix D.
16 Of the 35 different soil types present at TBR, six soil types are designated as prime farmland or farmland
17 of statewide importance and are considered to be of higher agricultural value. Due to historic forestry
18 practices, a large portion of TBR soils are considered previously disturbed.

19 **3.3.3 Environmental Consequences**

20 Direct impacts on geological resources (soils) would be primarily associated with the construction of
21 firebreaks. Impacts associated with the construction of firebreaks have also been assessed in the 2013
22 TBR Environmental Impact Statement (MCAS, 2013).

23 Any non-exempt, direct or indirect impacts on soils would require a SWPPP. Projects and management
24 practices are anticipated to result in no effects on topography or geology.

25 **3.3.3.1 No Action Alternative**

26 Under the No Action Alternative, the Proposed Action would not occur and there would be no change to
27 baseline geology, topography, or soils. Therefore, no significant impacts on geological resources would
28 occur with implementation of the No Action Alternative.

29 **3.3.3.2 Medium-Intensity Management Alternative (Preferred Alternative)**

30 The study area encompasses the proposed ground disturbance areas related to the Preferred
31 Alternative. Timber improvement projects, particularly mechanical improvements to remove invasive
32 species and prescribed burns implemented under the Preferred Alternative, would impact soils;
33 however, best management practices (BMPs) would be implemented on a project- and site-specific basis
34 to minimize or eliminate soil erosion and consequent sedimentation.

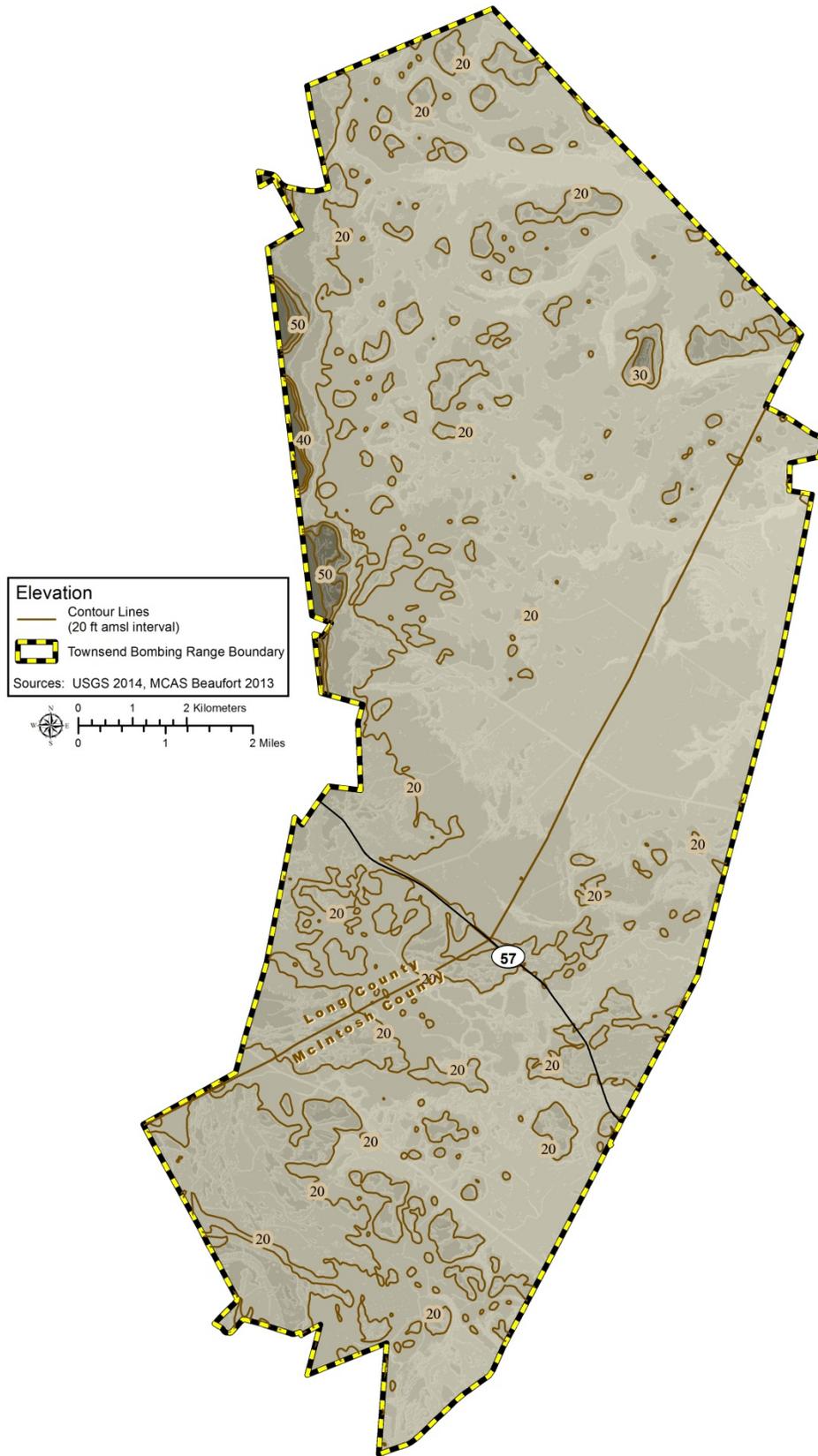


Figure 3-4. Topography Map

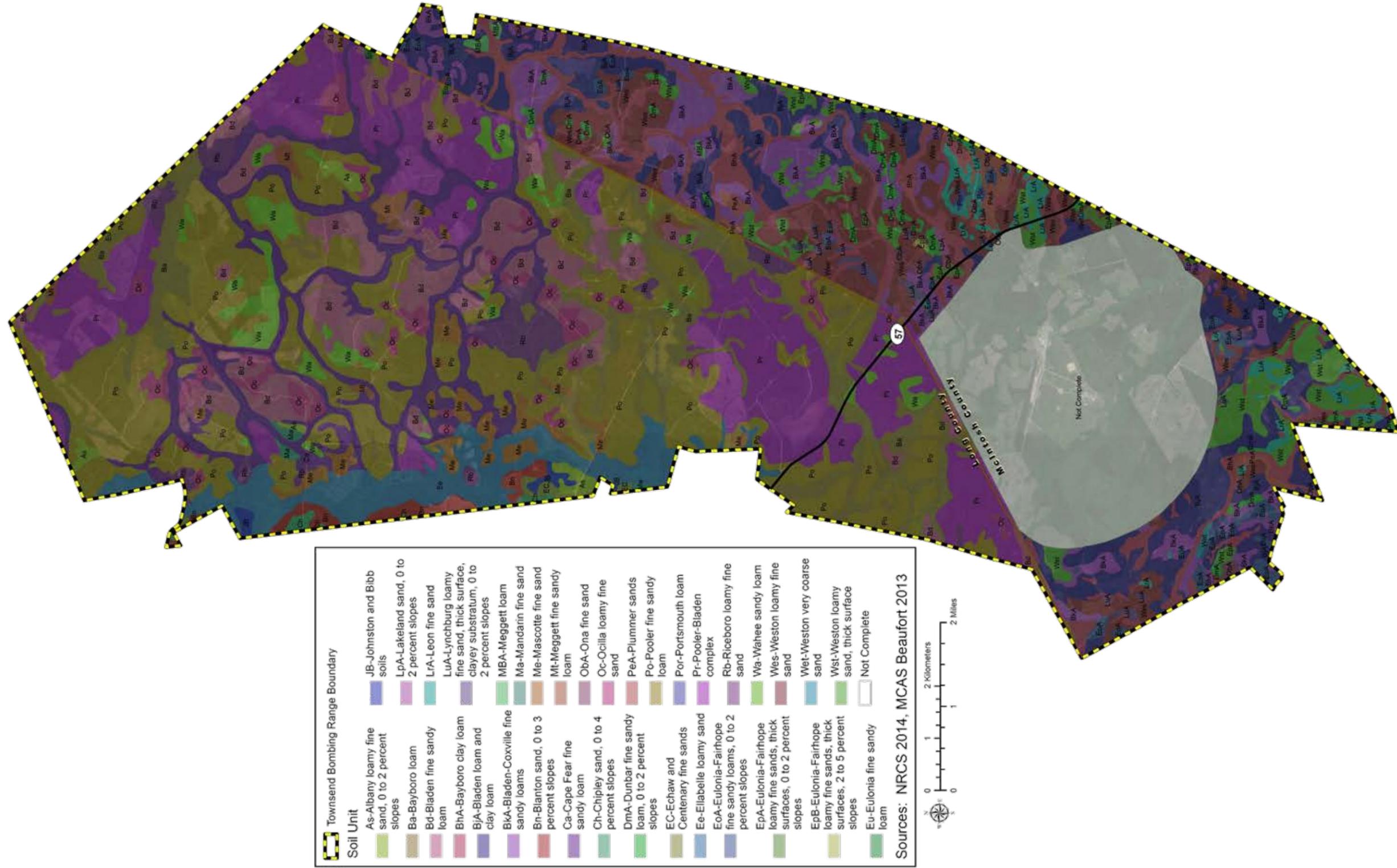


Figure 3-5. Soils Map

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1 Many projects would likely require a SWPPP to be prepared and implemented for projects involving
2 large areas of denuded soils (e.g., new roads, etc.). The SWPPP would identify numerous BMPs, such as
3 streamside management zones, silt fences, riparian buffer zones, and weather restrictions, which would
4 improve the potential to control erosion and sedimentation. Any timber harvest activity would be
5 conducted in accordance with the GFC's Best Management Practices for Forestry. Soils would also be
6 benefited by removal of feral pigs (*Sus scrofa*), as part of the nuisance wildlife management, which
7 create large wallows and exacerbate erosion and sedimentation issues near streams and other
8 waterbodies. There would be no direct impacts on the six soil types designated as prime farmland
9 associated with the Preferred Alternative. Therefore, implementation of the Preferred Alternative would
10 not result in significant impacts on geological resources (soils).

11 **3.3.3.3 Low-Intensity Management Alternative**

12 Implementation of the Low-Intensity Management Alternative would support all the projects under the
13 five management objectives (forest management, fish and wildlife management, land management,
14 management of outdoor recreational opportunities, and training) except for the GIS Database
15 Management stewardship project identified in the TBR INRMP. Construction and management activities
16 associated with firebreaks would result in the same geological resources (soils) and prime farmland
17 impacts as described for the Preferred Alternative. Therefore, implementation of this action alternative
18 would not result in significant impacts on geological resources (soils).

19 **3.4 Cultural Resources**

20 This discussion of cultural resources includes prehistoric and historic archaeological sites; historic
21 buildings, structures, and districts; and physical entities and human-made or natural features important
22 to a culture, a subculture, or a community for traditional, religious, or other reasons. Cultural resources
23 can be divided into three major categories:

- 24 • Archaeological resources (prehistoric and historic) are locations where human activity
25 measurably altered the earth or left deposits of physical remains.
- 26 • Architectural resources include standing buildings, structures, landscapes, and other built-
27 environment resources of historic or aesthetic significance.
- 28 • Traditional cultural properties may include archaeological resources, structures, neighborhoods,
29 prominent topographic features, habitat, plants, animals, and minerals that Native Americans or
30 other groups consider essential for the preservation of traditional culture.

31 **3.4.1 Regulatory Setting**

32 Cultural resources are governed by other Federal laws and regulations, including the National Historic
33 Preservation Act (NHPA), Archeological and Historic Preservation Act, American Indian Religious
34 Freedom Act, Archaeological Resources Protection Act of 1979, and the Native American Graves
35 Protection and Repatriation Act of 1990. Federal agencies' responsibility for protecting historic
36 properties is defined primarily by sections 106 and 110 of the NHPA. Section 106 requires Federal
37 agencies to take into account the effects of their undertakings on historic properties. Section 110 of the
38 NHPA requires Federal agencies to establish—in conjunction with the Secretary of the Interior—historic
39 preservation programs for the identification, evaluation, and protection of historic properties. Cultural
40 resources also may be covered by state, local, and territorial laws.

1 **3.4.2 Affected Environment**

2 Cultural resources that are listed in the National Register of Historic Places (NRHP) or eligible for listing
3 in the NRHP are “historic properties” as defined by the NHPA. The list was established under the NHPA
4 and is administered by the National Park Service on behalf of the Secretary of the Interior. The NRHP
5 includes properties on public and private land. Properties can be determined eligible for listing in the
6 NRHP by the Secretary of the Interior or by a Federal agency official with concurrence from the
7 applicable State Historic Preservation Office. An NRHP-eligible property has the same protections as a
8 property listed in the NRHP. The historical properties include archaeological and architectural resources.

9 Cultural resources have been grouped to reflect the categories identified in the “U.S. Marine Corps
10 Cultural Resources Program Guide” (USMC, 2009), consisting of archaeological resources (prehistoric
11 and historic archaeological sites and districts); historic built resources (buildings, structures, objects,
12 landscapes or districts, and other built features such as roads, railroads, canals, etc.); and traditional
13 cultural properties (TCPs), including archaeological sites and properties of traditional religious and
14 cultural importance (USMC, 2009). In general, specific locations of archaeological resources and TCPs
15 are kept confidential because of the concern for cultural sensitivity and vandalism. Therefore, maps or
16 figures with specific locations of cultural resources and/or historic properties are not included in this
17 section or elsewhere in this EA.

18 The area of potential effect (APE) for cultural resources is the geographic area or areas within which an
19 undertaking (project, activity, program or practice) may cause changes in the character or use of any
20 historic properties present. The APE is influenced by the scale and nature of the undertaking and may be
21 different for various kinds of effects caused by the undertaking. For the purposes of compliance with
22 Section 106 of the NHPA, the USMC has defined the APE for the Proposed Action as the TBR boundaries.

23 The USMC conducted a desktop cultural resources analysis of the APE between November 2010 and
24 January 2011 (Hendryx et al., 2011). The purpose of this desktop cultural resources analysis was to
25 identify previously recorded cultural resources within the APE and to classify proposed land acquisition
26 areas as containing high and low probability of possessing archaeological resources in accordance with
27 the Georgia Standards and Guidelines for Archaeological Surveys (Georgia Council of Professional
28 Archaeologists, n.d.). Subsequent to the desktop cultural resources analysis, the USMC conducted an
29 archaeological investigation between August 14 and October 14, 2011 (Hendryx, 2012). The USMC
30 conducted a reconnaissance survey for historic built resources (Appendix I) between August and
31 October 2011; the survey area consisted of 24,031.22 acres (Michael, 2012).

32 **3.4.2.1 Archaeological Resources**

33 A total of 29 archaeological resources have been identified within the APE, including the nine
34 archaeological resources identified during previously conducted cultural resources investigations for
35 unrelated actions (Hendryx et al., 2011; Hendryx, 2012). Eighteen (18) are archaeological sites (nine
36 previously recorded sites and nine newly identified sites) and 11 are newly identified isolated finds
37 (Hendryx et al., 2011; Hendryx, 2012; and MCAS, 2013). Additional archaeological investigation
38 (evaluation to determine NRHP eligibility) is recommended for five of the newly identified
39 archaeological sites. The remaining four newly identified archaeological sites and the 11 isolated finds
40 have been recommended not eligible for inclusion in the NRHP, and no further investigations have been
41 recommended (Hendryx, 2012).

1 **3.4.2.2 Architectural Resources**

2 Six built resources were identified within the APE. NRHP-eligibility evaluations are recommended for five
3 built resources identified within the APE (the House, Snuff Box Canal [Site 9MC345], Old Barrington
4 Road, Georgia Coast & Piedmont Railroad, and Rozier Cemetery) (Michael, 2012). The sixth built
5 resources identified within the APE (the Hunt Club building) do not appear to qualify as eligible for
6 inclusion in the NRHP because it is less than 50 years old and does not appear to meet any NRHP criteria
7 considerations; no further evaluation of this resource is recommended (Michael, 2012).

8 **3.4.2.3 Traditional Cultural Properties**

9 Section 106 consultation was initiated by the USMC with the 21 Federally recognized Indian tribes on
10 April 29 and October 4, 2011. The purpose of this consultation was to introduce the 2013 range
11 expansion to the tribes, determine whether the tribes were interested in participating in the
12 consultation process as Section 106 consulting parties, and to identify any tribal issues or concerns,
13 including, but not limited to, archaeological resources, properties of traditional religious or cultural
14 importance, or TCPs. No TCPs or sacred sites were identified within the APE.

15 **3.4.3 Environmental Consequences**

16 Analysis of potential impacts on cultural resources considers both direct and indirect impacts. Direct
17 impacts may be the result of physically altering, damaging, or destroying all or part of a resource,
18 altering characteristics of the surrounding environment that contribute to the importance of the
19 resource, introducing visual, atmospheric, or audible elements that are out of character for the period
20 the resource represents (thereby altering the setting), or neglecting the resource to the extent that it
21 deteriorates or is destroyed. Indirect impacts

22 **3.4.3.1 No Action Alternative**

23 Under the No Action Alternative, the Proposed Action would not occur and there would be no change to
24 cultural resources. Therefore, no significant impacts on cultural resources would occur with
25 implementation of the No Action Alternative.

26 **3.4.3.2 Medium-Intensity Management Alternative (Preferred Alternative)**

27 Impacts on cultural resources would not be expected since there are no major construction projects
28 associated with the INRMP. Further, the preponderance of INRMP management and maintenance
29 activities would be conducted outside of the target areas. A total of 12 cultural resources are located
30 outside the target areas: eight archaeological sites, three built resources (Old Barrington Road, Rozier
31 Cemetery, and Georgia Coast & Piedmont Railroad), and portions of one archaeological/built resource
32 (Snuff Box Canal). Twenty (20) cultural resources are located inside the newly acquired TBR property
33 target areas surveyed to date: nine archaeological sites and eleven isolated archaeological finds
34 (Hendryx et al., 2011; Hendryx, 2012; Michael 2012). The archaeological and architectural resources
35 located on or adjacent to TBR would be avoided during implementation of any INRMP projects that have
36 the potential for disturbance (e.g., prescribed burns and firebreak construction/maintenance).
37 Therefore, implementation of the Preferred Alternative would not result in significant impacts on
38 cultural resources.

1 3.4.3.3 Low-Intensity Management Alternative

2 Implementation of the Low-Intensity Management Alternative would support all the projects under the
3 five management objectives (forest management, fish and wildlife management, land management,
4 management of outdoor recreational opportunities, and training) except for the GIS Database
5 Management stewardship project identified in the TBR INRMP. Similar to the Preferred Alternative,
6 construction and management activities associated with firebreaks and prescribed burns would avoid
7 cultural resources areas. Therefore, implementation of this action alternative would not result in
8 significant impacts on cultural resources.

9 3.5 Biological Resources

10 Biological resources include living, native, or naturalized plant and animal species and the habitats
11 within which they occur. Plant associations are referred to generally as vegetation, and animal species
12 are referred to generally as wildlife. Habitat can be defined as the resources and conditions present in
13 an area that support a plant or animal.

14 Within this EA, biological resources are divided into two major categories: (1) terrestrial vegetation and
15 (2) terrestrial wildlife. Threatened, endangered, and other special status species are discussed in their
16 respective categories. Table 3-4 lists all special status species that are potentially present.

Table 3-4. Threatened and Endangered Species Known to Occur or Potentially Occurring and Critical Habitat Present in ROI

<i>Common Name</i>	<i>Scientific Name</i>	<i>Federal Listing Status</i>	<i>State Listing Status</i>	<i>Critical Habitat Present?</i>
American alligator	Alligator mississippiensis	SAT	None	None
Frosted flatwoods salamander	Ambystoma cingulatum	T	S	None
Gopher tortoise	Gopherus polyphemus	C	T	None
Eastern indigo snake	Drymarchon couperi	T	T	None
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	E	None
Striped newt	Notophthalmus perstriatus	C	R	None
Hairy rallieweed	Baptista arachnifera	E	E	None

Selections for Listing Status Column include: C = candidate species for Federal Endangered Species Act (ESA) listing; E = endangered; T = threatened; NL = not listed; SSC = Species of Special Concern (State designation); R = Rare; SAT = Listed due to similarity of appearance to threatened species (These species are not biologically threatened or endangered and are not subject to ESA section 7 consultation.); X = present.

17 3.5.1 Regulatory Setting

18 For the purposes of this EA, special-status species are those species listed as threatened or endangered
19 under the ESA and species afforded Federal protection under the Migratory Bird Treaty Act (MBTA). The
20 purpose of the ESA is to conserve the ecosystems upon which threatened and endangered species depend
21 and to conserve and recover listed species. Section 7 of the ESA requires action proponents to consult with
22 the USFWS or National Oceanic and Atmospheric Administration Fisheries to ensure that their actions are

1 not likely to jeopardize the continued existence of Federally listed threatened and endangered species or
2 result in the destruction or adverse modification of designated critical habitat. Critical habitat cannot be
3 designated on any areas owned, controlled, or designated for use by the DoD where an INRMP has been
4 developed that, as determined by the Department of Interior or Department of Commerce Secretary,
5 provides a benefit to the species subject to critical habitat designation.

6 Birds, both migratory and most native-resident bird species, are protected under the MBTA, and their
7 conservation by Federal agencies is mandated by EO 13186 (Migratory Bird Conservation). Under the
8 MBTA, it is unlawful by any means or in any manner to pursue, hunt, *take*, capture, kill, attempt to *take*,
9 capture, or kill, [or] possess migratory birds or their nests or eggs at any time, unless permitted by
10 regulation. The 2003 National Defense Authorization Act gave the Secretary of the Interior authority to
11 prescribe regulations to exempt the Armed Forces from the incidental taking of migratory birds during
12 authorized military readiness activities. The final rule authorizing the DoD to *take* migratory birds in such
13 cases include a requirement that the Armed Forces must confer with the USFWS to develop and
14 implement appropriate conservation measures to minimize or mitigate adverse effects of the Proposed
15 Action if the action will have a significant negative effect on the sustainability of a population of a
16 migratory bird species. Bald and golden eagles are protected by the Bald and Golden Eagle Protection
17 Act. This act prohibits anyone without a permit issued by the Secretary of the Interior from taking bald
18 eagles, including their parts, nests, or eggs. The Act defines *take* as "pursue, shoot, shoot at, poison,
19 wound, kill, capture, trap, collect, molest or disturb."

20 The CZMA establishes a Federal-state partnership to provide for the comprehensive management of
21 coastal resources. Coastal states and territories develop management programs based on enforceable
22 policies and mechanisms to balance resource protection and coastal development needs. Actions
23 implemented on Federal lands must ensure consistency with these plans and programs to the maximum
24 extent practicable. The Navy has coordinated with the USFWS regarding the Preferred Alternative.

25 **3.5.2 Affected Environment**

26 The following discussions provide a description of the existing conditions for each of the categories
27 under biological resources at TBR.

28 **3.5.2.1 Terrestrial Vegetation**

29 Vegetation includes terrestrial plant communities and constituent plant species.

30 GADNR is currently involved in developing an ecological community classification system based on the
31 U.S. National Vegetation Classification (USNVC) system (GADNR, 2005). The USNVC system is based on
32 vegetation as it currently exists on the landscape (Federal Geographic Data Committee 2008) and is used
33 in the INRMP to classify terrestrial habitats on TBR. Landforms, soils, and other features are not directly
34 considered as part of the classification criteria, but ecological and biogeographical information help
35 guide the structure of the classification. The system can be used to classify both natural and cultural
36 vegetation types. As part of the GADNR Coastal Resource Mapping project, the ecological communities
37 of McIntosh and Long Counties, including all of TBR, were delineated using the USNVC system
38 (Thompson, 2010 and Elliott, 2010, respectively) (Figure 3-6). Because forestry was the predominant
39 land use on lands acquired for expansion of TBR, the distribution and extent of ecological communities
40 has changed substantially since 2010. It is assumed that a large portion of the lands acquired by TBR
41 have been in a continual state of change prior to transfer of ownership.

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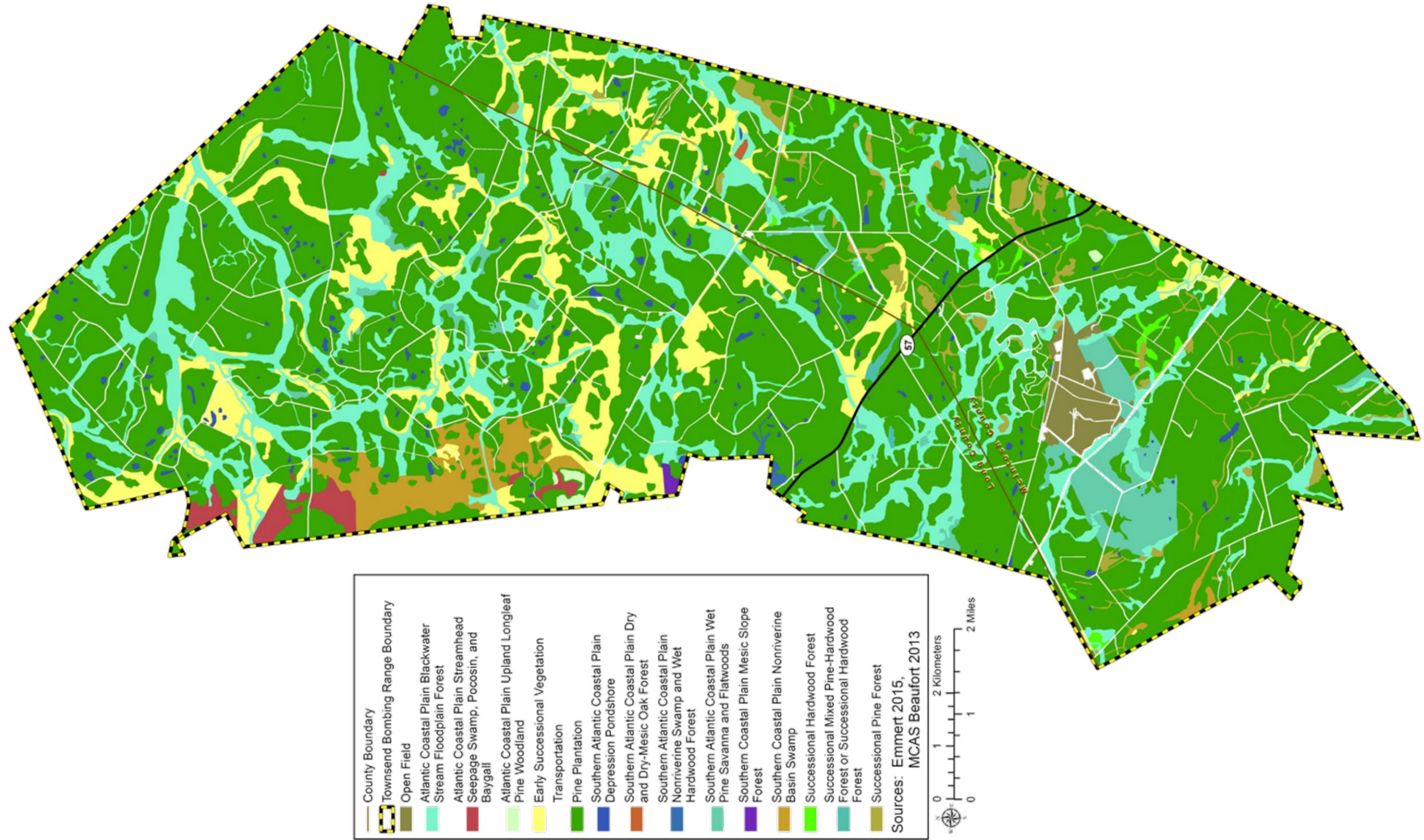


Figure 3-6. Terrestrial Habitat and Vegetation Map

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1 A brief description of each USNVC ecological community found on TBR in 2010 is provided below and
2 can be found on the NatureServe website (usnvc.org). Each of the natural community types found on
3 TBR is considered regionally important under the GADNR State Wildlife Action Plan (SWAP). Where
4 equivalent, USNVC ecological communities are cross-referenced to the GADNR SWAP regionally
5 important habitats, and the SWAP name for the equivalent USNVC ecological community is provided
6 parenthetically.

7 Each of the natural communities classified by the USNVC is considered a regionally important habitat
8 under the GADNR SWAP. Some of the regionally important habitats identified in the SWAP are based on
9 small topographical features, or other specific conditions that are typically associated with a more
10 inclusive ecological community as defined by the USNVC. A discussion of these habitat features is
11 included with the description of the encompassing ecological community.

12 Natural ecological communities are described first in order of decreasing elevation. Disturbed and
13 cultural communities are described last, beginning with the least culturally influenced and ending with
14 the most culturally influenced communities.

15 **Natural Ecological Communities**

16 ***Upland Longleaf Pine Woodland*** communities occur on upland sites composed of loamy to sandy flats.
17 Soils are acidic and typically infertile. Large patch or matrix upland habitats are characterized by a sparse
18 canopy of longleaf pine (*Pinus palustris*) (sometimes with slash pine [*Pinus elliotii*]) and a diverse
19 herbaceous layer dominated by wiregrass. These communities can range from mesic to dry, depending
20 on topographic position and soils, and transition downslope into wet pine savannas, pine flatwoods, or
21 other wetlands. These habitats are heavily dependent on frequent fire for maintenance. On drier sites
22 within the matrix of longleaf pine, more fire-tolerant oaks can form a portion of the canopy. The GADNR
23 SWAP identifies these habitats as Longleaf Pine /Scrub Oak Woodlands (GADNR, 2005). These habitats
24 are described as sparse-canopied xeric longleaf pine system with patchy oak understory composed of
25 turkey oak (*Quercus laevis*), sand post oak (*Quercus stellata*), bluejack oak (*Quercus incana*), blackjack
26 oak (*Quercus marilandica*), and other scrub oak species. These habitats and species are typically found
27 on deep sand soils, on ridges and upper slopes that contains a fairly diverse groundlayer of xerophytic
28 grasses and forbs and scattered shrubs.

29 ***Dry Forest and Dry-Mesic Oak Forest*** are typically small isolated communities located in dry to slightly
30 moist sites that are protected from frequent fire by surrounding or adjacent communities. These
31 communities generally occur on terraces above bottomland hardwood forests, ravines, or nonalluvial
32 flats protected from frequent fire. Vegetation is dominated by oak and hickory species, including water
33 oak (*Quercus nigra*), white oak (*Quercus alba*), southern red oak (*Quercus falcata*), and pignut hickory
34 (*Carya glabra*). Southern magnolia (*Magnolia grandiflora*), American holly (*Ilex opaca*), ironwood
35 (*Olneya tesota*), flowering dogwood (*Cornus florida*), and spruce pine (*Pinus glabra*) typically occur
36 where these communities are associated with small isolated uplands within a floodplain or depressional
37 wetland.

38 ***Mesic Slope Forest*** communities are an uncommon hardwood forest type, typically found on very mesic
39 river bluffs, and occasionally on gentle slopes that are naturally protected from fire by topographic
40 setting. This community is often small in extent and occurs within a narrow zone between wetland and
41 fire-maintained upland forests. This community is often associated with and in proximity to hillside
42 seeps. In addition to American beech (*Fagus grandifolia*) and southern magnolia, the communities may

1 contain spruce pine, water oak, water hickory (*Carya aquatica*), American holly, and other fire-intolerant
2 species, as well as epiphytic species such as green-fly orchid (*Epidendrum magnoliae*).

3 **Wet Pine Savanna and Flatwoods** communities (a.k.a., Wet Pine Savanna, Herb and Shrub Bog, and Pine
4 Flatwoods) are one of the most extensive and prevalent natural habitats of the Sea Island Flatwoods.
5 These environments consist of open canopy areas with wet, seasonally saturated soils. Open canopies
6 facilitate the development of diverse herbaceous groundcover species, and frequent fire limits
7 development and recruitment of hardwood and shrub species. The communities were dominated
8 formerly by longleaf pine, now typically by slash pine, and occasionally with loblolly (*Pinus taeda*) or
9 pond pine (*Pinus serotina*). Groundcover species are variant and dependent upon the frequency of fire
10 and hydrologic conditions. The shrub layer may be sparse, consisting mainly of gallberry (*Ilex glabra*),
11 saw palmetto (*Serenoa repens*), wax myrtle (*Morella cerifera*), and fetterbush (*Lyonia lucida*), lowbush
12 blueberry (*Vaccinium angustifolium*), and other ericaceous species. The herbaceous layer is often
13 diverse and dense, and can include wiregrass (*Aristida* spp.), broomsedge (*Andropogon virginicus*), *Xyris*
14 species, spike rush (*Eleocharis palustris*), chain fern (*Woodwardia* spp.), maiden cane (*Amphicarpum*
15 *muhlenbergianum*), and *Hypericum* species. Wet Pine Savanna and Flatwoods communities may also
16 include small peat-filled depressions dominated by titi (*Cryilla racemiflora*), and other shrubs or by
17 herbaceous bog plants.

18 **Streamhead Seepage Swamp, Pocosin, and Baygall** communities are seepage-fed wetlands often
19 associated with ravines or side-slopes, along the headwaters of streams, or in areas of high
20 groundwater. Vegetation consists of woody plant species with a dense shrub layer. Common species
21 include blackgum (*Nyssa sylvatica*), red maple (*Acer rubrum*), tulip tree (*Liriodendron tulipifera*), titi,
22 fetterbush, gallberry, and dog hobble (*Leucothoe axillaris*). Hillside seeps are natural groundwater
23 discharge points found on moist to wet lower slopes in sandy terrain that create small patch habitats.
24 Hillside seeps may be dominated by shrubs or herbs and typically support pitcher plants.

25 **Depression Pondshore** communities are seasonally or semi-permanently flooded forests of depressional
26 features in broad inter-stream flats. Depressional features include small basins formed by soil
27 subsidence, swales, or natural blockage of small drainages. Soils range from mineral to organic and
28 canopy dominants may include bays, pond cypress (*Taxodium ascendens*), or pond pine. Fire plays a role
29 in maintaining some of these systems. Isolated wetlands that do not support fish populations are very
30 important breeding habitats for amphibians such as the flatwoods salamander.

31 **Non-riverine Basin Swamp** communities occupy large seasonally inundated basins with peat substrates.
32 These communities are located beyond the influence of streams. Common vegetation includes pond
33 cypress, blackgum (*Nyssa sylvatica*), slash pine, titi, and fetterbush.

34 **Non-riverine Swamp and Wet Hardwood Forest** communities occur on poorly drained areas saturated
35 or inundated by rainfall. These communities are located beyond the influence of streams or tidal areas
36 and include diverse hardwood-dominated forests found on natural levees, upper floodplain flats and
37 terraces along brownwater and blackwater rivers. They are characterized by a diverse canopy of
38 hardwood species dominated by various oaks, green ash (*Fraxinus pennsylvanica*), sweetgum
39 (*Liquidambar styraciflua*), red maple, water hickory, and other mesic species. These extensive forested
40 systems provide habitat for a wide variety of wildlife species, and are especially important for wide-
41 ranging forest interior species. Bottomland hardwood forests have been impacted by altered hydrologic
42 conditions, forest conversion, and invasive exotic species.

1 **Blackwater Stream Floodplain Forest** communities exist throughout much of TBR within low-lying areas
2 associated with narrow bands of dense canopy hardwood species located in the floodplains of small
3 streams and rivers. Seasonal and periodic flooding is an important ecological factor where inundation
4 limits species compositions to flood-tolerant species. Vegetation is composed of wetland tree species
5 such as bald cypress (*Taxodium distichum*) and blackgum, with associated species including red maple,
6 sweetbay magnolia (*Magnolia virginiana*), loblolly bay (*Gordonia lasianthus*), water oak, and laurel oak
7 (*Quercus hemisphaerica*). This community is important in areas of forestry where it can function as a
8 buffer to erosion. Although this community often occupies a smaller area than surrounding
9 communities, it is an important component of regional floral and faunal diversity. Canebrakes are
10 thickets of native river cane found along rivers and creeks under sparse to full tree cover. Canebrakes
11 are identified as regionally important habitat by the GADNR SWAP and provide habitat for a variety of
12 neotropical birds and insects (GADNR, 2005). These habitats require periodic fire or other form of
13 disturbance for maintenance.

14 **Disturbed or Cultural Communities**

15 **Successional Hardwood Forest** communities are associated with recently harvested or disturbed areas
16 often in mesic or topographically low-lying areas. This community represents a transition from early
17 successional vegetation communities by the presence and establishment of a more defined canopy
18 stratum. Vegetation is dependent upon the previously converted community but is characterized by a
19 hardwood canopy stratum consisting of species such as red maple, water oak, laurel oak, beech, or
20 hickory species.

21 **Loblolly Pine-Water Oak-Sweetgum Successional Vegetation** communities are associated with
22 disturbed moist pine flatwoods or planted pine areas and represent a transition from early successional
23 vegetation communities by the presence and establishment of a more defined canopy. This community
24 is located on topographically flat and low elevations and is identified by a mixture of loblolly pine, water
25 oak, and sweetgum where no one species is dominant.

26 **Successional Pine Forest** communities are associated with recently cleared or harvested pine plantation
27 areas. Following harvest, areas are typically furrowed and replanted with pine species. Initially, the
28 successional pine forest communities are composed of early successional and shrub species such as
29 winged sumac (*Rhus copallinum*), blackberry (*Rubus* sp.), broomsedge, gallberry, wax myrtle, and
30 saltbush (*Atriplex canescens*). Over time, planted pine species mature and outcompete herbaceous and
31 shrub species as the community transitions back into a pine plantation environment.

32 **Pine Plantation** communities are densely planted loblolly, slash, or longleaf pine stands that are actively
33 managed for silvicultural operations. Management activities for these areas include herbicide
34 application, ditching and draining, and furrowing. Species composition is limited and many of these
35 plantation communities lack age distribution of tree species. Midstory and understory species are
36 inhibited due to low-light penetration and herbicide application. Pine plantation environments lack
37 transition between adjacent environments and are typically bound by access roads, ditches, or
38 maintained timber stands.

39 **Successional Scrub** communities are located in recently disturbed areas often associated with recent
40 fire, hurricanes, or mechanical clearing activities. Vegetation is dominated by early successional and
41 shrub species such as winged sumac, blackberry, broomsedge, gallberry, wax myrtle, and saltbush.

42 **Open Field** communities are maintained environments lacking a distinguished canopy or shrub layer.
43 Species composition consists of grasses and weedy successional species. Perpetual maintenance, such as

1 prescribed fires, herbicide application, or mechanical cutting, maintains these areas in an herbaceous
2 state.

3 Sensitive and Regionally Important Plants

4 The GADNR SWAP identifies sensitive and regionally important plant species associated with the Sea
5 Island Flatwoods (Table 3-5) (GADNR, 2005). These species are threatened by the loss of natural
6 ecological communities and alteration of ecosystem processes. Because these species are uncommon,
7 their occurrence on the landscape can have a substantial benefit on regional biodiversity. The biology,
8 habitats, threats, and management recommendations for each of these species are provided below.
9 Species classified as threatened or endangered by USFWS or GADNR and candidates for listing by the
10 USFWS are discussed in Section 2.3.4 of the INRMP. Threatened, endangered, and candidate species are
11 also sensitive and regionally important, but are afforded additional protections under the ESA and the
12 Georgia Endangered Wildlife Act.

Table 3-5. Sensitive or Regionally Important Plants

Common Name	Scientific Name	Status	
		TBR	GADNR
Green-fly orchid	<i>Epidendrum conopseum</i>	CR	U
Hooded pitcher plant	<i>Sarracenia minor var. minor</i>	PR	U
Purple honeycomb-head	<i>Balduina atropurpurea</i>	PR	R
Velvet sedge	<i>Carex dasycarpa</i>	PR	R
Yellow flytrap	<i>Sarracenia flava</i>	PR	U

13 CR – confirmed resident; PR – possible resident; U – unusual; R – rare

14 **Green-fly Orchid (*Epidendrum conopseum*)** - The green-fly orchid is the only epiphytic orchid in the
15 United States to occur outside of Florida and is known from the Coastal Plains of the southeastern
16 United States and eastern Mexico (GADNR, 2014a). The species grows on the limbs of southern
17 magnolia and live oak trees in moist forests, usually along streams. Management for this species should
18 include surveys to identify its presence and allowing the regeneration and protection of bottomland and
19 floodplain forests.

20 **Hooded Pitcher plant (*Sarracenia minor var. minor*)** - The hooded pitcher plant is a perennial herb
21 occurring in Georgia, Florida, South Carolina, and North Carolina (GADNR, 2014a). Pitcher plants capture
22 and digest insects and other small animals. Digestion enables the plants to absorb nitrogen, which is
23 typically a limiting nutrient of bogs and other permanently saturated wetlands. Suitable habitats include
24 wet savannas and pine flatwoods, seepage slopes, sphagnum seeps in swamps, bogs, and wet ditches.
25 The hooded pitcher plant is one of the most common of Georgia's pitcher plants and is likely to occur on
26 the expanded portion of TBR. Management for this species should include surveys to identify its
27 presence, restoration of drainage networks, avoidance of soil disturbance, ditching, draining, firebreak
28 construction, bedding, and mechanical clearing in wetlands, prescribed fire, education of TBR users to
29 avoid poaching, and eradication of feral hogs.

30 **Purple Honeycomb-Head (*Balduina atropurpurea*)** - Purple honeycomb-head is a perennial herb
31 occurring in the coastal plain of Georgia, Florida, South Carolina, and, possibly, Alabama and North
32 Carolina (GADNR, 2014a). Purple honeycomb-head occupies pine flatwoods and savannas, seepage
33 slopes, pitcher plant bogs, and wet ditches. About 45 populations have been recently documented in
34 Georgia; however, this species is not known to occur on TBR. Management for this species should
35 include surveys to identify its presence, use of prescribed fire, restoration of drainage networks, and

1 avoidance of soil disturbance, ditching, draining, firebreak construction, bedding, and mechanical
2 clearing in wetlands.

3 **Velvet Sedge (*Carex dasycarpa*)** - The velvet sedge is a perennial grass-like herb occurring in Georgia,
4 Florida, Alabama, Mississippi, and South Carolina (GADNR, 2014a). Velvet sedge can be found on well-
5 drained, sandy-loamy soils in a variety of habitats including mixed pine-hardwood forests on river bluffs
6 and stream terraces, levees and swales in floodplains, maritime forests along Atlantic coast rivers,
7 longleaf pine woodlands on barrier islands, and beech-magnolia-spruce pine forests. Conversion of
8 habitat to pine plantations, agriculture, and development is the greatest threat to this species.
9 Encroachment by invasive plants has also impacted the velvet sedge. Management for this species
10 should include surveys to identify its presence, restoration of drainage networks, avoidance of soil
11 disturbance, ditching, draining, firebreak construction, bedding, mechanical clearing in wetlands,
12 prescribed fire, and control of invasive plants.

13 **Yellow Flytrap (*Sarracenia flava*)** - The yellow flytrap (yellow trumpet pitcher plant) is a perennial herb
14 occurring in Georgia, west to Mississippi and north to southeastern Virginia, in the Coastal Plain
15 (GADNR, 2014a). Pitcher plants capture and digest insects and other small animals. Digestion enables
16 the plants to absorb nitrogen, which is typically a limiting nutrient of bogs and other permanently
17 saturated wetlands. Suitable habitats include wet savannas and pine flatwoods, seepage slopes, and
18 bogs. Yellow flytrap is one of the more common of Georgia's pitcher plants and is likely to occur on the
19 expanded portion of TBR. Management for this species should include surveys to identify its presence,
20 restoration of drainage networks, avoidance of soil disturbance, ditching, draining, firebreak
21 construction, bedding, mechanical clearing in wetlands, prescribed burns, education of TBR users to
22 avoid poaching, and eradication of feral hogs.

23 **Invasive Plants**

24 Invasive and exotic species on TBR are managed through the removal of the species and the restrictions
25 on the introduction of the species to the Installation in accordance with EO 13112. Invasive plants are
26 non-native to Georgia and cause harm to natural ecological communities or human environments. Pest
27 plant species on TBR are plants that specifically cause harm to the human environment, such as non-
28 native Mediterranean annuals in maintained lawns, and poisonous native plants, such as poison ivy
29 (*Toxicodendron radicans*). Pest plants can be found in natural ecological communities, but are not
30 necessarily invasive in these environments. A survey of invasive plants on TBR was conducted in 2004
31 (Southern Division, 2004).

32 Pine plantations of varying age are quite homogeneous in plant species composition at TBR. Forestry
33 management practices have effectively eliminated and continue to inhibit establishment and growth of
34 invasive plants within the interior of forest stands. However, invasive plants establish rapidly within
35 recently disturbed areas and along roadsides and forest edges. The University of Georgia's (University of
36 Georgia, 2015) Early Detection and Distribution Mapping System provides an online database of invasive
37 species observations recorded in Georgia. There are 86 plant species that are non-native to the United
38 States, reported to be a problem somewhere in the United States, and known to occur in McIntosh or
39 Long Counties. The Georgia Exotic Plant Pest Council (2006) identifies non-native plants that pose
40 threats to natural ecological communities in Georgia and classifies these plants using the following
41 categories:

42 **Category 1** - Exotic plant that is a serious problem in Georgia natural areas by extensively invading
43 native plant communities and displacing native species.

1 **Category 1 Alert** - Exotic plant that is a not yet a serious problem in Georgia natural areas, but that has
2 significant potential to become a serious problem.

3 **Category 2** - Exotic plant that is a moderate problem in Georgia natural areas through invading native
4 plant communities and displacing native species, but to a lesser degree than Category 1
5 species.

6 **Category 3** - Exotic plant that is a minor problem in Georgia natural areas, or is not yet known to be a
7 problem in Georgia but is known to be a problem in adjacent states.

8 **Category 4** - Exotic plant that is naturalized in Georgia but generally does not pose a problem in Georgia
9 natural areas or a potentially invasive plant in need of additional information to determine
10 its true status.

11 The following invasive plant species have been observed on TBR: Japanese honeysuckle (*Lonicera*
12 *japonica*), Japanese wisteria (*Wisteria floribunda*), torpedo grass (*Panicum repens*), camphor tree
13 (*Cinnamomum camphora*), hemp sesbania (*Sesbania macrocarpa*), cogongrass (*Imperata cylindrica* (L.)
14 Beauv.), and Chinese privet (*Ligustrum sinense*) (Southern Division, 2004).

15 **Camphor tree (*Cinnamomum camphora*, Category 2)** - The camphor tree is an evergreen tree native to
16 eastern Asia, growing to over 65 feet in height. It has glossy ovate leaves in a simple, alternate
17 arrangement and produces small, black fruits, and white flowers in loose panicles. The crushed leaves
18 and inner bark give off a strong odor of camphor (Langeland and Burks, 1998). It usually occurs in dry
19 disturbed areas such as roadsides, but also invades upland pine and scrub communities and mesic
20 hammocks, where it can threaten sensitive native species (Macdonald et al., 2008). The most effective
21 management strategy for controlling camphor trees is preventing their spread by removing immature
22 trees before they begin to produce fruit. Repeated mowing can control seedlings, and manual removal
23 has been shown to control young trees (Macdonald et al., 2008). Mature trees can be controlled by a
24 frilling treatment in which the outer bark is cut and peeled back to form a pocket or frill, into which a
25 herbicide such as triclopyr (commercially available as Garlon® 4, 30 percent in oil) is poured (MacDonald
26 et al., 2008).

27 **Chinese privet (*Ligustrum sinense*, Category 1)** - Chinese privet is a perennial shrub that grows up to 16
28 feet in height. The plant has gray bark with a smooth texture, and glossy elliptic or ovate leaves. Chinese
29 privet and other invasive *Ligustrum* species are native to Asia, Europe, and North Africa. It was
30 introduced in 1852 as an ornamental shrub and has since become established in many regions in the
31 United States particularly the southeast. Chinese privet invades floodplain forests and other native
32 communities, where it forms dense thickets and disrupts and out competes native species (MacDonald
33 et al., 2008). Frequent mowing and cutting is an effective management strategy for small populations
34 but will not eradicate the plant from an area. Application of glyphosate or triclopyr to foliage or freshly
35 cut stumps of Chinese privet has been shown to kill the plant and is the recommended management
36 technique for large infestations (MacDonald et al., 2008).

37 **Cogongrass (*Imperata cylindrica*, Category 1)** - Cogongrass is a fast-growing perennial grass that was
38 introduced into the United States in 1911 near Mobile, Alabama. Cogongrass grows in patches and can
39 reach 5 feet in height. Unlike other summer grasses, cogongrass produces fluffy, white, plume-like heads
40 in early spring (late March through mid-June in south Georgia). It typically invades non-cultivated
41 habitats including rights-of-way, forests, pastures, orchards, and waste areas. Tillage of new patches of
42 cogongrass is an effective control measure. Frequent mowing and cutting is an effective management
43 strategy for small populations but will not eradicate the plant from an area. Application of glyphosate or

1 imazapyr twice a year has been shown to kill the plant and is the recommended management technique
2 for large infestations. Older infestations may require 2 to 3 years of treatment to eliminate rhizomes.
3 Within pine plantations, prescribed burning during winter before herbicide treatments will increase the
4 effectiveness of the herbicide application (Evans et al., 2005).

5 **Hemp sesbania (*Sesbania herbacia [macrocarpa]*, Category 2)** - Hemp sesbania (coffee weed) is an
6 annual legume attaining a height of over 30 feet and having a fibrous woody stem and compound
7 leaves. It produces yellow flowers and numerous black seeds that are toxic to humans and animals. It
8 has become established throughout the Gulf Coastal Plain in ditches, along riparian areas, and in fallow
9 fields and other disturbed areas. It threatens native species by shading and competition, and is also a
10 major agricultural pest (Boyette et al., 2014). Herbicides such as lactofen and acifluorfen have been
11 shown to effectively control hemp sesbania in agricultural plots, and biological controls such as certain
12 fungi have also been shown to be effective (Boyette et al., 2014). Some populations of hemp sesbania
13 have been shown to be tolerant of glyphosate (Boyette et al., 2014). Mechanical removal or cutting is
14 not considered to be an effective management strategy for hemp sesbania due to the large number of
15 seeds it produces.

16 **Japanese honeysuckle (*Lonicera japonica*, Category 1)** - Japanese honeysuckle is a perennial vine that
17 forms mounds and mats on open ground and climbs shrubs, low trees, and structures such as fencing by
18 twining. It is native to Japan, Korea, China, and Taiwan and has become naturalized in much of the
19 United States particularly in the southeast (Bravo, 2003). It is present in nearly all southeastern forest
20 communities and can dominate large areas, threatening sensitive native species, and can sometimes
21 smother or strangle small trees. Where it occurs in small patches, Japanese honeysuckle can be
22 controlled through mechanical means including pulling entire vines and root systems, and frequent
23 mowing (Bravo, 2003). Larger infestations can be controlled effectively using systemic herbicides such as
24 glyphosate (available commercially as Rodeo® for wetlands and Roundup® for uplands) and triclopyr
25 (available commercially as Garlon® 3A) and applied when conditions are conducive to plant activity
26 (Bravo, 2003).

27 **Japanese wisteria (*Wisteria floribunda*, Category 4)** - Japanese wisteria is a perennial woody vine native
28 to Japan. It forms dense thickets that overcrowd native species. It also climbs trees through twining and
29 can overtake and strangle native shrubs and trees. It favors disturbed areas exposed to full sunlight such
30 as forest edges and roadsides, and can create favorable conditions for itself by strangling and killing
31 trees to reduce canopy cover. Small populations can be controlled mechanically by cutting vines as close
32 to the root collar as possible early in the growing season. Established populations of Japanese wisteria
33 have been effectively managed by applying systemic herbicides such as glyphosate and triclopyr to
34 freshly cut stems. Large infestations can be controlled by applying a 2 percent concentration of
35 glyphosate or triclopyr and water, and a 0.5 percent non-ionic surfactant to the foliage (Remaley, 2005).

36 **Torpedo grass (*Panicum repens*, Category 3)** - Torpedo grass is a perennial grass with long, knotty
37 rhizomes that often forms dense mats. It was introduced to the Gulf Coast of the United States over 100
38 years ago from an unknown place of origin (it is native to countries in the Old and New World) and now
39 occurs within various plant communities including coastal sand plant communities, marshes and other
40 wetlands, riparian areas, along ditches and canals, and as an aquatic emergent (Stone, 2011). Effective
41 management strategies include top burning of torpedo grass mats in areas where there is a large
42 infestation followed by application of herbicide such as imazapyr and glyphosate to the immature cuticle
43 of young shoots (Stone, 2011).

1 3.5.2.2 Aquatic Habitats and Vegetation

2 An aquatic habitat is specifically defined as an area of open water that supports aquatic or amphibious
3 life, and a limited cover of emergent, submerged, or floating vegetation. Aquatic habitats on TBR are
4 limited to surface waters of varying hydrology such as small streams, canals, and ponds. Lands near the
5 southwestern boundary of the expanded TBR are within or drain directly into the Altamaha River
6 corridor. Using the Cowardin system, aquatic habitats on TBR are classified as Lacustrine systems or
7 Palustrine Unconsolidated Bottoms (Cowardin et al., 1979). Aquatic habitats are not classified by the
8 USNVC. The GADNR SWAP identifies open-water ponds as a regionally important habitat and the
9 Altamaha River corridor as a regionally important conservation area (GADNR, 2005). Open Water Ponds
10 are aquatic habitats ranging from isolated depressions to impoundments created by beaver. Vegetation
11 is sparse and consists primarily of emergent and floating macrophytes. These habitats are relatively
12 uncommon in the Sea Island Flatwoods, and are maintained by periodic fire and fluctuating water levels.
13 These habitats generally support common amphibians and reptiles, and can support rare amphibians
14 where they do not support fish. Seasonal Streams and Canals are surface waters characterized by
15 channelized surface flow. The majority of seasonal streams on TBR are first-order streams with seasonal
16 hydrology. The four canals on TBR, Stink Hole Creek, Tobacco Bottom Canal, Tram Road Canal, and Snuff
17 Box Canal, are each permanently inundated and channelized.

18 TBR abuts the Altamaha River corridor and several small streams and drainages located on TBR
19 discharge directly into the Altamaha River. The Altamaha River is a large, low-gradient, meandering river
20 with sandbars, sloughs, and an extensive floodplain that may remain inundated for extensive periods.
21 Sand and silt are the dominant substrata and the river typically carries heavy sediment loads. Several
22 rare and endemic bivalves have been reported from the Altamaha River, including the Altamaha
23 spiny mussel (*Elliptio spinosa*), listed as endangered under the ESA, and the Altamaha arc mussel
24 (*Alasmidonta arcula*), a candidate for listing.

25 3.5.2.3 Terrestrial Wildlife

26 Wildlife includes all animal species (i.e., insects and other invertebrates, fish, amphibians, reptiles, birds,
27 and mammals) focusing on the species and habitat features of greatest importance or interest.

28 Sensitive and Regionally Important Wildlife

29 The GADNR SWAP identifies sensitive and regionally important plant species associated with the Sea
30 Island Flatwoods (Table 3-6). Two of these species (Bachman's sparrow [*Peucaea aestivalis*] and
31 Henslow's sparrow [*Ammodramus henslowii*]) are known to occur on TBR. In general, these species are
32 threatened by loss of natural ecological communities and alteration of ecosystem processes. Because
33 these species are uncommon, their occurrence on the landscape can have a substantial benefit on
34 regional biodiversity. The biology, habitats, threats, and management recommendations for each of
35 these species are provided below. Species classified as threatened or endangered by USFWS or GADNR
36 and candidates for listing by the USFWS are discussed in Section 2.3.4 of the INRMP. Threatened,
37 endangered, and candidate species are also sensitive and regionally important, but are afforded
38 additional protections under the ESA and the Georgia Endangered Wildlife Act.

39 **Bachman's Sparrow (*Aimphila aestivalis*, State-listed rare)** - Bachman's sparrow is a small insectivore
40 often associated with open, mature pine forests (GADNR, 2014b). The species prefers dense cover of
41 grasses and forbs or palmetto scrub and can be found in mature open pinewoods, regenerating clear-
42 cuts, utility rights-of-way, and old pastures. Bachman's sparrow has become increasingly rare due to
43 conversion of grassy fields to row crops or intensively grazed pastures, fire suppression in forested

- 1 habitats, and dense stocking of pine seedlings when replanting but is known to occur on TBR.
 2 Management for this species should include monitoring and surveys to identify areas of suitable habitat,
 3 conversion to pine dominated natural communities, prescribed fires, and avoidance of excessive
 4 herbicide use in suitable habitats.

Table 3-6. Sensitive or Regionally Important Wildlife

Common Name	Scientific Name	Status	
		TBR	GADNR
Amphibians			
Gopher frog	<i>Lithobates capito</i>	PR	R
Reptiles			
Mimic glass lizard	<i>Ophisaurus mimicus</i>	PR	R
Spotted turtle	<i>Clemmys gutta</i>	PR	U
Mammals			
Rafinesque's Big-eared bat	<i>Corynorhynchus rafinesquii</i>	PM/PR	R
Birds			
Bachman's sparrow	<i>Aimphila aestivalis</i>	CR	R
Henslow's sparrow	<i>Ammadramus henslowii</i>	CR	R
Southeastern kestrel	<i>Falco sparverius paulus</i>	PM	R
Swallow-tailed kite	<i>Elanoides forficatus</i>	PM	R
Fish			
Blackbanded sunfish	<i>Enneacanthus chaetodon</i>	PR	E
Bluefin killifish	<i>Lucania goodei</i>	PR	R

- 5 CR – Confirmed resident; PM – Possible migrant or occasional visitor; PR – Possible resident; CR – confirmed resident;
 6 R – rare; U – unusual

7 **Blackbanded Sunfish (*Enneacanthus chaetodon*, State-listed endangered)** - The blackbanded sunfish is
 8 a small, laterally compressed and deep-bodied species reaching a maximum length of 4 inches and has
 9 five to six distinct black bars along its sides that extend from the dorsum to the venter. The first bar
 10 passes through the eye and the third through the first three membranes of the spinous dorsal fin to the
 11 upper edge. No other sunfish has this barring pattern. Blackbanded sunfish inhabit shallow, low-velocity,
 12 non-turbid waters of lakes, ponds, rivers, and streams. They are strongly associated with aquatic
 13 vegetation and are typically found in acidic tea-stained waters where they feed on aquatic
 14 invertebrates. Beaver ponds are important habitat for spawning, which generally occurs in spring, and
 15 for juvenile fish (GADNR, 2014b). Various natural and anthropogenic factors may pose a threat to
 16 blackbanded sunfish including alterations to drainage patterns within suitable habitat, excessive water
 17 withdrawal, removal of beaver dams, drought, competition or predation from other fish, and invasive
 18 species such as apple snails, which threaten aquatic vegetation. Management for this species should
 19 include surveys to monitor and identify its presence within suitable habitats that employ a variety of
 20 survey techniques (e.g., seining, trapping, and dip netting) and protection of suitable habitat.

21 **Bluefin Killifish (*Lucania goodei*, State-listed rare)** - Bluefin killifish reach approximately 2 inches in
 22 length and have slender, compressed bodies with terminal, upturned snouts. They are sexually
 23 dimorphic, with adult males having brightly colored dorsal, caudal, anal, and pelvic fins. Bluefin killifish
 24 are associated with aquatic vegetation in slow-flowing waters. They have been known to occur in
 25 ditches, ponds, sloughs, lakes, pools, and the backwaters of streams and spring runs. Bluefin killifish are
 26 also found in brackish water environments such as shallow estuaries (GADNR, 2014b). Threats to bluefin
 27 killifish include habitat loss from reduced water levels in marshes and wetlands, flow reduction in

1 tributaries and channels resulting from water withdrawal for irrigation, and removal of wetland and
2 riparian vegetation. Management for this species should include surveys to identify its presence,
3 protection of wetlands, and avoidance of excessive water withdrawal from seasonal channels and small
4 tributaries.

5 **Gopher Frog (*Lithobates capito*, State-listed rare)** - The gopher frog occurs throughout the Coastal Plain
6 of the southeastern United States (GADNR, 2014b). In Georgia, the gopher frog is restricted to longleaf
7 pine-dominated communities and occurs in well-drained and more poorly drained sites. Except when
8 breeding, the gopher frog is essentially terrestrial and lives in animal burrows. Gopher tortoise and
9 oldfield mouse (*Peromyscus polionotus*) burrows are typically used in drier habitats, while crayfish
10 burrows may be used on wetter habitats. Gopher frogs breed in isolated, depressional wetlands, and
11 optimal breeding sites provide a group or cluster of isolated wetlands. The gopher frog may potentially
12 reside within TBR, so management for this species should include surveys to identify its presence,
13 conversion to suitable pine dominated natural communities, prescribed fires, and avoidance of pesticide
14 use in occupied habitats.

15 **Henslow's Sparrow (*Ammadramus henslowii*, State-listed rare)** - The Henslow's sparrow is a small
16 insectivore and seed eater known to breed throughout much of the central and eastern midwest, along
17 the very northern fringe of the southeast, in much of New York and Pennsylvania, and southwestern
18 Ontario, Canada (GADNR, 2014b). Wintering birds occur in the southeast Coastal Plain from North
19 Carolina to eastern Texas and portions of the lower Mississippi River Valley. Breeding and wintering
20 habitats are characterized by dense cover of grasses and forbs, well-developed litter layer, standing
21 dead vegetation, and little or no woody vegetation. Sites with moist soils seem to be preferred. On its
22 winter grounds, dense stocking of pines, lack of prescribed fire, draining of pitcher plant bogs and other
23 wetlands, and unfavorable changes in power line maintenance procedures all reduce the dense grassy
24 groundcover this bird prefers and lead to further population declines. This species has been observed on
25 TBR and may use suitable wintering habitats throughout the expanded TBR. Management for this
26 species should include monitoring of known occurrences, surveys to identify its presence elsewhere on
27 TBR, conversion to suitable pine-dominated natural communities, and prescribed fires.

28 **Mimic Glass Lizard (*Ophisaurus mimicus*, State-listed rare)** - The mimic glass lizard is a long, slender,
29 limbless lizard occurring in a narrow band of the lower Coastal Plain from southeastern North Carolina
30 to the Pearl River in Mississippi (GADNR, 2014b). Mimic glass lizards are associated with longleaf pine
31 communities, and habitat alteration in the lower Coastal Plain has contributed to substantial decline of
32 this species. The last reported collection from Georgia occurred in 1978, and there are currently no
33 known populations in the state. Destruction and fragmentation of mature, open pine forest habitat have
34 been the greatest threats to the mimic glass lizard. It is unlikely that the mimic glass lizard occurs on the
35 expanded portion of TBR. Management for this species should include surveys to identify its presence,
36 conversion to suitable pine dominated natural communities, and prescribed fires.

37 **Rafinesque's Big-eared Bat (*Corynorhynchus rafinesquii*, State-listed rare)** - Rafinesque's big-eared bat
38 has brownish-gray appearing dorsal hair, with individual dorsal hairs being dark brown to black at the
39 base with pale red to brown tips. Its belly fur is dark at the base with contrasting white tips. Adults range
40 from 3 to 4 inches in length, and weigh 0.25 to 0.5 ounce, with females tending to be slightly heavier
41 than males. The wingspan ranges from 10 to 12 inches. The ears are large, usually exceeding 0.25 inch in
42 length, are joined at the base, and are coiled (resembling the horns of a ram) when the bat is roosting.
43 Rafinesque's big-eared bats are typically associated with forest communities such as mature bottomland
44 and upland hardwood forests, and pine flatwood forests that are near water. Roosting sites include

1 abandoned buildings, bridges, hollow trees, loose tree bark, rocky outcrops, and the entrances of caves
2 and mines (GADNR, 2014b). These bats are colonial roosters, and suitable roost sites may hold up to 100
3 individuals. Rafinesque's big-eared bats forage among the canopies of large trees, and feed exclusively
4 on night-flying insects, especially moths. Primary threats to Rafinesque's big-eared bat populations
5 include pesticides and destruction and alteration of forest habitat. Management for this species should
6 include roost site surveys, surveys to identify suitable habitat (i.e., mature forests with plentiful hollow
7 trees), avoidance of detrimental forest management practices such as culling of hollow trees, and
8 avoidance of excessive use of pesticides near areas of suitable habitat.

9 **Southeastern Kestrel (*Falco sparverius paulus*, State-listed rare)** - The southeastern kestrel is a small
10 falcon occurring throughout much of North America (GADNR, 2014b). In Georgia, the southeastern
11 kestrel breeds in large open habitats including grasslands, pastures, sandhills, and open pine forests of
12 the Coastal Plains. It is an obligate secondary cavity nester that uses old woodpecker holes or other
13 cavities in trees. It also nests and roosts in nest boxes, buildings, and other human-made structures. The
14 species preys on large invertebrates and small mammals, birds, and reptiles. Today the biggest threats
15 to southeastern kestrel populations in Georgia are loss and alteration of open habitats, loss of cavity
16 trees, and heavy pesticide use in feeding areas. Increased pesticide use can cause direct poisoning of
17 birds as well as decrease prey numbers, particularly insects. This can lead to reduced survival rates for
18 kestrels, as well as lowered reproductive success. Although the southeastern kestrel is not likely to occur
19 on TBR, providing adequately designed nest boxes has increased populations in other areas. The
20 management prescriptions identified in the INRMP which result in growth of large mature trees and
21 maintenance of habitats with an open canopy could result in the creation of suitable habitats for the
22 southeastern kestrel in the future.

23 **Spotted Turtle (*Clemmys gutta*, State-listed rare)** - The spotted turtle is a small aquatic turtle ranging
24 from 3.5 to 4.5 inches in length that occurs from southern Maine southward along the Atlantic Coastal
25 Plain and portions of the Piedmont to central Florida (GADNR, 2014b). Populations also occur in the
26 midwestern states and southern Canada. Heavily vegetated, shallow wetlands with standing or slowly
27 flowing water are the typical habitat for the spotted turtle. Wetlands with a soft, mucky substrate seem
28 to be preferred. During certain times of the year, spotted turtles spend a considerable amount of time
29 on land. During this short activity period, terrestrial movements are often made from one wetland to
30 another. At other times of the year, most spotted turtles bury themselves in moist, organic soil or muck
31 either to aestivate or hibernate. A wide variety of plant and animal (live or carrion) material is
32 consumed, including filamentous algae, aquatic grasses, aquatic insect larvae, crustaceans, snails,
33 tadpoles, salamanders, and fishes. Although this species has not been identified on TBR, it could occur in
34 the expanded portion of TBR. Management for the spotted turtle should include surveys to identify
35 presence and avoidance of soil disturbance, ditching, draining, firebreak construction, bedding, and
36 mechanical clearing in wetlands. Upland characteristics supporting the spotted turtle are not well
37 understood; thus, management recommendations cannot be made for upland habitats.

38 **Swallow-tailed Kite (*Elanoides forficatus*, State-listed Rare)** - The swallow-tailed kite is a migratory
39 summer resident in Georgia (GADNR, 2014b). The main breeding range in the United States is contained
40 in just seven states and is restricted to riparian habitats throughout peninsular Florida and associated
41 with major river systems of the lower coastal plains of South Carolina, Georgia, Alabama, Mississippi,
42 Louisiana, and Texas. In Georgia, this species occurs most commonly along the larger Atlantic drainage
43 rivers, particularly the Altamaha, Savannah, Ogeechee, and Satilla rivers, but also in the Okefenokee
44 Swamp and at sites scattered along the southern border of the state. This kite nests in trees that emerge

1 above the surrounding forest, which in Georgia are typically very large pines found in small “pine
2 islands” within floodplain or riparian forest, or in older stands of pine forest adjacent to floodplains of
3 large rivers or tributary creeks. Foraging habitats include bottomland forests, cypress and mixed
4 cypress-hardwood swamps, hardwood hammocks, pine flatwoods, pine forests bordering riparian areas,
5 freshwater and brackish marshes, wet prairies, sloughs, and pastures. Loss of nesting, foraging, and
6 roosting habitat from drainage of marshes and conversion of bottomland forests are the major threats
7 to the species today.

8 Although nesting kites are relatively inaccessible and somewhat tolerant of human activity, roosting
9 kites do not tolerate high levels of direct disturbance and are vulnerable to harassment. Areas possibly
10 as large as 100,000 acres containing diverse riparian forest, upland pine edge, and open foraging areas
11 are required to support viable populations. Areas capable of supporting kite populations now and in the
12 future, especially those associated with large river and creek systems, must be identified and
13 cooperatively managed to provide suitable habitat conditions for nesting and foraging. Key roosting sites
14 must also be protected. Conservation of swallow-tailed kites must involve lands actively managed for
15 forestry and other uses in addition to wilderness areas and other public lands. Swallow-tailed kites have
16 been observed foraging on TBR and are likely to forage in suitable habitats near the Altamaha River.
17 Management for this species should include surveys to monitor and identify its presence, protection of
18 wetlands, and allowing natural regeneration of floodplain communities.

19 **3.5.2.4 Game Animals**

20 TBR supports several species of game animals including white-tailed deer (*Odocoileus virginianus*), wild
21 turkey (*Meleagris gallopavo*), bobwhite quail (*Colinus virginianus*), and cottontail rabbit (*Sylvilagus*
22 *floridanus*). TBR has conducted controlled hunts for white-tailed deer since 2004 and continues to offer
23 approximately three recreational hunts per year. No fishing activities occur at TBR.

24 **3.5.2.5 Nuisance Animals**

25 A nuisance animal is any animal that causes direct or indirect adverse effects on native species or
26 natural ecological communities. The most prevalent invasive animal on TBR is the feral pig. The
27 extensive disturbance on soil and vegetation as a result of their rooting habits affects plant communities
28 and may cause shifts in plant community structure (Georgia Museum of Natural History, 2008). They
29 also compete for food with native animal species, particularly mast crops (acorns) which are important
30 sources of food for wild turkey and white-tailed deer. During the summer months, feral pigs create
31 wallows in wet sites, destroying the integrity of the plant and soil community. Other invasive species on
32 TBR are likely to include the nine-banded armadillo (*Dasypus novemcinctus*) and nutria (*Myocastor*
33 *coypus*) (Georgia Invasive Species Task Force, 2014). Invasive invertebrates are also known to occur on
34 TBR, but are managed as forest pests.

35 **3.5.2.6 Migratory Birds and Birds of Conservation Concern**

36 The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to “identify
37 species, subspecies, and populations of all migratory nongame birds that, without additional
38 conservation actions, are likely to become candidates for listing under the Endangered Species Act (ESA)
39 of 1973.” The USFWS identifies 35 migratory birds that have some potential to occur within McIntosh or
40 Long Counties as a Bird of Conservation Concern (USFWS, 2008a) (Table 3-7). Of these 35 birds, TBR is
41 within the year-round range of nine species, the wintering range of 15 species, the breeding range of 10
42 species, and the migratory range of one species. Of these 35 birds, five have been documented on TBR.

- 1 While the Atlanta Audubon Society does not identify any Important Bird Areas within TBR, the Altamaha
- 2 River Watershed Management Area has been identified as such (Atlanta Audubon Society, 2014).

Table 3-7. Birds of Conservation Concern, Southeastern Coastal Plain

Common Name	Latin Name	Federal Status	Breeding Status
Red-throated loon	<i>Gavia stellata</i>	NONE	X
Black-capped petrel	<i>Pterodroma hasitata</i>	E	nb
Audubon's shearwater	<i>Puffinus lherminieri</i>	NONE	nb
American bittern	<i>Botaurus lentiginosus</i>	NONE	nb
Least bittern	<i>Ixobrychus exilis</i>	NONE	X
Roseate spoonbill	<i>Platalea ajaja</i>	NONE	nb
Swallow-tailed kite	<i>Elanoides forficatus</i>	NONE	X
Bald eagle	<i>Haliaeetus leucocephalus</i>	DELISTED	X
American kestrel (<i>paulus</i> ssp.)	<i>Falco sparverius paulus</i>	NONE	X
Peregrine falcon	<i>Falco peregrinus</i>	DELISTED	X
Yellow rail	<i>Coturnicops noveboracensis</i>	NONE	nb
Black rail	<i>Laterallus jamaicensis</i>	NONE	X
Limpkin	<i>Aramus guarauna</i>	NONE	X
Snowy plover (a)	<i>Charadrius nivosus</i>	NONE	X
Wilson's plover	<i>Charadrius wilsonia</i>	NONE	X
American oystercatcher	<i>Haematopus palliatus</i>	NONE	X
Solitary sandpiper	<i>Tringa solitaria</i>	NONE	nb
Upland sandpiper	<i>Bartramia longicauda</i>	NONE	nb
Whimbrel	<i>Numenius phaeopus</i>	NONE	nb
Long-billed curlew	<i>Numenius americanus</i>	NONE	nb
Marbled godwit	<i>Limosa fedoa</i>	NONE	nb
Red knot (<i>rufa</i> ssp.)	<i>Calidris canutus rufa</i>	C	nb
Semipalmated sandpiper (Eastern)	<i>Calidris pusilla</i>	NONE	nb
Buff-breasted sandpiper	<i>Calidris subruficollis</i>	NONE	nb
Short-billed dowitcher	<i>Limnodromus griseus</i>	NONE	nb
Least tern ^(a)	<i>Sternula antillarum</i>	NONE	X
Gull-billed tern	<i>Gelochelidon nilotica</i>	NONE	X
Sandwich tern	<i>Thalasseus sandvicensis</i>	NONE	X
Black skimmer	<i>Rynchops niger</i>	NONE	X
Common ground-dove	<i>Columbina passerina</i>	NONE	X
Chuck-will's-widow	<i>Antrostomus carolinensis</i>	NONE	X
Whip-poor-will	<i>Antrostomus vociferus</i>	NONE	X
Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	NONE	X
Loggerhead shrike	<i>Lanius ludovicianus</i>	NONE	X
Brown-headed nuthatch	<i>Sitta pusilla</i>	NONE	X
Bewick's wren (<i>bewickii</i> ssp.)	<i>Thryomanes bewickii</i>	NONE	X
Sedge wren	<i>Cistothorus platensis</i>	NONE	nb
Wood thrush	<i>Hylocichla mustelina</i>	NONE	X
Blue-winged warbler	<i>Vermivora cyanoptera</i>	NONE	X
Black-throated green warbler	<i>Setophaga virens</i>	NONE	X
Prairie warbler	<i>Setophaga discolor</i>	NONE	X
Cerulean warbler	<i>Setophaga cerulea</i>	NONE	X

Table 3-7. Birds of Conservation Concern, Southeastern Coastal Plain

Common Name	Latin Name	Federal Status	Breeding Status
Prothonotary warbler	<i>Protonotaria citrea</i>	NONE	X
Swainson's warbler	<i>Limnothlypis swainsonii</i>	NONE	X
Kentucky warbler	<i>Geothlypis formosa</i>	NONE	X
Bachman's sparrow	<i>Peucaea aestivalis</i>	NONE	X
Henslow's sparrow	<i>Ammodramus henslowii</i>	NONE	X
LeConte's sparrow	<i>Ammodramus leconteii</i>	NONE	nb
Nelson's sharp-tailed sparrow	<i>Ammodramus nelsoni</i>	NONE	nb
Saltmarsh sharp-tailed sparrow	<i>Ammodramus caudacutus</i>	NONE	nb
Seaside sparrow ^(a)	<i>Ammodramus maritimus</i>	NONE	X
Painted bunting	<i>Passerina ciris</i>	NONE	X
Rusty blackbird	<i>Euphagus carolinus</i>	NONE	nb

1 E – Endangered, C – Candidate, nb – non-breeding

2 (a) non-listed subspecies or population of a Threatened or Endangered species

3 3.5.2.7 Threatened, Endangered, and Candidate Species

4 TBR natural resources staff have reviewed the GADNR SWAP, including the list of high-priority plants
5 and animals associated with the Sea Island Flatwoods, the GADNR (2014b) database of protected and
6 sensitive species occurrences in the USGS quarter quads encompassing the expanded range, and the
7 USFWS (2014) Information, Planning, and Conservation database of listed species potentially affected by
8 any project occurring in Long or McIntosh Counties. TBR natural resources staff have reviewed these
9 lists and identified those Federally listed species (with their associated state listings as applicable)
10 known to occur on TBR and those species which could be supported by habitats occurring or potentially
11 occurring on TBR (Table 3-8). No portions of the TBR contain critical habitat for Federally listed species
12 as defined by the ESA. A brief description of each of these protected species and its management needs
13 is provided below.

Table 3-8. Protected and Candidate Species Potentially Occurring on TBR

Common Name	Scientific Name	Status		
		TBR	USFWS	GADNR
Amphibians				
Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	CR	T	T
Striped newt	<i>Notophthalmus perstriatus</i>	LR	C	T
Reptiles				
American alligator	<i>Alligator mississippiensis</i>	CR	T/SA	-
Eastern indigo snake	<i>Drymarchon couperi</i>	LR	T	T
Gopher tortoise	<i>Gopherus Polyphemus</i>	CR	C	T
Birds				
Red-cockaded woodpecker	<i>Picoides borealis</i>	PM	E	E
Wood stork	<i>Mycteria americana</i>	CM	E	E
Bachman's warbler	<i>Vermivora bachmanii</i>	U	E	E

14 CM – Confirmed migrant or occasional visitor; CR – Confirmed resident; PM – Possible migrant or occasional visitor; PR –
15 Possible resident; LR – Likely resident; C – Candidate; E – Endangered; R – Rare; T – Threatened; T/SA – Threatened by
16 similarity of appearance; U – Unusual

1 Species descriptions below are in alphabetical order to facilitate ease of look-up and reference.

2 **American Alligator (*Alligator mississippiensis*, Federally Threatened by similarity of appearance)** - The
3 American alligator occurs throughout the southeastern United States (National Park Service [NPS],
4 2014). The species primarily inhabits freshwater swamps and marshes, but can also be found in rivers,
5 lakes, and smaller bodies of water. Hunting and loss of habitat led to the Federal listing of the species as
6 endangered in 1967. Populations have since improved, and the American alligator was removed from
7 the list of endangered species in 1987. The species is currently listed as threatened due to similarity of
8 appearance to another listed species, the American crocodile. This listing status is intended to deter
9 illegal hunting of either species to prevent inadvertent *take* of the American crocodile. Management for
10 this species should include monitoring of population size and education of all users of TBR to avoid harm
11 or harassment.

12 **Bachman's Warbler (*Vermivora bachmanii*, Federally Endangered)** - The Bachman's warbler is the
13 rarest songbird native to the United States and was listed as Federally endangered on March 11, 1967
14 (32 FR 4001; 35 FR 8495 [ESA]). It is a small warbler species with a total length of 4 to 5 inches, with a
15 slender slightly downward curving bill. Males have an olive-green dorsum with a yellow forehead, lores
16 chin and belly, a black throat and crown, and dusky wings and tail (USFWS, 1999). Females are drab in
17 coloration, having an olive-green dorsum and underside with a gray crown, and lacking the black
18 coloration present in males (USFWS, 1999). The Bachman's warbler breeds in the southeastern United
19 States and winters in western Cuba. The habitat associations of this species are not well known.
20 However, historical records describe associated habitat as old-growth bottomland hardwood forests
21 with open-canopy areas containing dense ground cover as nesting habitats (USFWS, 1999). Bachman's
22 warbler populations experienced drastic declines during the early 1900s, and it is now believed that this
23 species is either extinct or near extinction. Several factors are thought to have played a role in the
24 decline of Bachman's warbler including deforestation in the United States and Cuba, and severe tropical
25 weather events (USFWS, 1999). While it is unlikely that Bachman's warbler is present on TBR, surveys
26 for other avian species conducted in bottomland hardwood habitat may document this species. In
27 addition to Bachman's warbler, there are numerous species of plants and animals identified as high
28 priority for conservation by the GADNR SWAP that may occur on the expanded TBR or that would
29 benefit from proposed management projects identified in this INRMP.

30 **Eastern Indigo Snake (*Drymarchon couperi*, Federally Threatened)** - The eastern indigo snake is a large,
31 black, non-venomous snake found in a variety of habitats throughout much of the southeastern United
32 States (GADNR, 2014b). In Georgia, the eastern indigo snake is most often associated with sand ridge
33 habitats that often occur along major Coastal Plain streams. Eastern indigo snakes are often associated
34 with the burrows of the gopher tortoise, where they seek shelter from extreme temperatures and lay
35 eggs. In areas lacking tortoise burrows, decayed stumps and logs are important habitat features used for
36 cover. Individuals are likely to occupy upland habitats in association with gopher tortoise burrows during
37 the summer and migrate to stream-bottom thickets in summer and make extensive movements during
38 the late summer and fall. Eastern indigo snakes eat a variety of small mammals, amphibians, and other
39 reptiles, including eastern diamondback rattlesnakes and gopher tortoise hatchlings.

40 The eastern indigo snake was Federally listed as a threatened species on January 31, 1978 (43 FR 4026).
41 The objective of the Recovery Plan (USFWS, 2008b) is to ensure that numerous populations continue to
42 exist in the historical range of the species. Once this is established, the Recovery Plan calls for all states
43 within the range to provide legal protection; delisting would then be considered as eastern indigo
44 snakes would be protected from interstate commerce by the Lacey Act.

1 Habitat loss is the most limiting factor affecting the eastern indigo snake, but collection, killing, vehicle
2 strikes, and pesticides also impact this species. Observations of the eastern indigo snake have been
3 documented west of State Highway 57 on the western boundary of TBR (MCAS, 2013). The eastern
4 indigo snake is known to have a large range and utilize a variety of habitats, and therefore may utilize
5 habitats within TBR. Management for this species should include surveys to identify its presence,
6 conversion of pine plantation to suitable pine-dominated natural communities, and prescribed fires.

7 **Frosted Flatwoods Salamander (*Ambystoma cingulatum*, Federally Threatened)** - The frosted
8 flatwoods salamander is restricted to the Coastal Plain of South Carolina, Georgia, Florida, and Alabama
9 (GADNR, 2014b). Breeding habitats include ephemeral wetlands, depressional wetlands dominated by
10 pond cypress, blackgum, and slash pine that are seasonally flooded and geographically isolated from
11 other bodies of water. These breeding habitats are typically devoid of predatory fish. Optimum breeding
12 habitats are supported by appropriate upland habitats within 1,500 feet of a breeding site. Supporting
13 upland habitats include moderately moist open pine flatwoods or pine savannas with a transitional open
14 canopy ecotone between upland and wetland habitats to facilitate transition between habitats.

15 The frosted flatwoods salamander was Federally listed as threatened on April 1, 1999 (64 FR 15691), as
16 populations declined due to loss of suitable habitat. Fire suppression and conversion of longleaf pine
17 flatwoods into slash and loblolly pine plantations are the major threats to the frosted flatwoods
18 salamander. Forestry practices such as ditching, draining, or bedding can alter local hydrology and
19 eliminate or degrade potential breeding habitats. Extant populations are known from only four sites in
20 Georgia; thus, fragmentation also threatens the species.

21 The frosted flatwoods salamander has been documented at TBR and may utilize ephemeral wetlands or
22 ponds within the expanded TBR, where systematic surveys for this species have not occurred. Avoidance
23 of mechanical disturbance to the soil and discontinuing practices that may result in adverse hydrological
24 impacts on breeding sites are critical, especially within at least a 1-mile radius from the edge of all
25 known breeding wetlands. Periodic lightning-season burns should be prescribed in pinelands inhabited
26 by flatwoods salamanders, and these fires should be allowed to burn into isolated wetlands. Known
27 breeding sites should be monitored annually. Management should also include education of TBR users
28 and efforts to restore a more natural hydrology through restoration of drainage networks.

29 **Gopher Tortoise (*Gopherus polyphemus*, Federal Candidate for Listing, State-listed Threatened)** - The
30 gopher tortoise is separated into two populations by the USFWS. The western population, Federally
31 listed as threatened on July 7, 1987 (52 FR 25376), is defined as those individuals that are found west of
32 the Mobile and Tombigbee Rivers in Alabama, Mississippi, and Louisiana. All gopher tortoises located to
33 the east are part of the eastern population. FR Docket No. FWS-R4-ES-2009-0029 (dated July 27, 2011;
34 76 FR 45130) states that listing the eastern population is warranted but precluded by higher-priority
35 actions. As such, the gopher tortoise is Federally listed as a candidate species in an effort to conserve
36 habitat to prevent the species from becoming listed. Likewise, the gopher tortoise is listed as threatened
37 by the GADNR.

38 Gopher tortoises are common in most types of upland communities with open canopies (GADNR
39 2014b). They are commonly found in habitats such as sandhills, pine flatwoods, scrub, scrubby
40 flatwoods, dry prairies, xeric hammocks, pine-mixed hardwood forests, and coastal dunes. Gopher
41 tortoises construct burrows in sandy soils. Gopher tortoises reside in these burrows, which protect them
42 from other species and extreme heat. These burrows also provide similar protection for over 350 other
43 commensal species. Gopher tortoises have been observed within xeric areas in the western portion of

1 the expanded TBR and may occur in other areas. Management for this species should include
2 monitoring of known populations, surveying to identify presence on other portions of TBR, conversion
3 to suitable pine dominated natural communities, and prescribed fires.

4 **Red-cockaded Woodpecker (*Picoides borealis*, Federally Endangered)** - The red-cockaded woodpecker
5 is a non-migratory cavity nester that was once common in mature pine forests throughout the
6 southeastern United States from eastern Texas and Oklahoma to the Atlantic Coast and north to
7 Missouri, Kentucky, and Maryland (GADNR, 2014b). The current range for this species has been greatly
8 reduced and fragmented due to destruction and fragmentation of mature, open pine forest habitat.
9 Habitat loss led to the Federal listing of the red-cockaded woodpecker as endangered in 1970 (35 FR
10 16047). Georgia has five remaining population centers that comprise the vast majority the state's red-
11 cockaded woodpecker population including Fort Benning, Fort Stewart, Okefenokee National Wildlife
12 Refuge, Piedmont National Wildlife Refuge/Breder Experimental Forest/Oconee National Forest, and
13 plantations in the Red Hills region of Thomas and Grady Counties where red-cockaded woodpecker
14 habitat maintenance had been incidental to land management for quail hunting and aesthetics.
15 Translocation efforts have re-established several family groups on Joseph Jones Ecological Research
16 Center and Silver Lake Watershed Management Area. A few scattered groups may remain elsewhere on
17 private land.

18 **Striped Newt (*Notophthalmus perstriatus*, Federal Candidate for Listing, State-listed Threatened)** - The
19 striped newt was recently added as a candidate species to the USFWS threatened and endangered
20 species list on June 7, 2011 (76 FR 32911). The striped newt is a small salamander found only in Georgia
21 and Florida. Habitat includes longleaf pine-dominated savanna, scrub, or sandhills dominated by grass
22 species. During the spring, the striped newt transitions from uplands into depressional and ephemeral
23 wetlands to lay eggs. Suitable breeding habitat consists of shallow, isolated ponds, and wetlands devoid
24 of fish. The primary threat to striped newts is habitat loss due to fire suppression and hardwood
25 invasion (76 FR 32911-32923). The striped newt has not been documented on TBR, but may utilize
26 ephemeral wetlands or ponds within TBR.

27 More research is needed to better understand the full range of requirements necessary for the survival
28 of this unusual species. All efforts should be made to create low impact buffer zones surrounding
29 breeding sites that incorporate a substantial amount of upland habitat. In areas known to contain
30 striped newts, forest managers should minimize heavy soil disturbance, incorporate longer timber
31 rotations, and reduce the basal area of planted pines. Habitat management actions for the gopher
32 tortoise are also appropriate for the striped newt. Periodic fires are necessary to control woody
33 midstory vegetation in upland habitats and should be allowed to burn into isolated wetlands. Drainage
34 of isolated wetlands should be avoided.

35 **Wood Stork (*Mycteria Americana*, Federally Endangered)** - The wood stork was listed as Federally
36 endangered on February 28, 1984 (49 FR 7332). The wood stork is a colonial bird that nests in large
37 rookeries often constructed in cypress or blackgum trees, or in mangroves on islands. Rookeries may be
38 used from year to year as long as they remain undisturbed (USFWS, 1986). They feed in flocks on small
39 fish, crustaceans, amphibians, reptiles, and arthropods found within freshwater marshes, flooded
40 roadside and agricultural ditches, and depressions in cypress heads, swamp sloughs, tidal creeks and
41 pools, and estuaries. The wood stork is known to travel long distances (up to 80 miles) in search of
42 feeding areas. Past research on Georgia wood stork colonies has found that foraging occurs 80 percent
43 of the time within a 12-mile radius (USFWS, 1986).

1 A known wood stork rookery is located several miles northwest of TBR (USFWS, 2009). Given the wood
2 stork's ability to travel great distances, portions of TBR are likely to be utilized by wood stork as foraging
3 habitat.

4 **3.5.3 Environmental Consequences**

5 This analysis focuses on wildlife or vegetation types that are important to the function of the ecosystem
6 or are protected under Federal or state law or statute.

7 **3.5.3.1 No Action Alternative**

8 Under the No Action Alternative, the Proposed Action would not occur and there would be no change to
9 biological resources. Therefore, no significant impacts on biological resources would occur with
10 implementation of the No Action Alternative.

11 **3.5.3.2 Medium-Intensity Management Alternative (Preferred Alternative)**

12 Implementation of the Medium-Intensity Management alternative would support all the projects under
13 the five management objectives (forest management, fish and wildlife management, land management,
14 management of outdoor recreational opportunities, and training) of the TBR INRMP. The study area for
15 the analysis of effects on biological resources associated with the Preferred Alternative includes the
16 entire TBR.

17 **Vegetation**

18 Various proactive management measures would be implemented under the Preferred Alternative,
19 including timber stand improvement, nuisance wildlife management, invasive plant species control, and
20 land/fire management. These mandatory stewardship initiatives would increase the biodiversity and
21 value of the vegetation communities on the TBR and facilitate the ultimate objective of establishing an
22 old-growth forest to support the military training mission. No adverse impacts would be expected under
23 this alternative; however, major beneficial effects would be anticipated.

24 **Terrestrial Wildlife**

25 Wildlife species are expected to benefit from the removal or control of invasive plant and animal
26 species. As control of exotic and invasive species is implemented and additional wildlife management
27 plans are initiated, biodiversity is expected to increase. Some individuals of wildlife species, especially of
28 less mobile species, could be harmed during timber stand improvement practices (and prescribed
29 burns); however, the long-term beneficial impacts on the wildlife populations would outweigh the loss
30 of relatively few specimens.

31 The MBTA (16 U.S.C. § 703) requires the avoidance of harming migratory bird, or the parts, nests, or
32 eggs of such bird; or the application for a permit from the USFWS to conduct any action that could not
33 avoid such effects on migratory birds. Habitats for migratory birds occur throughout the TBR, and a
34 diverse population of neo-tropical migratory birds is expected to occur on the property. However, no
35 major construction activities are planned under the Preferred Alternative that would result in the
36 destruction or alteration of these habitats. Timber stand improvement (and prescribed burning) projects
37 could temporarily affect migratory birds, depending upon the season in which the activity occurs;
38 however, long-term impacts on neo-tropical migratory birds are expected to be beneficial with
39 improved forestry management practices.

1 Fishes could be impacted by prescribed burns and applications of herbicides for invasive plant species
2 control. Erosion and sedimentation from burned areas and stormwater runoff containing herbicides
3 would adversely affect water quality, clog gills of certain fish species, reduce egg buoyancy, and reduce
4 visibility of prey items. Only herbicides that are approved for application near or within aquatic habitats
5 would be used to avoid or reduce impacts on fishes and other aquatic organisms. No herbicide
6 application would occur near Stink Hole Creek, Tobacco Bottom Canal, Tram Road Canal, and Snuff Box
7 Canal in an effort to avoid adverse effects on species within the upper reaches of the South Newport
8 River. Erosion control measures would be used as outlined in the timber management plan to minimize
9 and potentially eliminate any adverse effects during the timber improvement activities. BMPs such as
10 canal and streamside buffers would be identified as well.

11 **Threatened and Endangered Species**

12 Eight threatened, endangered, and candidate species are likely to occur within the APE of the Preferred
13 Alternative. Suitable habitat exists within the Preferred Alternative APE for the frosted flatwoods
14 salamander, striped newt, American alligator, eastern indigo snake, gopher tortoise, red-cockaded
15 woodpecker, Hairy rallieweed, and wood stork. The Bachman's warbler has not been observed on TBR.

16 One of the first projects to be completed would be an inventory to determine the presence of
17 threatened, endangered, and candidate species or habitat suitable to support such species. This
18 inventory would facilitate the development and implementation of long-term management plans, which
19 would provide substantial long-term benefits to these species. Improved forestry management practices
20 through timber stand improvements would enhance red-cockaded woodpecker populations and,
21 indirectly, frosted flatwoods salamander and striped newt populations. The latter species would benefit
22 from the additional shade that would be provided along the banks of the Tram Road Canal and Snuff Box
23 Canal within the upper reaches of the South Newport River.

24 During prescribed burns, individuals of select threatened, endangered, and candidate species, such as
25 wood stork or gopher tortoise, may be affected, but populations of these species are not likely to be
26 adversely affected. In the event that red-cockaded woodpeckers do occur on TBR, prescribed burns
27 would be integral to their management. Prescribed burns and timber improvement projects would also
28 benefit other threatened, endangered, and candidate species such as American alligator, eastern indigo
29 snake, and red-cockaded woodpecker. Removal or control of invasive plant and animal species would
30 benefit threatened, endangered, and candidate species through reduction of competition and
31 enhancement of habitat.

32 Temporary impacts on threatened and endangered terrestrial species could occur from smoke and
33 habitat disturbances associated with prescribed burn and firebreak construction and management
34 activities. Threatened and endangered terrestrial species on TBR are already habituated to high levels of
35 noise associated with ongoing training and bombing activities. Increases in noise levels from firebreak
36 construction and management activities to the ambient noise environment would be negligible and
37 temporary. Firebreak construction and management activities would occur on previously forested
38 management areas. Minimal disturbance of the natural ecological communities supporting threatened,
39 endangered, and candidate species would occur under the Preferred Alternative. Therefore, habitat
40 removal would be negligible and would not negatively impact habitat use by any threatened or
41 endangered species. Firebreak construction and prescribed burn activities would result in short-term
42 impacts from disturbance to terrestrial wildlife including threatened and endangered species, but would
43 not further threaten the existence of any protected species or sensitive habitats. Additionally,

1 Installation personnel would continue to manage habitats according to the INRMP, which is designed to
2 protect and benefit threatened and endangered species.

3 There would be no significant impact on threatened and endangered species and no formal consultation
4 between the USMC and USFWS would be required. Therefore, implementation of the Preferred
5 Alternative would not result in significant impacts on biological resources.

6 **3.5.3.3 Low-Intensity Management Alternative**

7 Implementation of the Low-Intensity Management Alternative would support all the projects under the
8 five management objectives (forest management, fish and wildlife management, land management,
9 management of outdoor recreational opportunities, and training) except for the GIS Database
10 Management stewardship project identified in the TBR INRMP. Without this GIS framework and
11 database, TBR would retain an incomplete inventory of the range's natural resources, including the
12 location of all the natural ecological communities, sensitive and regionally important plants,
13 preponderance of invasive plant areas, and aquatic habitats and vegetation on TBR and deterioration of
14 natural features and systems rather than the desired maintenance, preservation, and enhancement of
15 ecosystems. Construction and management activities associated with firebreaks would result in the
16 same natural resources impacts as described for the Preferred Alternative. Therefore, implementation
17 of this action alternative would not result in significant impacts on biological resources.

18 **3.6 Socioeconomics**

19 This section discusses population demographics, employment characteristics, schools, and housing
20 occupancy status data that provide key insights into socioeconomic conditions that might be affected by
21 a proposed action.

22 **3.6.1 Regulatory Setting**

23 Socioeconomic data shown in this section are presented at the county, state, and national levels to
24 characterize baseline socioeconomic conditions in the context of regional, state, and national trends.
25 Data were collected from Federal databases, including the U.S. Census Bureau and the U.S. Bureau of
26 Economic Analysis.

27 **3.6.2 Affected Environment**

28 McIntosh and Long Counties are primarily rural in nature with the majority of populated areas located
29 near and within the county seats. The ROI for assessing socioeconomic impacts is the area immediately
30 around the TBR, McIntosh and Long Counties. Due to the military's long association with the area, the
31 current facility is an integral part of the community and economy of the region. TBR occupies a 33,813-
32 acre tract of land located in McIntosh and Long Counties, Georgia.

33 **3.6.2.1 Population Characteristics**

34 Population data for areas around TBR are shown in Table 3-9. Long County experienced substantial
35 population growth from 2010 to 2014, growing more than 18 percent, from 14,448 to 17,113, compared
36 to a decrease of 0.8 percent for neighboring McIntosh County. Over the same time period, the
37 population of state of Georgia increased by 4.2 percent, and the population of the U.S. increased by 3.3
38 percent.

1 **Table 3-9. Population Characteristics of the Region**

	McIntosh County	Long County	Georgia
2014 Population	14,214	17,113	10,097,343
2010 Population	14,332	14,448	9,688,681
Percent Change	-0.8%	18.4%	4.2%

2 Source: U.S. Census Bureau 2015

3 Long and McIntosh Counties are relatively rural counties, with population densities in 2010 of 36.1 and
 4 33.8 persons per square mile, respectively, compared to 168.4 persons per square mile for the state of
 5 Georgia. According to 2014 Census estimates, the population of McIntosh County is 38.6 percent
 6 minority, and the population of Long County is 40.9 percent minority, both of which are below the 45.7
 7 percent minority for the State of Georgia (U.S. Census Bureau 2014). The population of McIntosh County
 8 is approximately 35 percent Black or African American alone and 2 percent Hispanic or Latino, while the
 9 population of Long County is approximately 26 percent Black or African American alone and 11 percent
 10 Hispanic or Latino.

11 Table 3-10 shows educational attainment in the area. The percentage of the population with a high
 12 school credential in Long County (85.0 percent) is similar to Georgia (84.7 percent) and the U.S. (86.0
 13 percent). The percentage of the population with a high school credential in McIntosh County is slightly
 14 lower at 80.5 percent. The percentage of the population with a Bachelor's degree or higher in both Long
 15 and McIntosh Counties (14.0 and 15.8 percent, respectively) is substantially below the average for
 16 Georgia (28.0 percent) and the U.S. (28.8 percent).

17 **Table 3-10. Educational Attainment of the Region and the United States**

Percent of Persons Age 25+	McIntosh County	Long County	Georgia	United States
High school graduates	80.5%	85.0%	84.7%	86.0%
Bachelor's degree or higher	15.8%	14.0%	28.0%	28.8%

18 Source: U.S. Census Bureau 2015

19 **3.6.2.2 Regional Housing Characteristics**

20 Regional data on housing units in McIntosh and Long Counties, Georgia, and the Nation are presented in
 21 Table 3-11 (U.S. Census Bureau 2014).

22 **Table 3-11. Housing Characteristics of the Region and the United States**

	Total Housing Units	Occupied			Homeowner Vacancy Rate*	Rental Vacancy Rate**
		Units	Owner-Occupied	Renter-Occupied		
McIntosh County	9,171	4,993	81.5%	18.5%	3.8%	12.3%
Long County	5,979	4,841	62.2%	37.8%	1.5%	16.4%
Georgia	4,094,812	3,518,097	65.1%	34.9%	3.2%	10.5%
United States	132,057,804	115,610,216	64.9%	35.1%	2.2%	7.3%

23 Source: U.S. Census Bureau 2014

24 *Homeowner vacancy rate is the proportion of the homeowner inventory that is vacant "for sale."

25 ** Rental vacancy rate is the proportion of the rental inventory that is vacant "for rent."

1 **3.6.2.3 Labor Force and Employment**

2 For the year 2014, the annual average labor force in McIntosh and Long Counties was 5,884 and 6,631,
3 respectively. The average annual unemployment rates in 2014 in McIntosh and Long Counties was 8.2
4 and 7.3 percent, respectively, and the unemployment rate for Georgia was 7.2 percent, all of which
5 were noticeably greater than the national average unemployment rate of 6.2 percent for 2014 (U.S.
6 Bureau of Labor Statistics, 2015a and 2015b).

7 **3.6.3 Environmental Consequences**

8 Analysis of impacts on socioeconomics is focused on the issues of the effects of the alternatives on
9 population and housing characteristics, and labor force and employment data.

10 **3.6.3.1 No Action Alternative**

11 Under the No Action Alternative, the Proposed Action would not occur and there would be no change to
12 the socioeconomic conditions in the local area or region. Therefore, no significant impacts would occur
13 with implementation of the No Action Alternative.

14 **3.6.3.2 Medium-Intensity Management Alternative (Preferred Alternative)**

15 The study area for socioeconomic analyses for the Preferred Alternative is defined as McIntosh and Long
16 Counties, Georgia. Implementation of the Medium-Intensity Management alternative would support all
17 the projects under the five management objectives (forest management, fish and wildlife management,
18 land management, management of outdoor recreational opportunities, and training) of the TBR INRMP.

19 This alternative could involve limited additional activities related to personnel conducting sensitive
20 species and bird surveys, removing invasive plants, construction and maintenance of firebreaks, and
21 conducting prescribed burns. These activities could provide minor temporary positive, direct impacts in
22 the region, including increased revenues to local businesses if local contractors are utilized and
23 increased revenues to retail establishments, hotels, and restaurants if contractors from outside the
24 region are used to conduct the surveys, remove invasive plants, construct the firebreaks, and perform
25 the prescribed burns. Therefore, implementation of the Preferred Alternative would not result in
26 significant impacts on the socioeconomics of the local area or region.

27 **3.6.3.3 Low-Intensity Management Alternative**

28 Implementation of the Low-Intensity Management Alternative would support all the projects under the
29 five management objectives (forest management, fish and wildlife management, land management,
30 management of outdoor recreational opportunities, and training) except for the GIS Database
31 Management stewardship project identified in the TBR INRMP. The study area for socioeconomics
32 analysis for the Low-Intensity Management Alternative is the same as the Preferred Alternative;
33 McIntosh and Long Counties, Georgia.

34 Similar to the Preferred Alternative, these activities could provide minor temporary positive, direct
35 impacts in the region, including increased revenues to local businesses if local contractors are utilized
36 and increased revenues to retail establishments, hotels, and restaurants if contractors from outside the
37 region are used to conduct the surveys, remove invasive plants, construct the firebreaks, and perform
38 the prescribed burns. Therefore, implementation of this action alternative would not result in significant
39 impacts on the socioeconomics of the local area or region.

1 3.7 Environmental Justice

2 The USEPA defines Environmental Justice as the fair treatment and meaningful involvement of all people
3 regardless of race, color, national origin, or income with respect to the development, implementation,
4 and enforcement of environmental laws, regulations, and policies (USEPA, 2015).

5 3.7.1 Regulatory Setting

6 Consistent with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and*
7 *Low-Income Populations* (February 11, 1994), the Navy's policy is to identify and address any
8 disproportionately high and adverse human health or environmental effects of its actions on minority
9 and low-income populations. EO 12898 is intended to ensure that proposed Federal actions do not have
10 disproportionately high or adverse human health and environmental effects on minority and low-
11 income populations and to ensure greater public participation by minority and low-income populations.
12 It requires each agency to develop an agency-wide environmental justice strategy. A Presidential
13 Transmittal Memorandum issued with the EO states that "Each Federal agency shall analyze the
14 environmental effects, including human health, economic and social effects, of Federal actions, including
15 effects on minority communities and low-income communities, when such analysis is required by the
16 NEPA 42 U.S.C. section 4321, et seq." The DoD has directed that NEPA will be used to implement the
17 provisions of the EO.

18 3.7.2 Affected Environment

19 3.7.2.1 Minority Populations

20 EO 12898 does not provide guidelines on how to determine concentrations of minority or low-income
21 populations. However, analysis of demographic data on race, ethnicity, and poverty provides
22 information on minority and low-income populations that could be affected by the Proposed Actions.
23 The 2010 U.S. Census estimates the numbers of minority individuals and the American Community
24 Survey provides the most recent poverty estimates available. Minority populations are those persons
25 who identify themselves as Black, Hispanic, Asian American, American Indian/Alaskan Native, Pacific
26 Islander, or Other.

27 Minority population, based upon self-identification, within the state of Georgia was 45.7 percent of the
28 total population in 2014 (Table 3-12). Minority population in McIntosh County in 2014 was 38.6 percent
29 of the population. Minority population in Long County in 2014 was 40.9 percent of the population. A
30 potential disproportionate impact may occur when the percent minority in the study area exceeds 50
31 percent.

32 **Table 3-12. Minority and Poverty Characteristics of the Region**

Location	Minority Population (Percent)	All Ages in Poverty (Percent)
McIntosh County	38.6	14.9
Long County	40.9	19.2
Georgia	45.7	18.2

33 Source: U.S. Census Bureau 2015

1 3.7.2.2 Low-Income

2 Poverty status is used to define low-income. Poverty is defined as the number of people with income
3 below poverty level, which was \$24,230 for a family of four in 2014, according to the U.S. Census
4 Bureau. Additionally, a disproportionate impact may occur when the percent minority and/or low-
5 income in the study area are meaningfully greater than those in the region.

6 Income and poverty data are shown in Table 3-13. Per capita income for McIntosh and Long Counties is
7 low at 55.5 and 46.4 percent of the U.S. average, respectively (U.S. Bureau of Economic Analysis, 2014).
8 However, the poverty rate in McIntosh County (14.9 percent) is below the poverty rate for the state of
9 Georgia (18.2 percent) and the nation (15.4 percent).

10 **Table 3-13. Income and Poverty Characteristics of the Region and the United States**

	McIntosh County	Long County	Georgia	United States
Per capita personal income (dollars), 2013	\$24,861	\$20,792	\$37,845	\$44,765
Per capita personal income as a percent of U.S., 2013	55.5%	46.4%	84.5%	100%
Persons of all ages below poverty level, 2009-2013	14.9%	19.2%	18.2%	15.4%

11 Sources: U.S. Census Bureau 2015 and U.S. Bureau of Economic Analysis 2014.

12 The per capita income for individuals in McIntosh County is \$24,861, for Long County is \$20,792, and for
13 the State of Georgia is \$37,845. (U.S. Census Bureau 2014). Per capita incomes for individuals in
14 McIntosh and Long Counties fall substantially below the averages for the State of Georgia and the U.S.
15 Approximately 19.2 percent of Long County persons of all ages fall below poverty level.

16 3.7.2.3 Protection of Children

17 EO 13045 requires each Federal agency “to identify and assess environmental health risks and safety
18 risks that may disproportionately affect children” and “ensure that its policies, programs, activities, and
19 standards address disproportionate risks to children that result from environmental health risks or
20 safety risks.” This EO was prompted by the recognition that children, still undergoing physiological
21 growth and development, are more sensitive to adverse environmental health and safety risks than
22 adults. The potential for impacts on the health and safety of children is greater where projects are
23 located near residential areas. Table 3-14 identifies the percentage of child populations (under age 18)
24 within the ROI. Long County’s population of children is similar to the state.

25 **Table 3-14. Population Under 18 Years of Age for the Region and the United States**

Location	Population Under Age 18 (2014)
McIntosh County	19.0%
Long County	28.9%
Georgia	24.7%
U.S.	23.1%

Sources: U.S. Census Bureau, 2015

26 Children make up 19.0 percent of the McIntosh County population; 28.9 percent of the Long County
27 population, which is comparable to the average population of children throughout the state (24.7
28 percent). According to the 2015 Census, about one third of the children under the age of 18 living in

1 McIntosh (32.8 percent) and Long (29.6 percent) Counties lives under the national poverty rate (U.S.
2 Census Bureau 2015).

3 **3.7.3 Environmental Consequences**

4 This analysis focuses on the potential for a disproportionate and adverse exposure of specific off-base
5 population groups to the projected adverse consequences discussed in the previous sections of this
6 chapter.

7 **3.7.3.1 No Action Alternative**

8 Under the No Action Alternative, the Proposed Action would not occur and there would be no affect on
9 Environmental Justice. Therefore, no significant impacts would occur with the implementation of the No
10 Action Alternative.

11 **3.7.3.2 Medium-Intensity Management Alternative (Preferred Alternative)**

12 The study area for environmental justice analysis for the Preferred Alternative is defined as McIntosh
13 and Long Counties, Georgia. Implementation of the Medium-Intensity Management Alternative would
14 support all the projects under the five management objectives (forest management, fish and wildlife
15 management, land management, management of outdoor recreational opportunities, and training) of
16 the TBR INRMP.

17 Tables 3-12, 3-13, and 3-14 illustrate that the there are no impacts that would disproportionately affect
18 concentrations of minority, low-income, or children populations within the ROI. Implementation of the
19 Preferred Alternative would, therefore, not cause disproportionately high and adverse human health or
20 environmental effects on any minority or low-income populations or effects that would
21 disproportionately affect children.

22 **3.7.3.3 Low-Intensity Management Alternative**

23 Implementation of the Low-Intensity Management Alternative would support all the projects under the
24 five management objectives (forest management, fish and wildlife management, land management,
25 management of outdoor recreational opportunities, and training) except for the GIS Database
26 Management stewardship project identified in the TBR INRMP. The study area for environmental justice
27 analysis for this action alternative is the same as the Preferred Alternative.

28 Similar to the Preferred Alternative, there are no impacts that would disproportionately affect
29 concentrations of minority, low-income, or children populations within the ROI. Implementation of the
30 Low-Intensity Management Alternative would, therefore, not cause disproportionately high and adverse
31 human health or environmental effects on any minority or low-income populations or effects that would
32 disproportionately affect children.

33 **3.8 Summary of Potential Impacts on Resources and Impact Avoidance and Minimization**

34 A summary of the potential impacts associated with each of the action alternatives and the No Action
35 Alternative and impact avoidance and minimization measures are presented in Tables 3-15 and 3-16,
36 respectively. Table 3-15 provides a comprehensive list of all mitigation requirements associated with the
37 Proposed Action.

Table 3-15. Summary of Potential Impacts on Resource Areas

	No Action Alternative	Alternative 1: Medium-Intensity Management Alternative (Preferred Alternative)	Alternative 2: Low-Intensity Management Alternative
Air Quality	No change to baseline air quality. Prescribed fires would contribute an estimated 919 tpy of CO (CEQ threshold = 25,000 tpy).	Prescribed fires would contribute an estimated maximum 7,224 tpy of CO (CEQ threshold = 25,000 tpy).	Prescribed fires would contribute an estimated 7,224 tpy of CO (CEQ threshold = 25,000 tpy).
Water Resources	No change to baseline water resources (groundwater, surface waters, floodplains, and wetlands); beneficial improvements would not be realized as stream blockages would not be removed and buffer corridors around wetlands would not be established.	No impacts on groundwater. Beneficial improvements to surface waters and floodplains would occur from the removal of woody debris and stream blockages. Buffer strips or corridors around wetlands would help to achieve no net loss of wetlands and maintain wetland habitat quality.	Similar to Alternative 1; however, without the GIS framework and database project, TBR would retain an incomplete inventory of the range's wetlands locations whereby potentially allowing some remaining woody debris and stream blockages to exist.
Geological Resources	No change to baseline geological resources (geology, topography, or soils).	Timber improvement projects, particularly mechanical improvements to remove invasive species and prescribed burns would impact soils. No direct impacts on soil types designated as prime farmland.	Same as Alternative 1.
Cultural Resources	No change to baseline cultural resources.	No impacts on cultural resources, as archaeological and architectural resources located on or adjacent to TBR would be avoided during implementation of any INRMP projects.	Same as Alternative 1.
Biological Resources	No change to biological resources. Timber stand improvements, nuisance wildlife management, invasive plant species control, and land/fire management would not occur.	Mandatory stewardship initiatives would increase the biodiversity and value of the vegetation communities on the TBR and facilitate the ultimate objective of establishing an old-growth forest. Timber stand improvements (and prescribed burn) projects could temporarily affect migratory birds, depending upon the season in which the activity occurs. Fishes could be impacted by prescribed	Similar to Alternative 1; however, without the GIS framework and database project, TBR would retain an incomplete inventory of the range's natural resources and therefore, not support a range-wide comprehensive conservation effort.

Table 3-15. Summary of Potential Impacts on Resource Areas

	<i>No Action Alternative</i>	<i>Alternative 1: Medium-Intensity Management Alternative (Preferred Alternative)</i>	<i>Alternative 2: Low-Intensity Management Alternative</i>
<i>Biological Resources, continued</i>		burns and applications of herbicides for invasive plant species control. Erosion and sedimentation from burned areas and stormwater runoff containing herbicides would adversely affect water quality. Temporary impacts on threatened and endangered terrestrial species could occur from smoke and habitat disturbances associated with prescribed burn and firebreak construction and management activities.	
<i>Socioeconomics</i>	No change to baseline socioeconomics of the local area or region.	INRMP projects could provide minor temporary positive, direct impacts on the region, including increased revenues to local businesses if local contractors are utilized.	Same as Alternative 1.
<i>Environmental Justice</i>	No change to baseline environmental justice conditions.	There would be no disproportionately high and adverse human health or environmental effects on minority, low-income populations, or children.	Same as Alternative 1.

Table 3-16. Impact Avoidance And Minimization Measures

Measure	Anticipated Benefit	Evaluating Effectiveness	Implementing and Monitoring	OPR	Estimated Completion Date
Alternative 1: Medium-Intensity Management Alternative (Preferred Alternative)					
Erosion and Sediment Controls; erosion-control matting, silt fencing, brush barriers, channel stabilization, storm drain inlet protection, temporary and permanent seeding, mulch application, and dust control	Soils and surface water quality impact minimization	Low surface water/stream turbidity	Implement during construction and maintenance of firebreaks; pre- and post-construction monitoring	MCAS/TBR Natural Resources Manager	TBD
Limiting construction activities to non-bird nesting periods	Migratory and T&E bird impact minimization	Consistent seasonal nesting activity	Implement construction and maintenance of firebreaks during non-bird nesting periods; seasonal nesting monitoring	MCAS/TBR Natural Resources Manager	TBD
Establish protective buffer strips or corridors around wetlands	To achieve no net loss of wetlands and maintain wetland habitat quality	Consistent annual wetland preservation	Implement during construction and maintenance of firebreaks; pre- and post-construction monitoring	MCAS/TBR Natural Resources Manager	TBD
Avoidance of cultural (archaeological and architectural) resources	No impacts on cultural resources	Consistent annual cultural resources preservation	Implement during construction and maintenance of firebreaks; pre- and post-construction monitoring	MCAS/TBR Natural Resources Manager	TBD
Alternative 2: Low-Intensity Management Alternative (Same as Alternative 1)					

4 Cumulative Impacts

This section 1) defines cumulative impacts, 2) describes past, present, and reasonably foreseeable future actions relevant to cumulative impacts, 3) analyzes the incremental interaction the Proposed Action may have with other actions, and 4) evaluates cumulative impacts potentially resulting from these interactions.

4.1 Definition of Cumulative Impacts

The approach taken in the analysis of cumulative impacts follows the objectives of the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations, and CEQ guidance. Cumulative impacts are defined in 40 Code of Federal Regulation (CFR) section 1508.7.

The impact on the environment that results from the incremental impact of the action when added to the other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

To determine the scope of environmental impact statements, agencies shall consider cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

In addition, CEQ and U.S. Environmental Protection Agency (USEPA) have published guidance addressing implementation of cumulative impact analyses—Guidance on the Consideration of Past Actions in Cumulative Effects Analysis (CEQ, 2005) and Consideration of Cumulative Impacts in EPA Review of NEPA Documents (USEPA, 1999). CEQ guidance entitled *Considering Cumulative Impacts Under NEPA* (1997) states that cumulative impact analyses should

“...determine the magnitude and significance of the environmental consequences of the Proposed Action in the context of the cumulative impacts of other past, present, and future actions...identify significant cumulative impacts...[and]...focus on truly meaningful impacts.”

Cumulative impacts are most likely to arise when a relationship or synergism exists between a proposed action and other actions expected to occur in a similar location or during a similar time period. Actions overlapping with or in proximity to the Proposed Action would be expected to have more potential for a relationship than those more geographically separated. Similarly, relatively concurrent actions would tend to offer a higher potential for cumulative impacts. To identify cumulative impacts, the analysis needs to address the following three fundamental questions.

- Does a relationship exist such that affected resource areas of the Proposed Action might interact with the affected resource areas of past, present, or reasonably foreseeable actions?
- If one or more of the affected resource areas of the Proposed Action and another action could be expected to interact, would the Proposed Action affect or be affected by impacts of the other action?
- If such a relationship exists, then does an assessment reveal any potentially significant impacts not identified when the Proposed Action is considered alone?

1 4.2 Scope of Cumulative Impacts Analysis

2 The scope of the cumulative impacts analysis involves both the geographic extent of the effects and the
3 time frame in which the effects could be expected to occur. For this environmental assessment (EA), the
4 study area delimits the geographic extent of the cumulative impacts analysis. In general, the study area
5 will include those areas previously identified in Chapter 3 for the respective resource areas. The time
6 frame for cumulative impacts centers on the timing of the Proposed Action.

7 Another factor influencing the scope of cumulative impacts analysis involves identifying other actions to
8 consider. Beyond determining that the geographic scope and time frame for the actions interrelate to
9 the Proposed Action, the analysis employs the measure of “reasonably foreseeable” to include or
10 exclude other actions. For the purposes of this analysis, public documents prepared by Federal, state,
11 and local government agencies form the primary sources of information regarding reasonably
12 foreseeable actions. Documents used to identify other actions include notices of intent for EISs and EAs,
13 management plans, land use plans, and other planning related studies.

14 4.3 Past, Present, and Reasonably Foreseeable Actions

15 This section will focus on past, present, and reasonably foreseeable future projects at and near
16 Townsend Bombing Range (TBR). In determining which projects to include in the cumulative impacts
17 analysis, a preliminary determination was made regarding the past, present, or reasonably foreseeable
18 action. Specifically, using the first fundamental question included in Section 4.1, it was determined if a
19 relationship exists such that the affected resource areas of the Proposed Action (included in this EA)
20 might interact with the affected resource area of a past, present, or reasonably foreseeable action (i.e.
21 Department of Defense [DoD]). If no such potential relationship exists, the project was not carried
22 forward into the cumulative impacts analysis. In accordance with CEQ guidance (CEQ, 2005), these
23 actions considered but excluded from further cumulative effects analysis are not catalogued here, as the
24 intent is to focus the analysis on the meaningful actions relevant to inform decision-making. Projects
25 included in this cumulative impacts analysis are listed in Table 4-1 and briefly described in the following
26 subsections.

Table 4-1. Cumulative Action Evaluation

Action	Level of NEPA Analysis Completed
Past Actions	
• Historical DoD Use within the Region	n.a.
• Historical DoD Use within the Current TBR Boundary	n.a.
• Timber History in the Region	n.a.
• Development at Highway 251 and Interstate 95	n.a.
• Georgia Power Electric Transmission Line	n.a.
• Interstate 95 Expansion	n.a.
• CIM, LLC, Land Sale	n.a.
Present and Reasonably Foreseeable Future Actions	
• DoD Use within the Current TBR Boundary	n.a.
• Cypress Natural Gas Pipeline	n.a.
• Brigade Combat Team Cancellation at Fort Stewart, Georgia	n.a.
• East Coast Basing of the Joint Strike Fighter	n.a.

27 n.a. Not available

1 **4.3.1 Past Actions**

2 **4.3.1.1 Historical DoD Use within the Region**

3 Georgia has a long military history where several active military installations are relatively near TBR,
4 including Fort Stewart, Hunter Army Airfield, Kings Bay Submarine Base, Naval Air Station (NAS)
5 Jacksonville, NAS Mayport, Robbins Air Force Base, Marine Corps Air Station (MCAS) Beaufort, and
6 Marine Corps Recruit Depot at Parris Island. Former military installations in the area include NAS Glynco
7 (currently used by the Federal Law Enforcement Training Center) and Harris Neck Army Airfield (in what
8 is now the Harris Neck National Wildlife Refuge). The DoD historically owned much of the property that
9 now comprises TBR.

10 **4.3.1.2 Historical DoD Use within the Current TBR Boundary**

11 Approximately 75 percent of the recently acquired lands at TBR was part of the Townsend Range
12 Complex between 1944 and 1946. A majority of the land, formerly part of the Complex, is now owned
13 by various commercial timber companies. In late 1940, the Army Air Corps utilized land for a bombing
14 range to be used by the 3rd and 27th Bombardment groups at Savannah Army Air Base (later Hunter
15 Field). By the end of 1942, Townsend Range Complex consisted of 12,851 acres. Throughout World War
16 II, the facilities at Townsend were expanded and enhanced.

17 In 1944, Townsend Range Complex occupied 22,633 acres and consisted of three bomb targets, a rifle
18 range, a machine gun range, a dive bomb range, and high- and low-altitude bombing ranges. In 1944, an
19 air-to-ground gunnery range was added on 27,218 acres that had two sets of four targets. The use and
20 size of the bombing range were reduced after World War II and by June 30, 1946, a total of 34,410 acres
21 of the range had been declared excess. In 1959, the Townsend Range Complex, controlled by Hunter Air
22 Force Base, consisted of only 5,111 acres.

23 In 1966, the range was no longer needed and its closure was authorized. NAS Glynco, Georgia, then
24 assumed control of TBR and operated it until 1972. From 1972 to 1980, TBR was inactive and in private
25 ownership. The U.S. Marine Corps (USMC) reopened the range in 1981 and leased 3,882 acres from the
26 Union Camp Corporation, and the Georgia Air National Guard (GA ANG) began operating the range for
27 the USMC. In the late 1980s, the USMC began to negotiate for the purchase of the property. A
28 declaration of taking for 2,773 acres was filed in December 1991. In July 1992, an additional 2,410 acres
29 were purchased, which brought TBR to 5,183 acres (USACE 2001).

30 **4.3.1.3 Timber History in the Region**

31 The history of the timber industry in McIntosh and Long Counties (as well as the surrounding region) is
32 very similar to historical timber production throughout the Southeast. The earliest timber harvesting in
33 the area revolved around the Naval store industry, which was associated with the maintenance of pre-
34 Twentieth Century Navy ships. In the late 1800s and early 1900s, the timber industry utilized the “cut
35 out and get out” technique, which involved a timber company buying one or more parcels of virgin
36 timber, building a sawmill and production facilities, cutting all of the marketable trees in their parcel(s),
37 milling and shipping it, and moving on to new parcels. This method systematically depleted timber
38 resources in the area. Following World War II, the timber companies moved into fiber (paper)
39 production with some sawtimber still produced (Money 2011d).

1 4.3.1.4 Development at Highway 251 and Interstate 95

2 Development at Highway 251 and I-95 (also referred to as Exit 49) in McIntosh County began
3 approximately 20 years ago with an outlet mall, hotels, gas station/truck stop, and a small assortment of
4 restaurants. An industrial park (Tidewater Industrial Complex) also is in this area (Burns 2011).

5 4.3.1.5 Georgia Power Electric Transmission Line

6 Two Georgia Power electric transmission lines are near TBR to the west and the southeast, both of
7 which are in operation. The right-of-way (ROW) to the west of TBR is approximately 150 feet wide. The
8 ROW to the east is shared by an electric transmission line and a natural gas line and is approximately
9 200 feet wide.

10 4.3.1.6 Interstate 95 Expansion

11 From 1993 until December 2010, all 112 miles of I-95 in Georgia were expanded from four lanes to six
12 lanes. Over the 17-year project life, the Georgia Department of Transportation (GDOT) invested more
13 than \$1 billion dollars in I-95 improvements, including \$533 million in Glynn and McIntosh Counties,
14 which was the final stage of the project. Georgia's portion of I-95 originally opened in 1976.

15 4.3.1.7 CIM, Limited Liability Corporation (LLC), Land Sale

16 Molpus Woodlands Group, LLC, recently purchased CIM, LLC's holdings in the northwest portion of TBR
17 (approximately 4,144 acres). Molpus also purchased CIM, LLC, landholdings outside TBR; however, exact
18 locations and acreages are unknown.

19 4.3.2 Present and Reasonably Foreseeable Actions**20 4.3.2.1 DoD Use within the Current TBR Boundary**

21 TBR is one of four air-to-ground ranges within the USMC's inventory on the East Coast and one of seven
22 in the United States that supports air combat/air-to-ground operations. TBR is owned by MCAS Beaufort
23 and operated by the GA ANG under a host-tenant real estate agreement with MCAS Beaufort. The GA
24 ANG provides daily operational control and range maintenance. TBR is the centerpiece of the Savannah
25 Combat Readiness Training Center and supports training for units deployed to the Combat Readiness
26 Training Center from throughout the United States, as well as international users. The current target
27 area at TBR is divided into different areas to support military training operations, which are mainly
28 committed to fixed-wing, air-to-ground, inert ordnance practice.

29 4.3.2.2 Cypress Natural Gas Pipeline

30 The Southern Natural Gas Company constructed (2008) a 167-mile natural gas pipeline (the Cypress
31 Pipeline) from the Elba Island liquefied natural gas import terminal in Savannah, Georgia, to
32 northeastern Florida. Within Georgia, the Cypress Pipeline extends through Effingham, Chatham, Bryan,
33 Liberty, Long, McIntosh, Glynn, Camden, and Charlton Counties. The underground pipeline traverses
34 approximately 2 miles of Long County and 17 miles of McIntosh County (Federal Energy Regulatory
35 Commission, 2006), including approximately 11 miles along the eastern boundary of a former
36 acquisition area.

1 **4.3.2.3 Brigade Combat Team Cancellation at Fort Stewart, Georgia**

2 In December 2007, the DoD announced that a new Brigade Combat Team (BCT) would form at Fort
3 Stewart. A BCT would add approximately 3,500 soldiers to the Installation and surrounding communities
4 along with dependent family members and related military support. In June 2009, the DoD cancelled the
5 addition of the 5th BCT at Fort Stewart. The direct economic impact of this decision on the region
6 consisted of public and private sector investments made to prepare for the absorption of significant
7 military and secondary population growth on the Installation and in the community within a highly
8 compressed time frame (EDAW AECOM and RKG Associates, 2009). As a result of the cancellation,
9 remediation funding was made available to governments in Liberty, Bryan, Tattnall and Long Counties.
10 In 2014, remediation funds from the Coastal Regional Commission/Office of Economic Adjustment were
11 made available (Georgia Coastal Regional Commission, 2014).

12 **4.3.2.4 East Coast Basing of the Joint Strike Fighter**

13 The Navy prepared an Environmental Impact Statement for the proposed basing and operation of 13
14 Joint Strike Fighter F-35B squadrons at MCAS Beaufort, in Beaufort, South Carolina, and MCAS Cherry
15 Point in Havelock, North Carolina (MCAS, 2013).

16 The USMC variant of the Joint Strike Fighter, the F-35B, is a short take-off/vertical landing, multi-role
17 fighter aircraft whose primary emphasis is air-to-ground combat. The aircraft is designed to replace
18 existing fleets of F-18 A/C/D Hornets (strike fighter), AV-8B Harriers (attack), and the EA-6B Prowler
19 (electronic warfare) aircraft. The F-35B East Coast basing would take approximately 11 years to
20 implement and began in 2012. The proposal would base up to 216 aircraft (i.e., 10 active-duty and 1
21 reserve squadrons of up to 16 aircraft each and 2 Pilot Training Center squadrons at 20 aircraft each) at
22 MCAS Beaufort and MCAS Cherry Point. Facility construction and modifications would occur prior to and
23 continue throughout F-35B squadron arrivals; the F-35B would operate within existing airspace and at
24 training ranges currently used by USMC Hornet, Harrier, and Prowler aircraft (MCAS, 2015).

25 **4.4 Cumulative Impacts Analysis**

26 Where feasible, the cumulative impacts were assessed using quantifiable data; however, for many of the
27 resources included for analysis, quantifiable data are not available and a qualitative analysis was
28 undertaken. In addition, where an analysis of potential environmental effects for future actions has not
29 been completed, assumptions were made regarding cumulative impacts related to this EA/
30 Environmental Impact Statement where possible. The analytical methodology presented in Chapter 3,
31 which was used to determine potential impacts on the various resources analyzed in this document, was
32 also used to determine cumulative impacts.

33 **4.4.1 Air Quality**

34 **4.4.1.1 Description of Geographic Study Area**

35 The Region of Influence (ROI) for assessing cumulative impacts on air quality is the air basin in which TBR
36 is located. Changes in air quality within the ROI that have resulted from past, present, and future actions
37 include population migration and associated increases in industrial and automotive emissions, increases
38 in the number of aircraft during training missions at Fort Stewart and TBR, and the fluctuations in
39 prescribed fires utilized to manage timber industry operations.

1 **4.4.1.2 Relevant Past, Present, and Future Actions**

2 No past or present actions have been identified that might interact with air quality of the Proposed
3 Action. The East Coast basing of the joint strike fighter and continued prescribed burning associated
4 with forest management practices are reasonably foreseeable actions that have been identified that
5 might interact with air quality of the Proposed Action. The air quality impacts associated with the
6 Proposed Action include minor temporary direct impacts in the region, including increased carbon
7 monoxide emissions from the prescribed burning of a maximum of 8,650 acres of land per year.
8 However, prescribed fires allow the land manager to mimic natural fire return intervals under controlled
9 conditions where smoke management can minimize air quality impacts. Annual greenhouse gas
10 emissions would fall well below the CEQ threshold of 25,000 metric tons (27,557 tons). This limited
11 amount of emissions would not likely contribute to global warming to any discernible extent. As such,
12 insignificant changes to air quality would be anticipated.

13 **4.4.1.3 Cumulative Impacts Analysis**

14 Cumulative air quality impacts from past, present, and future actions within the ROI would be less than
15 significant because McIntosh and Long Counties (and TBR) are in an attainment area for all criteria
16 pollutants, and there is a relatively small population and low levels of industrial activity contributing to
17 air emissions within the ROI. The attainment status of the region would not be threatened or lead to a
18 violation of any Federal, state, or local air regulation as a result of these cumulative air emissions.
19 Therefore, implementation of the Proposed Action combined with the past, present, and reasonably
20 foreseeable future projects, would not result in significant impacts within the ROI.

21 **4.4.2 Water Resources**

22 **4.4.2.1 Description of Geographic Study Area**

23 The ROI for assessing cumulative impacts on water resources at TBR, including groundwater, surface
24 water, wetlands, and floodplains, is defined by the Ogeechee River Basin (Ogeechee River Coastal
25 subbasin) and a portion of the Altamaha River Basin (Altamaha River subbasin). Changes in water
26 resources within ROI that have resulted from past, present, and future actions primarily include impacts
27 on surface waters and wetlands that have been caused by residential, commercial, and industrial
28 developments; marinas; shipping and docking facilities; silvicultural operations; construction of utility
29 infrastructure such as electric transmission lines and natural gas pipelines; development of roads
30 including I-95; and from past use by the DoD.

31 **4.4.2.2 Relevant Past, Present, and Future Actions**

32 Past or present actions have been identified that might interact with the water resource (surface waters
33 and wetlands) areas of the Proposed Action include channelization of natural rivers, streams, and
34 creeks; filling of benthic environments; creation of ditches, drains, canals, and other water control
35 structures to regulate hydrologic regimes; and discharges of waste, sediments, or other pollutants into
36 surface waters, and the clearing of riparian vegetation. Future actions have been identified that might
37 interact with the water resource (surface waters and wetlands) areas of the Proposed Action include
38 continued growth of residential, commercial, and industrial developments; marinas; shipping and
39 docking facilities; silvicultural operations; and the construction of utility infrastructure such as electric
40 transmission lines and natural gas pipelines.

1 **4.4.2.3 Cumulative Impacts Analysis**

2 Cumulative water resources impacts from past, present, and future actions within the ROI would be less
3 than significant because of the protections and strict enforcements afforded by the Clean Water Act.
4 Therefore, implementation of the Proposed Action, combined with the past, present, and reasonably
5 foreseeable future projects, would not result in significant impacts within the ROI.

6 **4.4.3 Geological Resources**

7 **4.4.3.1 Description of Geographic Study Area**

8 The ROI for assessing cumulative impacts on geological resources of TBR, including topography, geology,
9 and soils, is defined by the TBR boundaries. Changes in geologic resources, primarily soils, within the ROI
10 that have resulted from past, present, and future actions primarily include impacts on soils that have
11 been caused by silvicultural operations, timber improvement projects, particularly mechanical
12 improvements to remove invasive species, construction of facilities and target areas, installation of
13 utility (electric, gas, and water) and transportation (roads, bridges, and stream crossings) infrastructure,
14 construction and maintenance of firebreaks, prescribed burns, and military training operations.

15 **4.4.3.2 Relevant Past, Present, and Future Actions**

16 No past or present actions have been identified that might interact with the geologic resources of the
17 Proposed Action on TBR. Foreseeable future actions that might interact with the geologic resources of
18 the Proposed Action on TBR include the continued use by DoD.

19 **4.4.3.3 Cumulative Impacts Analysis**

20 Cumulative impacts on geological resources from past, present, and future actions within the ROI would
21 be less than significant because activities outside of the TBR would have little to no effect on the
22 geological resources of TBR proper. Therefore, implementation of the Proposed Action, combined with
23 the past, present, and reasonably foreseeable future projects, would not result in significant impacts
24 within the ROI.

25 **4.4.4 Cultural Resources**

26 **4.4.4.1 Description of Geographic Study Area**

27 The Area of Potential Effect (APE) for cultural resources is the geographic area or areas within which an
28 undertaking (project, activity, program or practice) may cause changes in the character or use of any
29 historic properties present. For the purposes of compliance with Section 106 of the National Historic
30 Preservation Act, the APE for assessing cumulative impacts on cultural resources is the TBR boundaries.
31 Changes in cultural resources, primarily archaeological and historic built resources, within the APE that
32 have resulted from past, present, and future actions primarily include impacts that have been caused by
33 silvicultural operations, timber improvement projects, particularly mechanical improvements to remove
34 invasive species, construction of facilities and target areas, installation of utility (electric, gas, and water)
35 and transportation (roads, bridges, and stream crossings) infrastructure, construction and maintenance
36 of firebreaks, prescribed burns, and military training operations.

37 **4.4.4.2 Relevant Past, Present, and Future Actions**

38 Past, present, or reasonably foreseeable actions that might interact with the cultural resources of the
39 Proposed Action include the historical DoD use within the APE; historical and current timber industry

1 use within the APE; the past construction and current and future operation of the Cypress Pipeline; and
2 the past, current and future use of TBR by the DoD. Past and present uses of TBR can reasonably be
3 expected to have resulted in direct and indirect negative permanent impacts on cultural resources (both
4 archaeological and historic built resources) within TBR from the disturbance or destruction of such
5 resources during construction of range facilities and/or during military training activities. Past and
6 present impacts are part of the existing environment for cultural resources in the APE and future use of
7 TBR by the DoD can reasonably be expected to have similar direct or indirect impacts on cultural
8 resources (archaeological resources and historic built resources).

9 **4.4.4.3 Cumulative Impacts Analysis**

10 Cumulative impacts on cultural resources from past, present, and future actions within the APE would
11 be less than significant because the Federal government will provide protection (through avoidance) and
12 stewardship of the archaeological and historic built resources, such that any potential cumulative
13 impacts would be addressed in accordance with Federal statutes, regulations and guidance for
14 considering the protection of cultural resources. Therefore, implementation of the Proposed Action
15 combined with the past, present, and reasonably foreseeable future projects, would not result in
16 significant impacts within the ROI.

17 **4.4.5 Biological Resources**

18 **4.4.5.1 Description of Geographic Study Area**

19 The ROI for assessing cumulative impacts on biological resources of TBR, including terrestrial vegetation,
20 aquatic habitats and vegetation, terrestrial wildlife, migratory birds and birds of conservation concern,
21 and threatened, endangered, and candidate species, is defined by TBR boundaries. Changes in biological
22 resources within the ROI that have resulted from past, present, and future actions primarily include
23 impacts that have been caused by silvicultural operations, timber improvement projects, particularly
24 mechanical improvements to remove invasive species, construction of facilities and target areas,
25 installation of utility (electric, gas, and water) and transportation (roads, bridges, and stream crossings)
26 infrastructure, construction and maintenance of firebreaks, prescribed burns, and military training
27 operations.

28 **4.4.5.2 Relevant Past, Present, and Future Actions**

29 Past, present, or reasonably foreseeable actions that might interact with the biological resources of the
30 Proposed Action include the historical DoD use, historical timber industry use, and the past, present, and
31 future use of TBR by the DoD. Historic silviculture practices have converted high quality habitats into
32 densely planted pine stands, often consisting exclusively of one managed pine species, and have
33 reduced habitat quality and availability for wildlife species in the region. Removal and degradation of
34 habitat would have caused permanent impacts on wildlife from reduced habitat availability and
35 fragmentation of habitat.

36 **4.4.5.3 Cumulative Impacts Analysis**

37 Cumulative biological resource impacts from past, present, and future actions within the ROI would be
38 less than significant because the future use by the DoD would be restricted to the target areas
39 designated for military training operations, therefore avoiding impacts on the sensitive vegetation,
40 habitats, and wildlife of TBR. Therefore, implementation of the Proposed Action combined with the past,
41 present, and reasonably foreseeable future projects, would not result in significant impacts in the ROI.

1 **4.4.6 Socioeconomics**

2 **4.4.6.1 Description of Geographic Study Area**

3 The ROI for assessing socioeconomic impacts is McIntosh and Long Counties. As such, the ROI for this
4 cumulative effects analysis focuses on these counties. Socioeconomic changes within ROI that have
5 resulted from past, present, and future actions include population and housing, employment and
6 income, taxes and revenues, schools and education, and community service.

7 **4.4.6.2 Relevant Past, Present, and Future Actions**

8 No past, present, or reasonably foreseeable actions have been identified that might interact with the
9 socioeconomic resources of the Proposed Action. The socioeconomic impacts associated with the
10 Proposed Action include minor, temporary, positive, direct impacts in the region, including increased
11 revenues to local businesses if local contractors are utilized and increased revenues to retail
12 establishments, hotels, and restaurants if contractors from outside the region are used to conduct the
13 surveys, remove invasive plants, construct the firebreaks, and perform the prescribed burns. As such,
14 insignificant changes to population and housing, employment and income, taxes and revenues, schools
15 and education, and community service would be anticipated.

16 **4.4.6.3 Cumulative Impacts Analysis**

17 Cumulative socioeconomic impacts from past, present, and future actions within the ROI would be less
18 than significant because the Proposed Action supports minimal, temporary, positive, direct impacts on
19 revenues within the ROI. Therefore, implementation of the Proposed Action, combined with the past,
20 present, and reasonably foreseeable future projects, would not result in significant impacts within the
21 ROI.

22 **4.4.7 Environmental Justice**

23 **4.4.7.1 Description of Geographic Study Area**

24 Potential for direct and indirect impacts on environmental justice are anticipated to occur within the
25 jurisdiction of McIntosh and Long Counties. As such, the ROI for this cumulative effects analysis focuses
26 on these counties.

27 **4.4.7.2 Relevant Past, Present, and Future Actions**

28 No past, present, or reasonably foreseeable actions have been identified that might impact
29 environmental justice related to the Proposed Action. No environmental justice impacts have been
30 identified in association with the Proposed Action.

31 **4.4.7.3 Cumulative Impacts Analysis**

32 Cumulative impacts on environmental justice from past, present, and future actions within the ROI
33 would be less than significant because a review of such actions revealed no projects within the ROI that
34 have previously impacted or could impact minority, low-income, or children populations
35 disproportionately from other members of the local population.

36 Therefore, implementation of the Proposed Action combined with the past, present, and reasonably
37 foreseeable future projects, would not result in significant impacts within the ROI.

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5 Other Considerations Required by NEPA

5.1 Consistency with Other Federal, State, and Local Laws, Plans, Policies, and Regulations

In accordance with 40 Code of Federal Regulation (CFR) section 1502.16(c), analysis of environmental consequences shall include discussion of possible conflicts between the Proposed Action and the objectives of Federal, regional, state and local land use plans, policies, and controls. Table 5-1 identifies the principal Federal and state laws and regulations that are applicable to the Proposed Action, and describes briefly how compliance with these laws and regulations would be accomplished.

Table 5-1. Principal Federal and State Laws Applicable to the Proposed Action

<i>Federal, State, Local, and Regional Land Use Plans, Policies, and Controls</i>	<i>Status of Compliance</i>
National Environmental Policy Act (NEPA) (42 United States Code (U.S.C.) section 4321 et seq.); Council on Environmental Quality (CEQ) NEPA implementing regulations (40 CFR parts 1500-1508; Department of Navy (Navy) procedures for Implementing NEPA ((32 CFR part 775 and Chief of Naval Operations Instruction 5090.1D)	Complete; the preparation of this Environmental Assessment and a signed Finding of No Significant Impact serves as compliance.
Clean Air Act (42 U.S.C. section 7401 et seq.)	Complete; the counties within the Area of Potential Effect are in attainment with National Ambient Air Quality Standards. Project emission levels are expected to be less than de minimis thresholds; therefore, a determination of conformity with applicable implementation plan is not required.
Clean Water Act (33 U.S.C. section 1251 et seq.)	Complete; the Navy would continue to implement a Stormwater Pollution Prevention Plan, as applicable.
Coastal Zone Management Act (16 U.S.C. section 1451 et seq.)	Complete; a coastal consistency determination was submitted to the State of Georgia, and a concurrence letter was received.
National Historic Preservation Act (Section 106, 16 U.S.C. section 470 et seq.)	Complete; consultation with State Historic Preservation Office was completed; the State Historic Preservation Office concurred that no historic properties will be affected.
Endangered Species Act (16 U.S.C. section 1531 et seq.)	Complete; a determination of no jeopardy to listed species and no destruction or adverse modification of critical habitat was received through consultation with the U.S. Fish and Wildlife Service.
Migratory Bird Treaty Act (16 U.S.C. sections 703-712)	Complete; no incidental <i>take</i> of any migratory bird or impacts on nests would occur.
Bald and Golden Eagle Protection Act (16 U.S.C. section 668-668d)	Complete; no effects on bald or golden eagles.
Executive Order (EO) 11988, Floodplain Management	Complete; no construction or change in land use would occur within the floodplain.
EO 12088, Federal Compliance with Pollution Control Standards	Complete; no violation of environmental pollution control standards would occur.
EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations	Complete; no environmental health risks or safety risks that may disproportionately affect minority or low-income populations would occur.

Table 5-1. Principal Federal and State Laws Applicable to the Proposed Action

<i>Federal, State, Local, and Regional Land Use Plans, Policies, and Controls</i>	<i>Status of Compliance</i>
EO 13045, Protection of Children from Environmental Health Risks and Safety Risks	Complete; no environmental health or safety risks that may disproportionately affect children would occur.
EO 13175, Consultation and Coordination with Indian Tribal Governments	Complete; no claims by any tribes were identified.

1 **Coastal Zone Management**

2 The Federal Coastal Zone Management Act (CZMA) of 1972 establishes a Federal-state partnership to
 3 provide for the comprehensive management of coastal resources. Coastal states and territories develop
 4 site-specific coastal management programs based on enforceable policies and mechanisms to balance
 5 resource protection and coastal development needs. The Georgia Coastal Management Plan of the
 6 Coastal Resources Division, Georgia Department of Natural Resources lays out the policy to guide the
 7 use, protection, and development of land and ocean resources within the state's coastal zone. Under
 8 the Act, Federal activity in, or affecting, a coastal zone requires preparation of a Coastal Consistency
 9 Determination or a Negative Determination.

10 In other words, any Federal agency proposing to conduct or support an activity within or outside the
 11 coastal zone that will affect any land or water use or natural resource of the coastal zone is required to
 12 do so in a manner consistent with the CZMA or applicable state coastal zone program to the maximum
 13 extent practicable. However, Federal lands, which are "lands the use of which is by law subject solely to
 14 the discretion of...the Federal Government, its officers, or agents," are statutorily excluded from the
 15 State's "coastal zone".

16 If, however, the proposed Federal activity affects coastal resources or uses beyond the boundaries of
 17 the Federal property (i.e., has spillover effects), the CZMA Section 307 Federal consistency requirement
 18 applies. As a Federal agency, the Navy is required to determine whether its proposed activities would
 19 affect the coastal zone. This takes the form of either a Negative Determination or a Consistency
 20 Determination.

21 Potential impacts on applicable resources that are subject to the State's program have been addressed
 22 in the respective Environmental Consequences sections of this document. The USMC received
 23 concurrence on its determination that Integrated Natural Resources Management Plan projects are
 24 consistent to the maximum extent practicable with the relevant enforceable policies of the Georgia
 25 Coastal Management Plan. Analysis of effects determined that there would be no impacts on the land or
 26 water uses or natural resources of the coastal zone. A copy of the CZMA Consistency Determination is
 27 included as Appendix A.

28 **5.2 Irreversible or Irretrievable Commitments of Resources**

29 Resources that are irreversibly or irretrievably committed to a project are those that are used on a long-
 30 term or permanent basis. This includes the use of non-renewable resources such as metal and fuel, and
 31 natural or cultural resources. These resources are irretrievable in that they would be used for this
 32 project when they could have been used for other purposes. Human labor is also considered an
 33 irretrievable resource. Another impact that falls under this category is the unavoidable destruction of
 34 natural resources that could limit the range of potential uses of that particular environment.

1 **5.3 Relationship between Short-Term Use of the Environment and Long-Term Productivity**

2 NEPA requires an analysis of the relationship between a project's short-term impacts on the
3 environment and the effects that these impacts may have on the maintenance and enhancement of the
4 longterm productivity of the affected environment. Impacts that narrow the range of beneficial uses of
5 the environment are of particular concern. This refers to the possibility that choosing one development
6 site reduces future flexibility in pursuing other options, or that using a parcel of land or other resources
7 often eliminates the possibility of other uses at that site.

8 In the short-term, effects on the human environment with implementation of the Proposed Action
9 would primarily relate to the prescribed burns activity itself. Air quality would be impacted in the short-
10 term. In the long-term, no significant impacts would occur. The construction and maintenance of
11 firebreaks would not significantly impact the long-term natural resource productivity of the area. The
12 Proposed Action would not result in any impacts that would significantly reduce environmental
13 productivity or permanently narrow the range of beneficial uses of the environment.

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7 List of Preparers

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This EA was prepared collaboratively between the Navy and contractor preparers.

U.S. Department of the Navy

John Conway, NAVFAC SE
M.S., Oceanography
Years of Experience: 12
Responsible for: EA Project Management

Jered Jackson, NAVFAC SE
M.S., Marine Science
Years of Experience: 12
Responsible for: Threatened and Endangered Species Review

Contractors

Dennis Peters, GSRC
M.S., Bio-environmental Oceanography
Years of Experience: 30
Responsible for: EA Project Management

Howard Nass, GSRC
B.S., Forestry and Wildlife Management
Years of Experience: 25
Responsible for: Review

Todd Wilkinson, GSRC
M.S., Marine Biology
Years of Experience: 22
Responsible for: Biological Resources

Ann Guissinger, GSRC
M.S., Economics
Years of Experience: 32
Responsible for: Socioeconomic Resources, Environmental Justice

Liz Ayarbe-Perez, GSRC
M.S., Applied Geography
Years of Experience: 14
Responsible for: GIS Analyses and Figures Preparation

Jason Glenn, GSRC
M.A., Philosophy
Years of Experience: 15
Responsible for: Technical Editing

- 1 Patti Hardouin, GSRC
- 2 Associates of Arts
- 3 Years of Experience: 25
- 4 Responsible for: Document Production
- 5
- 6 Ticia Bullion, GSRC
- 7 B.S., Fashion Merchandising
- 8 Years of Experience: 9
- 9 Responsible for: Document Production

Appendix A

Coastal Consistency Determination



UNITED STATES MARINE CORPS
MARINE CORPS AIR STATION
BEAUFORT, SOUTH CAROLINA 29904-5001

5090
NREAO/009
21 Jan 2016

Mr. Spud Woodward
Georgia Department of Natural Resources
Director, Coastal Resources Division
One Conservation Way
Brunswick, GA 31520

Dear Mr. Woodward:

SUBJECT: FEDERAL COASTAL CONSISTENCY DETERMINATION FOR THE
IMPLEMENTATION OF THE INTEGRATED NATURAL RESOURCES
MANAGEMENT PLAN FOR TOWNSEND BOMBING RANGE, MCINTOSH
AND LONG COUNTIES, GEORGIA

On behalf of the United States Marine Corps (USMC), the Department of the Navy (Navy) is submitting this consistency determination in accordance with the Coastal Zone Management Act of 1972 (16 United States Code [U.S.C.], § 1451 et seq.) and 15 Code of Federal Regulations (CFR), § 930. This coastal consistency determination (CCD) was prepared to determine if the proposed implementation of the Integrated Natural Resources Management Plan (INRMP) at the Townsend Bombing Range (TBR) in McIntosh and Long Counties, Georgia (Enclosure 1) is consistent with the Georgia Coastal Management Plan (GCMP), administered by the Coastal Resources Division of the Georgia Department of Natural Resources.

The USMC proposes to implement an INRMP at TBR, consistent with the military use of the property and the goals and objectives established in the Sikes Act Improvement Act (SAIA). The purpose of the INRMP is to implement an ecosystem-based conservation program that provides for conservation and rehabilitation of natural resources in a manner that is consistent with the military mission; integrates and coordinates all natural resources management activities; provides for sustainable multipurpose uses of natural resources; and provides access for use of natural resources subject to safety and military security considerations. The projects outlined in the INRMP will be recommended for implementation if they are feasible and consistent with the project's intent, the Navy's

ecosystem goals, and the military mission, and if they maintain the quality of the natural environment in the public interest.

Alternatives were developed that address and support the four INRMP goals identified for TBR:

- Goal 1 Preserve access to air and land to meet military readiness requirements
- Goal 2 Protect and maintain natural resources within the TBR through the continuation and enhancement of ecologically appropriate and beneficial land use and management practices
- Goal 3 Manage and provide for multiple uses when appropriate, including sustainable yield of all renewable resources, scientific research, education, and recreation
- Goal 4 Provide public access to installation lands, where practicable, provided such access does not conflict with military readiness and does not harm sensitive natural resources on TBR

The Navy's Preferred Alternative (Proposed Action) supports a medium-intensity management scenario that would comply with all the mandatory requirements described in the INRMP. The implementation of the Proposed Action would assist MCAS Beaufort in achieving no net loss to the military mission. The projects identified in the INRMP focus on controlling invasive species, identifying sensitive bird, reptile, and amphibian species and their habitats, forest management to include silviculture and forest protection, and regular updates of the INRMP. Pertinent natural resource issues relative to the military mission include ecosystem management toward maintaining forest buffers via natural firebreaks around TBR, as well as preservation of sensitive species and their habitats while managing invasive species on TBR.

The USMC is obligated to ensure that any of its activities which affect land, water, or natural resources of the coastal zone be consistent with the enforceable policies of the GCMP. The USMC has determined that the implementation of the Proposed Action would be consistent with the CZMA, 16 U.S.C. § 1456, as amended. Additionally, it has been determined that the implementation of the INRMP goals and projects would be carried out in a manner that is fully consistent with the enforceable policies of the GCMP. This determination applies to the Proposed Action on land, water, or natural resources of the coastal zone, as directed by 15 CFR § 930.30. We request your concurrence with this determination within 60 days from receipt of this package.

Enclosure 2 includes the CCD with more detailed information on the Proposed Action. Enclosure 3 is the Draft-Final EA for the implementation of the INRMP at TBR.

If you have any questions regarding this determination or require additional information, please contact John Conway, (904) 542-6870 or Email: john.conway@navy.mil.

Sincerely,



William A. Drawdy
Natural Resources and
Environmental Affairs Officer
By Direction of the
Commanding Officer

- Enclosures:
1. Figure 1. Townsend Bombing Range Project Vicinity Map
 2. Coastal Consistency Determination for the Integrated Natural Resources Management Plan at the Townsend Bombing Range, McIntosh and Long Counties, Georgia.
 3. Draft-Final Environmental Assessment for the Integrated Natural Resources Management Plan for the Townsend Bombing Range, McIntosh and Long Counties, Georgia.

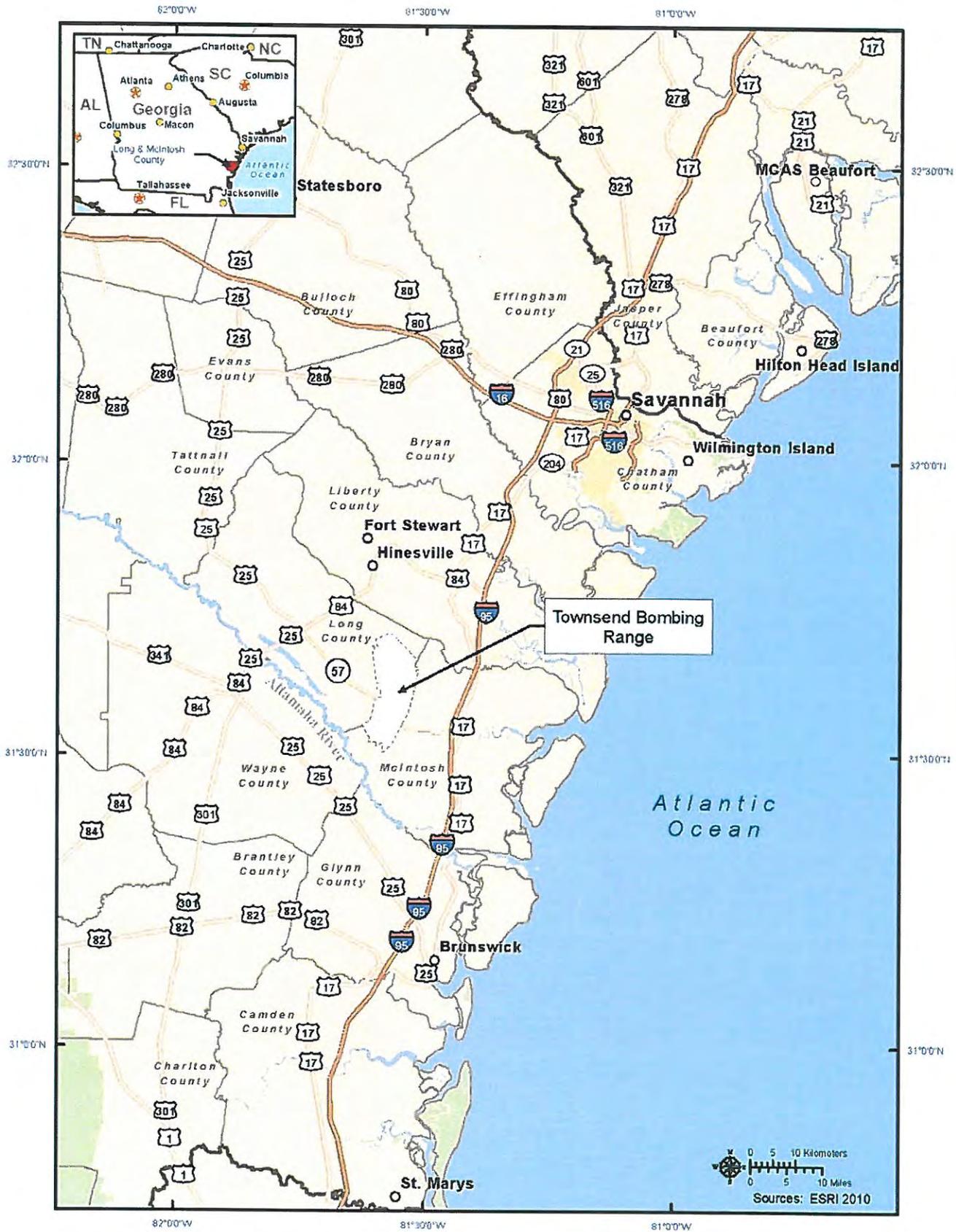


Figure 1. Townsend Bombing Range Project Vicinity Map

1 **FEDERAL AGENCY COASTAL ZONE MANAGMEENT ACT (CZMA)**
2 **CONSISTENCY DETERMINATION FOR THE STATE OF GEORGIA**

3 **INTRODUCTION**

4 This document provides the State of Georgia with the Department of the Navy's (Navy) Consistency
5 Determination under CZMA 16 U.S.C. § 1456 Section 307 (c) (1) [or (2)] and 15 Code of Federal
6 Regulations (CFR) § 930 (c), for the implementation of an Integrated Natural Resources
7 Management Plan (INRMP) at the Townsend Bombing Range (TBR) in McIntosh and Long
8 Counties, Georgia (Figure A-1). The information in this Coastal Consistency Determination (CCD)
9 is provided pursuant to 15 CFR § 930.39 and is based on the Pr Alternative supporting the
10 Proposed Action identified in the *Draft-Final Environmental Assessment for the Integrated Natural*
11 *Resources Management Plan for the Townsend Bombing Range, McIntosh and Long Counties,*
12 *Georgia.*

13 **PROPOSED FEDERAL AGENCY ACTION**

14 The USMC proposes to implement an INRMP at the Townsend Bombing Range (TBR),
15 consistent with the military use of the property and the goals and objectives established in the
16 Sikes Act Improvement Act (SAIA). The goal of the is to implement an ecosystem-
17 based conservation program that provides for conservation and rehabilitation of natural resources
18 in a manner that is consistent with the military mission; integrates and coordinates all natural
19 resources management activities; provides for sustainable multipurpose uses of natural resources;
20 and provides access for use of natural resources subject to safety and military security
21 considerations. The projects outlined in the INRMP will be recommended for implementation if
22 they are feasible and consistent with the project's intent, the Navy's ecosystem goals, and the
23 military mission, and if they maintain the quality of the natural environment in the public
24 interest.

25 The purpose of the Proposed Action is to implement an ecosystem-based conservation program
26 that provides for conservation and rehabilitation of sustainable natural resources in a manner that
27 is consistent with the military mission and provides military personnel with access to natural
28 resources, subject to safety and military security considerations. The need for the Proposed
29 Action is to comply with the SAIA, as well as CNO guidelines for installations that contain
30 significant natural resources.

31 Alternatives were developed address and support the four INRMP goals identified for TBR:

32 Goal 1 Preserve access to air and land to meet military readiness requirements

33 Goal 2 Protect and maintain natural resources within the TBR through the continuation and
34 enhancement of ecologically appropriate and beneficial land use and management
35 practices

36 Goal 3 Manage and provide for multiple uses when appropriate, including sustainable yield of
37 all renewable resources, scientific research, education, and recreation

38 Goal 4 Provide access to installation lands, where practicable, provided such access does not
39 conflict with military readiness and does not harm sensitive natural resources on TBR

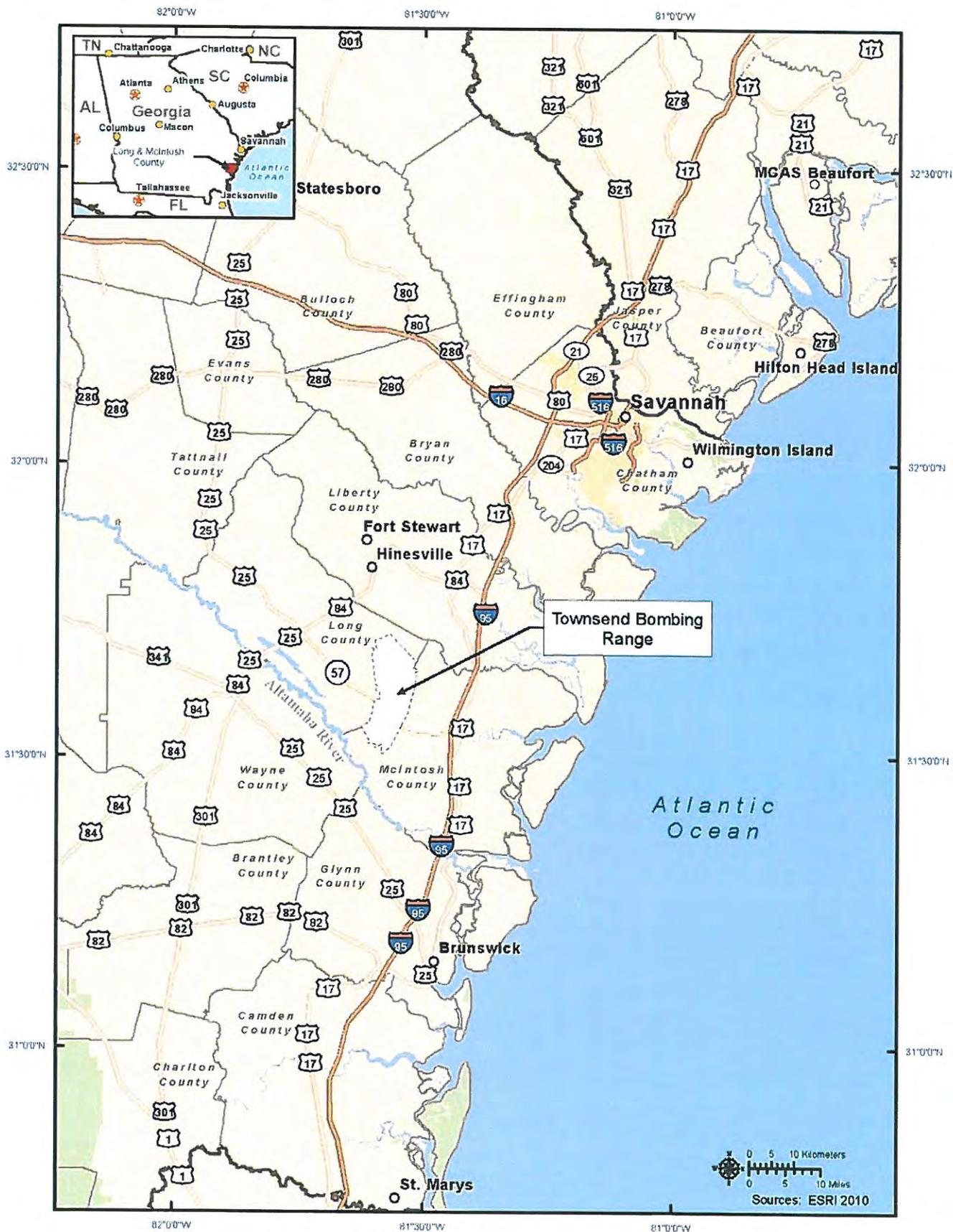


Figure A-1. Townsend Bombing Range Project Vicinity Map

1 The Navy's Preferred Alternative (Proposed Action) supports a medium-intensity management
2 scenario that would comply with all the mandatory requirements described in the INRMP and
3 would also incorporate the stewardship initiatives considered reasonable and achievable at TBR.
4 The implementation of the Proposed Action would assist MCAS Beaufort in achieving no net
5 loss to the military mission. The projects identified in the INRMP focus on controlling invasive
6 species, identifying sensitive bird, reptile, and amphibian species and their habitats, forest
7 management to include silviculture and forest protection, and regular updates of the INRMP.
8 Pertinent natural resource issues relative to the military mission include ecosystem management
9 toward maintaining forest buffers via natural firebreaks around TBR, as well as preservation of
10 sensitive species and their habitats while managing invasive species on TBR.

11 As a result of the recent completion of the 2013 MCAS Environmental Impact Statement (EIS)
12 supporting a significant range expansion at TBR, consultations and/or coordination with various
13 Federal and state regulatory agencies were performed in support of wetlands, threatened and
14 endangered species, protected migratory birds, historic properties and archaeological sites, and
15 coastal zone protection. In addition to the range expansion activities, natural resources
16 management activities, including firebreak construction and maintenance, as well as prescribed
17 fires, were also addressed.

18 **FEDERAL CONSISTENCY REVIEW**

19 Georgia's Coastal Management Plan (GCMP) is composed of state statutes, which constitute the
20 enforceable policies of the GCMP. The GCMP seeks to develop and implement a management
21 program that balances sustainable economic development and natural resource conservation in
22 coastal Georgia, by enforcement of the policies of the state as codified within the Official Code
23 of Georgia Annotated (O.C.G.A.). These policies are outlined in the applicable statutes of the
24 state of Georgia or under O.C.G.A. 12-5-322. O.C.G.A. policies addressed as part of the GCMP
25 consistency review and considered in the analysis of the Proposed Action are discussed in Table
26 A-1, below.

27 The USMC is obligated to ensure that any of its activities which affect land, water, or natural
28 resources of the coastal zone be consistent with the enforceable policies of the GCMP. The Navy
29 has determined that the implementation of the Proposed Action would be consistent with the
30 CZMA, 16 U.S.C. § 1456, as amended. This determination applies to the Proposed Action on
31 land, water, or natural resources of the coastal zone, as directed by 15 CFR § 930.30. The Navy
32 has additionally determined that the implementation of the INRMP goals and projects would be
33 carried out in a manner that is fully consistent to the maximum extent practicable with the
34 enforceable policies of the GCMP based on the following information, data, and analysis (given
35 as a summary in Table A-1) and presented as a comprehensive analysis in Chapter 3 of the Draft-
36 Final EA.

37
38 Pursuant to 15 CFR § 930.41, the State of Georgia has 60 days from the receipt of this letter in
39 which to concur with or object to this CCD, or to request an extension under 15 CFR §
40 930.41(b). Georgia's concurrence will be presumed if its response is not received by the Navy
41 by the sixtieth day from receipt of this determination. Georgia's response should be sent to:
42 Mr. John Conway, Naval Engineering Facilities Command (NAVFAC) Southeast, NEPA CORE,
43 EV21, P.O. Box 30 Building 903 Yorktown, Jacksonville, 212-0030, at commercial (904) 542-
44 6870 or Email: john.conway@navy.mil.

Table A-1. Georgia Coastal Management Program Consistency Review

Georgia Statute	Legal Scope	Consistency Evaluation
<p>Georgia Aquaculture Development Act (O.C.G.A. 27-4-251, et seq.)</p>	<p>The Act created a 14-member Aquaculture Development Commission composed of industry representatives, scientists, agency representatives, and others, whose purpose is to study aquaculture development in Georgia. The GADNR, with assistance from the Georgia Department of Agriculture and the Georgia Department of Industry, Trade, and Tourism provides staff support for the Commission.</p>	<p>No activities of the Proposed Action involve aquaculture development. This policy is not applicable to the Proposed Action.</p>
<p>Georgia Air Quality Act (O.C.G.A. 12-9-1, et seq.)</p>	<p>The Act provides authority to the Georgia Environmental Protection Division (GA EPD) to promulgate rules and regulations necessary to abate or to control air pollution for the state as a whole or from area to area, as appropriate. Establishment of ambient air quality standards, emission limitations, emission control standards, and other measures are necessary to provide standards that are no less stringent than the federal Clean Air Act (CAA) mandates. The GA EPD administers the Act.</p>	<p>Prescribed burning is the largest source of air emissions and potential impact on air quality at TBR. Under the TBR prescribed fire program, a maximum of 8,650 acres of land would be subject to prescribed burning on an annual basis. The potential carbon monoxide-equivalent greenhouse gas emissions associated with prescribed fires are estimated to be a maximum of 7,224 tons per year, which falls well below the CEQ threshold of 25,000 metric tons. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Boat Safety Act (O.C.G.A. 52-7-1, et seq.)</p>	<p>The Act provides enforceable rules and regulations for safe boating practices on Georgia's lakes, rivers, and coastal waters. This Act establishes boating safety zones for a distance of 1,000 feet from the high-water mark on Jekyll Island, Tybee Island, St. Simons Island, and Sea Island. All motorized craft, including commercial fishing vessels, jet skis, and power boats, are prohibited from these waters, except at certain pier and marina access points. This Act defines "abandoned vessels" as any left unattended for five days and provides for their removal. The Law Enforcement Section of the GA DNR, Wildlife Resources Division, and the Georgia Bureau of Investigation enforces these regulations.</p>	<p>The Proposed Action is located beyond the extent of the boating safety zones established by this Act. This policy is not applicable to the Proposed Action.</p>
<p>Georgia Coastal Management Act (O.C.G.A. 12-5-320, et seq.)</p>	<p>The Act provides enabling authority for the State to prepare and administer a coastal management program. The Act does not establish new regulations or laws; it is designed to establish procedural requirements for the GADNR to develop and implement</p>	<p>The Marine Corps has prepared an INRMP Implementation EA to examine impacts to air quality, water resources (groundwater, surface waters, floodplains, and wetlands), geological</p>

Georgia Statute	Legal Scope	Consistency Evaluation
	<p>a program for the sustainable development and protection of coastal resources. It establishes the GADNR as the State agency to receive and disburse federal grant monies. It establishes the Governor as the approving authority of the program and as the person who must submit the program to the federal government for approval under the federal CZMA. It requires other state agencies to cooperate with the Coastal Resources Division when exercising their activities within the coastal area.</p>	<p>resources (geology, topography, or soils), cultural resources (archaeological resources, historic built resources, and traditional cultural properties), biological resources (living, native, or naturalized plant and animal species and their habitats), socioeconomic (population demographics, employment characteristics, schools, and the housing occupancy status), and environmental justice as result of the Proposed Action. In addition, the Marine Corps has prepared this CCD document so that the Proposed Action adheres to the State's enforceable policies concerning development on the coast. The Proposed Action is fully consistent with this policy.</p>
<p>Coastal Marshlands Protection Act (O.C.G.A. 12-5-280, et seq.)</p>	<p>The Act provides the Coastal Resources Division with the authority to protect tidal wetlands. The Act limits certain activities and structures in marsh areas and requires permits for other activities and structures. Erecting structures, dredging, or filling marsh areas require a Marsh Permit administered through the GCMP. In cases where the proposed activity involves construction on State-owned tidal water bottoms, a Revocable License issued by the Coastal Resources Division may also be required. Marsh Permits and Revocable Licenses are not issued for activities that are inconsistent with the GCMP. The jurisdiction of the Act extends to "coastal marshlands" or "marshlands," which includes marshland, intertidal area, mudflats, tidal water bottoms, and salt marsh area within estuarine area of the state, whether or not the tidewaters reach the littoral areas through natural or artificial watercourses.</p>	<p>No activities of the Proposed Action occur within the jurisdictional area of the Act. This policy is not applicable to the Proposed Action.</p>
<p>Georgia Safe Dams Act (O.C.G.A. 12-5-370, et seq.)</p>	<p>The Act provides for the inspection and permitting of certain dams to protect the health, safety, and welfare of Georgia residents. The GA EPD is responsible for inspecting and certifying dams.</p>	<p>No dam construction or operation is included in the Proposed Action. This policy is not applicable to the Proposed Action.</p>
<p>Endangered Wildlife Act (O.C.G.A. 27-3-130, et seq.)</p>	<p>The Act provides for identification, inventory, and protection of animal species that are rare, unusual, or in danger of extinction. Additional species may be added by the Board of Natural Resources at any time. The protection offered to these species is limited to</p>	<p>Effects on Federally and state-listed species were examined in the INRMP implementation EA. The INRMP and EA were submitted to and reviewed by the U.S. Fish and Wildlife Service for Federally and</p>

Implementation of the INRMP at the TBR, McIntosh and Long Counties, Georgia

Consistency Determination

Georgia Statute	Legal Scope	Consistency Evaluation
	<p>those that are found on public lands of the State. It is a misdemeanor to violate the rules prohibiting capture, killing, or selling of protected species, and protection of protected species habitat on public lands. The rules and regulations are established and administered by the GA DNR for implementation of this Act.</p>	<p>state-listed species. Eight threatened, endangered, and candidate species are likely to occur within the area of potential effect (APE) on TBR. No portions of the TBR contain critical habitat for Federally listed species as defined by the ESA. Suitable habitat exists within the APE for the frosted flatwoods salamander (<i>Ambystoma cingulatum</i>), striped newt (<i>Notophthalmus persiatus</i>), American alligator (<i>Alligator mississippiensis</i>), eastern indigo snake (<i>Drymarchon couperi</i>), gopher tortoise (<i>Gopherus polyphemus</i>), red-cockaded woodpecker (<i>Picoides borealis</i>), and wood stork (<i>Mycteria americana</i>). The Bachman's warbler (<i>Vermivora bachmanii</i>) has not been observed on TBR. The Navy anticipates that the implementation of the Proposed Action may affect, but is not likely to adversely affect any listed species present on TBR. There would be no significant impacts on threatened and endangered species from the implementation of the Proposed Action and no formal consultation between the Marine Corps and USFWS would be required. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Environmental Policy Act (O.C.G.A. 12-16-1, et seq.)</p>	<p>The Act requires that all state agencies and activities prepare an Environmental Impact Report as part of the decision-making process. This is required for all activities that may have an impact on the environment. Alternatives to the proposed project or activity must be considered as part of the report.</p>	<p>This CCD is a component of the INRMP implementation EA, which evaluates the impacts of the Proposed Action. Informal consultation with the GADNR occurred during preparation of the Draft-Final EA. Preparation of the EA is fully consistent with both this state law and the National Environmental Policy Act.</p>
<p>Georgia Erosion and Sedimentation Act (O.C.G.A. 12-7-1, et seq.)</p>	<p>The Act requires that each county or municipality adopt a comprehensive ordinance establishing procedures governing land-disturbing activities based on the minimum requirements established by the Act. The Act is administered by the GA EPD and by local governments. Permits are required for specified "land-disturbing activities," including the construction or modification of manufacturing facilities, construction activities, certain activities</p>	<p>The primary land-disturbing activity for the Proposed Action would be associated with construction of roads and firebreaks. The majority of construction activities would be located within upland areas. Development of the land clearing and similar activities would adhere to the use of BMPs and conform to the erosion control requirements of</p>

Implementation of the INRMP at the TBR, McIntosh and Long Counties, Georgia

Consistency Determination

Georgia Statute	Legal Scope	Consistency Evaluation
	<p>associated with transportation facilities, activities on marsh hammocks, etc. Within certain constraints, permitting authority can be delegated to local governments. There are specific exemptions to the requirements of the Act (e.g. forestry land management practices).</p>	<p>the responsible county. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Game and Fish Code (O.G.C.A. 27-1-1, et seq.)</p>	<p>The code provides the ownership of, jurisdiction over, and control of all wildlife to be vested in the state of Georgia. The section declares that custody of all wildlife in the state is vested with the GADNR for management and regulation. The Wildlife Resources Division is the principal state agency vested with statutory authority for the protection, management, and conservation of terrestrial wildlife and freshwater wildlife resources, including fish, game, non-game, and endangered species. All licensing of recreational and commercial fish and wildlife activities, excluding shellfish, is performed by the Wildlife Resources Division. The Coastal Resources Division issues shellfish permits, regulates marine fisheries activities including the opening and closing of the commercial shrimp harvesting season and areas of shrimp harvest, regulates marine species size and creel limits, and enforces the National Shellfish Sanitation Program. The Commissioner of the GA DNR has directed that there will be cooperation and coordination between the Divisions of the Department in the administration of their respective responsibilities.</p>	<p>The Proposed Action does not include trapping, fishing, or the collection of shellfish. The existing TBR hunting program would continue to be conducted in accordance with all state hunting laws and regulations. Only licensed hunters would be allowed to participate in the program. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Game and Fish Code (O.C.G.A. 27-4-190, et seq.)</p>	<p>The provisions of Title 27, Part 4 of this coded describe the regulation of shellfish in Georgia. The provisions describe the requirements for a commercial shellfish harvester to have a license, issued by the GA DNR pursuant to the requirements of the U.S. Department of Agriculture. The Department also is authorized to approve shellfish growing areas for commercial harvest and must consider the guidelines established by the National Shellfish Sanitation Program. The Department conducts water sampling in areas that are approved for shellfish in conjunction with the National Shellfish Sanitation Program.</p>	<p>The Proposed Action would not result in the collection of shellfish. This policy is not applicable to the Proposed Action..</p>
<p>Georgia Heritage Trust Act (O.C.G.A. 12-3-70, et seq.)</p>	<p>The Act seeks to preserve certain real property in Georgia that exhibits unique natural characteristics, special historical significance, or particular recreational value. This Act created the Heritage Trust</p>	<p>Cultural resources considered at TBR included the presence of archaeological resources, historic built resources, and traditional cultural properties. A total</p>

Implementation of the INRMP at the TBR, McIntosh and Long Counties, Georgia

Consistency Determination

Georgia Statute	Legal Scope	Consistency Evaluation
	<p>Commission, comprised of 15 members appointed by the Governor who represent a variety of interests and expertise. The Commission served as an advisory body to the Governor and to the Board of the GA DNR, making recommendations concerning the identification, designation, and acquisition of heritage areas. Although this Act is still in Georgia law, the Commission's term expired and the implementation and administration of many of the goals of the Act has been superseded by the Heritage 2000 Program.</p>	<p>of 29 archaeological resources and six built resources were identified within the area of potential effect. No traditional cultural properties or sacred sites were identified. The archaeological and architectural resources located on or adjacent to TBR would be avoided during implementation of any INRMP projects that have the potential for ground disturbance (e.g., prescribed burns and firebreak construction/maintenance). Therefore, the Proposed Action is consistent with this policy.</p>
<p>Groundwater Use Act (O.C.G.A. 12-5-90, et seq.)</p>	<p>The Act charges the Board of GADNR with the responsibility to adopt rules and regulations relating to the conduct, content, and submission of water conservation plans, including water conservation practices, water drilling protocols, and specific rules for withdrawal and utilization of groundwater. The GA EPD administers these rules and regulations. Groundwater withdrawals of greater than 100,000 gallons per day require a permit from the GA EPD. Permit applications that request an increase in water usage must also submit a water conservation plan approved by the Director of the GA EPD (O.C.G.A. 12-5-96). The GA EPD has prepared a comprehensive groundwater management plan for coastal Georgia that addresses water conservation measures, protection from saltwater encroachment, reasonable uses, preservation for future development and economic development issues. The Memorandum of Agreement between the GA DNR and GA EPD ensures that permits issued under the Groundwater Use Act must be consistent with the Coastal Management Program.</p>	<p>The Proposed Action activities would occur within the Coastal Georgia Water and Wastewater Permitting Plan, Sub-Region 3, which allows for the continued use of the Upper Floridan aquifer based on real-time conditions. McIntosh and Long Counties are not part of any State-administered moratorium areas that place restrictions on the quantity of groundwater withdrawals. Implementation of the INRMP projects would have a minimal impact on the estimated 0.70 million gallons per day available water capacity for McIntosh County. Long County does not currently have a permitted water capacity. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Hazardous Waste Management Act (O.C.G.A. 12-8-60, et seq.)</p>	<p>The Act describes a comprehensive, state-wide program to manage hazardous wastes through regulating hazardous waste generation, transportation, storage, treatment, and disposal. Hazardous waste is defined by the Board of GADNR, and it includes any waste that the Board concludes is capable of posing a substantial present or future hazard to human health or the environment when improperly treated, transported, stored, disposed, or otherwise managed, based on regulations promulgated by the U.S. Environmental Protection</p>	<p>Wastes generated from equipment use during prescribed burns and firebreak construction activities would be consistent with those currently generated at TBR and would include both hazardous waste (e.g., used oil) and regulated non-hazardous waste (e.g., pads or towels used to absorb oil or fuel). These wastes would be managed through the existing waste management system according to prescribed procedures already in place, which include the</p>

Implementation of the INRMP at the TBR, McIntosh and Long Counties, Georgia

Consistency Determination

Georgia Statute	Legal Scope	Consistency Evaluation
	<p>Agency. The Act is administered and implemented by the GA EPD.</p>	<p>requirement that no hazardous waste would be disposed of, left, buried, or abandoned at TBR. No change to permits, hazardous waste generator status, or management would be required. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Historic Areas (O.C.G.A. 12-3-50, et seq.)</p>	<p>The authority found at O.C.G.A. 12-3-50 provides the GADNR with the powers and duties to “promote and increase knowledge and understanding of the history of this State from the earliest times to the present...” GADNR is also required to “promote and assist in the publicizing of the historical resources of the State by preparing and furnishing the necessary historical material to agencies charged with such publicity; to promote and assist in making accessible and attractive to travelers, visitors, and tourists the historical features of the State by advising and cooperating with State, federal, and local agencies charged with the construction of roads, highways, and bridges leading to such historical points.”</p>	<p>Cultural resources considered at TBR included the presence of archaeological resources, historic built resources, and traditional cultural properties. A total of 29 archaeological resources and six built resources were identified within the area of potential effect. No traditional cultural properties or sacred sites were identified. The archaeological and architectural resources located on or adjacent to TBR would be avoided during implementation of any INRMP projects that have the potential for ground disturbance (e.g., prescribed burns and firebreak construction/maintenance). Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Natural Areas Act (O.C.G.A. 12-3-90, et seq.)</p>	<p>The Georgia Natural Areas Act authorizes the GA DNR to identify areas in the state that are of unusual ecological significance and to secure the preservation of such areas in an undisturbed natural state. The purpose for such acquisition is to allow scientific study of the property, to educate, to “serve as examples of nature to the general public,” and to “enrich the quality of our environment for present and future generations.” Natural areas, as defined by the Act, are tracts of land in their natural state that are to be set aside and permanently protected or managed for the purpose of preserving natural plant or animal communities, rare or valuable members of such communities, or any other natural features of significant scientific, educational, geologic, ecological, or scenic value.</p>	<p>The GADNR maintains several wildlife management areas (WMAs) adjacent to or within close proximity to TBR. These include the Townsend WMA, Penholoway WMA, and the Sansavilla WMA. In addition, several conservation easements are located within or in close proximity to the proposed acquisition. These include the Goodwood Easement, Fort Barrington Club Easement, Altamaha River Corridor, The Lost 1,000 Easement, and the Penholoway Swamp Easement. No impacts to these areas are anticipated as result of the Proposed Action. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Oil and Gas and Deep Drilling Act (O.C.G.A. 12-4-40, et seq.)</p>	<p>The Act regulates oil and gas drilling activities to provide protection of underground freshwater supplies and certain “environmentally sensitive” areas. The Board of the GADNR has the authority to implement this Act. The Act establishes requirements for drilling,</p>	<p>No oil and/or gas drilling operations are proposed for this project. This policy is not applicable to the Proposed Action.</p>

Georgia Statute	Legal Scope	Consistency Evaluation
	<p>casing, and plugging of wells for oil, gas, or mineral exploration; (1) to alleviate escape of gas or oil from one stratum to another; (2) to prevent the pollution of freshwater by oil, gas, salt water, or other contaminants; (3) to prevent drowning of any stratum that might reduce the total ultimate recovery of gas or oil; and (4) to prevent fires, waste, and spillage of contaminants such as oil.</p>	
<p>Licenses to Dig, Mine, and Remove Phosphate Deposits; Restrictions on License Holders. (O.C.G.A. 12-4-100, et seq.)</p>	<p>These laws describe the State's management of phosphate deposits. There is great interest in phosphate mining in Georgia. In fact, the citizens of Georgia developed the Coastal Marshlands Protection Act in an effort to limit potential adverse environmental impacts from a proposed phosphate mining operation. The Secretary of State is charged with the administration of this statute and is networked with the Georgia Coastal Management Program.</p>	<p>No mining of phosphates is proposed for this project, therefore, this policy is not applicable to the Proposed Action.</p>
<p>Protection of Tidewaters Act (O.C.G.A. 52-1-1, et seq.)</p>	<p>The Act establishes the State of Georgia as the owner of the beds of all tidewaters within the state, except where title by a private party can be traced to a valid British Crown or State land grant. The Act provides the GADNR the authority to remove those "structures" that are capable of habitation or incapable of, or not used for, transportation. Permits for such structures may not extend past June 30, 1997. The Act provides procedures for removal, sale, or disposition of such structures.</p>	<p>No activities of the Proposed Action are located within tidewater areas, so this policy is not applicable to the Proposed Action.</p>
<p>Revocable License Program (O.C.G.A. 50-16-61, et seq.)</p>	<p>This program describes the general supervision of State properties as the responsibility of the Governor. Under this authority, the GA DNR, Coastal Resources Division, issues Revocable Licenses for recreational docks on State-owned tidal water bottoms.</p>	<p>No activities of the Proposed Action are located on State-owned tidal water bottoms. This policy is not applicable to the Proposed Action.</p>
<p>Right of Passage Act (O.C.G.A. 52-1-30, et seq.)</p>	<p>The Act declares the right of use of all navigable waterways of the state by all citizens of Georgia. The Act establishes the mechanism to remove "structures" that are capable of being used as a place of habitation, are not used as or are not capable of use as a means of transportation, and do not have a permit under the Act. Permits shall not be issued for a term ending after June 30, 1997. The Act is implemented by the GADNR Law Enforcement Division.</p>	<p>No portions of the Proposed Action are within navigable waterways of the State of Georgia. This policy is not applicable to the Proposed Action.</p>
<p>Mountain and River</p>	<p>The Act authorizes the GADNR to develop minimum standards that</p>	<p>The Altamaha River is a protected river corridor</p>

Georgia Statute	Legal Scope	Consistency Evaluation
<p>Corridor Protection Act (O.C.G.A. 12-2-1, et seq.)</p>	<p>can be adopted by local governments for the protection of river corridors (and mountains, watersheds, and wetlands). The Act is administered by the GA EPD. All rivers in Georgia with an average annual flow of 400 cubic feet per second are covered by the Act, except those within the jurisdiction of the Coastal Marshlands Protection Act. Some of the major provisions of the Act include: requirements for a 100-foot vegetative buffer on both sides of rivers; consistency with the Georgia Erosion and Sedimentation Act; and identification of river corridors by local governments in land-use plans developed under their respective comprehensive planning acts.</p>	<p>under this policy and is located to the southwest of the proposed acquisition areas. The Proposed Action would not result in impacts to the Altamaha River. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Safe Drinking Water Act (O.C.G.A. 12-5-170, et seq.)</p>	<p>The Act charges the GA EPD with the responsibility for maintaining the quality of drinking water and for maintaining a water-supply program adequate for present and future needs of the state, and to establish rules and policies for the proper administration of drinking water management programs.</p>	<p>The Proposed Action would not adversely impact the Upper Floridan aquifer, the principal drinking water aquifer in the coastal area. All potable water and wastewater requirements associated with the Proposed Action would rely on separate systems developed, operated, and maintained by the USMC. All INRMP implementation activities would be consistent with the applicable USMC UFC for water supply systems. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Georgia Scenic Rivers Act (O.C.G.A. 12-5-350, et seq.)</p>	<p>The Act defines "scenic river" to mean certain rivers or section of rivers that have valuable scenic, recreational, or natural characteristics that should be preserved for the benefit and enjoyment of present and future generations. Certain sections of rivers are named in the Act, and the process for designating other sections of Georgia rivers is described. The Act is administered by the GA EPD.</p>	<p>TBR does not include any scenic rivers covered under this Act. Therefore, this policy is not applicable to the Proposed Action.</p>
<p>Georgia Safe Drinking Water Act (O.C.G.A. 12-5-170, et seq.)</p>	<p>The Act charges the GA EPD with the responsibility for maintaining the quality of drinking water and for maintaining a water-supply program adequate for present and future needs of the state, and to establish rules and policies for the proper administration of drinking water management programs.</p>	<p>The Proposed Action would not adversely impact the Upper Floridan aquifer, the principal drinking water aquifer in the coastal area. All potable water and wastewater requirements associated with the Proposed Action would rely on separate systems developed, operated, and maintained by the USMC. All INRMP implementation activities would be consistent with the applicable USMC UFC for water</p>

Georgia Statute	Legal Scope	Consistency Evaluation
<p>Georgia Scenic Trails Act (O.C.G.A. 12-3-110, et seq.)</p>	<p>The Act authorizes the GADNR to establish a Scenic Trails System in Georgia. The Department is authorized to construct, maintain, and manage trails on lands acquired through purchase, easement, lease or donation. The purpose is to create a balanced system of trails throughout the state, including urban, bicycle, horse, rural hiking, primitive hiking, historical, bikeways, and combination trails. The GA DOT is authorized to construct the bicycle trails and bikeways after the GADNR has determined their routes.</p>	<p>supply systems. Therefore, the Proposed Action is consistent with this policy.</p> <p>The Georgia Coast Rail-Trail, a 68-mile long, multi-purpose trail extending 68 miles from Kingsland to Riceboro, is currently being built in segments over a number of years. The trail is being built on an existing, raised railroad bed, once owned by CSX Transportation, formerly known as Seaboard Coast Line. It will traverse the western portions of Camden, Glynn, McIntosh, and Liberty Counties. The trail is located approximately 1.5 miles to the east of TBR, and the Proposed Action would not affect the trail or recreational trail users. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Title 31 – Health (O.C.G.A. Title 31 generally) (Septic Tank Law)</p>	<p>The Department of Human Resources and the county boards of health are described and established by Title 31. There are other references for managing septic systems throughout the Code, including references within the River Corridor Protection Act (O.C.G.A. 12-2-8), the Georgia Water Quality Control Act (O.C.G.A. 12-5-20), and others, which make reference to safe siting of septic systems to ensure that leachate from those systems does not infiltrate the waters of the state. The county board(s) of health are provided the authority and the responsibility of ensuring safe installation and maintenance of septic systems.</p>	<p>The Proposed Action would not result in either the relocation of existing facilities or the construction of additional facilities. There are no plans for construction of septic tank facilities as part of the Proposed Action. Therefore, the Proposed Action is consistent with this policy.</p>
<p>Shore Protection Act (O.C.G.A. 2-5-230 , et seq.)</p>	<p>The Act is the primary legal authority for protection and management of Georgia’s shoreline features including sand dunes, beaches, sandbars, and shoals, collectively known as the sand-sharing system. The value of the sand-sharing system is recognized as vitally important in protecting the coastal marshes and uplands from Atlantic storm activity, as well as providing valuable recreational opportunities.</p>	<p>The Proposed Action is located inland, thus would not result in any adverse impacts to shoreline features. This policy is not applicable to the Proposed Action.</p>
<p>Georgia Comprehensive Solid Waste Management Act</p>	<p>The Georgia Comprehensive Solid Waste Management Act defines the rules regarding solid waste disposal in the state. Solid waste-handling facilities must be permitted by the State unless an</p>	<p>No solid waste is anticipated to be generated during the construction of firebreaks. Therefore, the</p>

Georgia Statute	Legal Scope	Consistency Evaluation
(O.C.G.A. 12-8-21, et seq.)	individual is disposing of waste from his own residence onto land or facilities owned by him and disposal of such waste does not adversely affect human health (O.C.G.A. 12-8-30.10). State law mandates that a county, municipality, or group of counties beginning a process to select a site for municipal waste disposal must first call at least one public meeting.	Proposed Action is consistent with this policy.
Georgia Surface Mining Act (O.C.G.A. 12-4-70, et seq.)	The Act regulates all surface mining in Georgia, including the coastal zone. Dredging or ocean mining of materials is not directly regulated by State authority, except that sand and gravel operations are subject to the Shore Protection Act.	The Proposed Action does not include any surface mining activities. This policy is not applicable to the Proposed Action.
Georgia Underground Storage Tank Act (O.C.G.A. 12-13-1, et seq.)	The Act provides the authority for the GA EPD to define the State criteria for operating, detecting releases, corrective actions, and enforcement of the utilization of underground storage tanks (USTs). The rules at Chapter 391-3-15 of the Rules and Regulations of the State of Georgia establish minimum standards and procedures to protect human health and safety and to protect and maintain the quality of groundwater and surface water resources from environmental contamination that could result from any releases of harmful substances stored in such tanks. These requirements reflect the federal law regulating underground storage tanks as well as the applicable State rules. All facilities with underground storage tanks are subject to these requirements. The Memorandum of Agreement between the Coastal Resources Division and the GA EPD ensures cooperation and coordination in the implementation of UST standards within the coastal area.	The Proposed Action does not include any USTs to be constructed. This policy is not applicable to the Proposed Action.
Georgia Water Quality Control Act (O.C.G.A. 12-5-20)	The Georgia Water Quality Control Act grants the GA EPD authority to ensure that water uses in Georgia are used prudently, are maintained or restored to a reasonable degree of purity, and are maintained in adequate supply. In the administration of this law, the GA EPD can revise rules and regulations pertaining to water quality and quantity, set permit conditions and effluent limitations, and set permissible limits of surface water usage for both consumptive and non-consumptive uses through the Board of the GADNR.	Stormwater discharges associated with the Proposed Action activities (firebreak construction) would comply with the requirements of the Clean Water Act (CWA) National Pollutant Discharge Elimination System (NPDES) permit program as administered by the GA EPD. Any non-exempt direct or indirect impacts to surface waters would require permits from the U.S. Army Corps of Engineers under Section 404 of the CWA and under the NPDES regulated by the GA EPD. Therefore,

Implementation of the INRMP at the TBR, McIntosh and Long Counties, Georgia

Consistency Determination

Georgia Statute	Legal Scope	Consistency Evaluation
<p>Water Wells Standards Act (O.C.G.A. 12-5-120, et seq.)</p>	<p>The Act provides standards for siting, constructing, operating, maintaining, and abandoning wells and boreholes. The Act requires that individual and non-public wells must be located as far removed from known or potential sources of pollutants as possible. Licensing requirements for drilling contractors are established by the Act, as well as a State Water Well Standards Advisory Council. The Council is authorized to adopt and amend rules and regulations that are reasonable to govern the licensing of well contractors. Compliance with the Act is required for all activities that utilize well water. The provisions of the Act are enforceable under Georgia law. The Council may file a petition for an injunction in the appropriate superior court against any person that has violated any provisions of the Act.</p>	<p>the Proposed Action is consistent with this policy.</p> <p>The Proposed Action does not include any wells to be constructed. This policy is not applicable to the Proposed Action.</p>
<p>The Wildflower Preservation Act (O.C.G.A. 12-6-170, et seq.)</p>	<p>The Act provides for designation and protection of plant species that are rare, unusual, or in danger of extinction. Additional species may be added by the Board of the GADNR at any time. The protection offered to these species is limited to those that are found on public lands of the state. It is a misdemeanor to transport, carry, convey, sell, cut, pull up, dig up, or remove protected species listed by this Act.</p>	<p>Effects on Federally and state-listed species were examined in the INRMP implementation EA. The INRMP and EA were submitted to and reviewed by the U.S. Fish and Wildlife Service for Federally and state-listed species. It was determined in the 2013 MCAS EIS that no state-protected species are likely to be adversely affected by its Proposed Action, which also includes prescribed burning and firebreak construction of the current Proposed Action. Therefore, the Proposed Action is consistent with this policy.</p>