

Environmental Assessment

Plum Tree Island National Wildlife Refuge Poquoson, Virginia

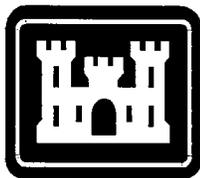
Tower(s) Removal

**U.S. Army Corps of Engineers
Norfolk District**

in cooperation with

**U.S. Fish and Wildlife Service
Eastern Virginia Rivers
National Wildlife Refuge Complex**

December 2005



**Environmental Assessment
Plum Tree Island National Wildlife Refuge Tower(s) Removal
Poquoson, Virginia**

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Finding of No Significant Impact

Plum Tree Island National Wildlife Refuge Tower(s) Removal Poquoson, Virginia

Pursuant to the Council on Environmental Quality Regulations (40 CFR Parts 1500-1508) for implementing the procedural provisions of the National Environmental Policy Act (42 U.S.C. 4321 et seq.) and Army Regulation 32 CFR 651 (*Environmental Analysis of Army Actions*), an Environmental Assessment (EA) was prepared by the U.S. Army Corps of Engineers, Norfolk District to evaluate the potential environmental effects associated with removal of World War II-era observation towers at Plum Tree Island National Wildlife Refuge (NWR) located in Poquoson, Virginia. These measures are proposed to reduce or eliminate human health and safety issues that the structures currently present. The one standing tower serves as an attractive nuisance, drawing people onto the shore in spite of extensive signage indicating the extreme hazard or unexploded munitions. It is in poor condition, posing a threat to anyone climbing it. The tower that has fallen in the water poses a safety hazard from a navigation standpoint.

The Corps of Engineers, in collaboration with the U.S. Fish and Wildlife Service (USFWS), evaluated reasonable alternative measures that would address concerns related to three (3) towers on Plum Tree Island NWR. The alternatives considered were as follows: no action; removal by ATV and crane/ barge (*remove all three towers, remove two towers, or remove one tower*); removal manually through NWR and then by shallow skiff and crane/barge (*remove two towers*); removal by helicopter (*remove all three towers, remove two towers, or remove one tower*); and removal of two towers while preserving a portion of the standing tower.

The preferred alternative and the proposed action is to dismantle two towers and remove them manually through the Refuge and then by shallow skiff and crane/barge. The two towers to be removed are the standing tower and the tower which has fallen over in the water. The standing tower will be removed by dismantling, removing the pieces manually to a location where they are accessible to a shallow draft skiff, then transporting to a crane/barge offshore. The fallen tower will be removed directly from the water by crane/barge. The one remaining tower will not be removed because it is inaccessible, is surrounded by marsh habitat, and poses no imminent threat to human health and safety or navigation.

The EA, incorporated by reference into this Finding of No Significant Impact (FONSI), examined the environmental effects of the No Action alternative and each alternative action. There is no indicated potential for the project, as proposed, to cause any long-term moderate or major adverse effects on appropriate resource areas of environmental concern including soils or geology, air quality, water resources, wetlands, endangered or threatened species, floodplains, noise, cultural resources, and visual resources within the project vicinity.

In summary, the expected adverse impacts associated with the action are minor, of short duration, and, as proposed, will not create any significant or controversial adverse environmental effects; therefore, the preparation of an Environmental Impact Statement is not considered to be necessary.

Interested parties are invited to review and comment on this FONSI and EA within 30 days of publication of the FONSI in the *Daily Press*. Copies of the EA are available either electronically or in print by contacting Mr. Craig Seltzer, U.S. Army Corps of Engineers, Norfolk District, Attn: CENAO-PM-PE, 803 Front Street, Norfolk, Virginia 23510-1096 (Email: craig.l.seltzer@usace.army.mil) (telephone 757/201-7390).

Date: _____

YVONNE J. PRETTYMAN-BECK
Colonel, District Engineer
Commanding

Environmental Assessment
Plum Tree Island National Wildlife Refuge Towers Removal
Poquoson, Virginia

1. PURPOSE AND NEED FOR THE ACTION

The removal of three obsolete World War-II era observation towers, two fallen from natural causes, and one still standing is being evaluated.

Need for the Project

At the present time the one standing tower and the two fallen towers serve no useful function for either the Department of Defense (DoD) or the USFWS. The standing tower is an attractive nuisance, drawing people onto the shore in spite of extensive signage indicating the extreme hazard of unexploded munitions in the shallows and on the island. This danger was demonstrated during an incident in 1958 when an individual visiting the island suffered temporary blindness and a partial leg amputation after a practice bomb exploded. In addition, the tower itself attracts people who want to climb it. The tower itself, which has not been maintained, is in poor condition as evidenced by the spalling of the concrete footings and corrosion of the tower itself. These structural problems make the tower a safety hazard to anyone climbing it.

The purpose of this EA is to assure the U.S. Army is in compliance with the National Environmental Policy Act (NEPA) of 1969, as amended; the Code of Federal Regulations (Title 32, Part 651) incorporating Army Regulation, 32 CFR 651, Environmental Analysis of Army Actions; and other regulations for implementing NEPA.

This document identifies and evaluates the potential environmental effects of implementing the proposed action and alternatives. The EA focuses on effects that could occur within the project area, primarily the Plum Tree Island NWR and adjoining waters, and analyzes direct effects (those caused by the proposed action and occurring at the same time and place) and indirect effects (those caused by the proposed action and occurring later in time or farther removed in distance but still reasonably foreseeable). The potential for cumulative effects is also addressed, and mitigation measures are identified where appropriate.

This document will facilitate the Department of the Army's and the Corps of Engineers compliance with NEPA by providing a framework to address potential impacts associated with the implementation of one or more tower removal measures at Plum Tree Island NWR in Poquoson, Virginia. The need to remove existing tower structures in the interest of human health and safety is evident upon observation of both the deteriorated structures themselves and the presence of munitions regularly uncovered by storms and natural erosion of the island.

The aerial photos that follow show the southeast portion of the Plum Tree Island NWR and the locations of the three towers (Figure I-1). Figure I-2 shows the standing tower (tower 1), which is located east of Flat Gut.

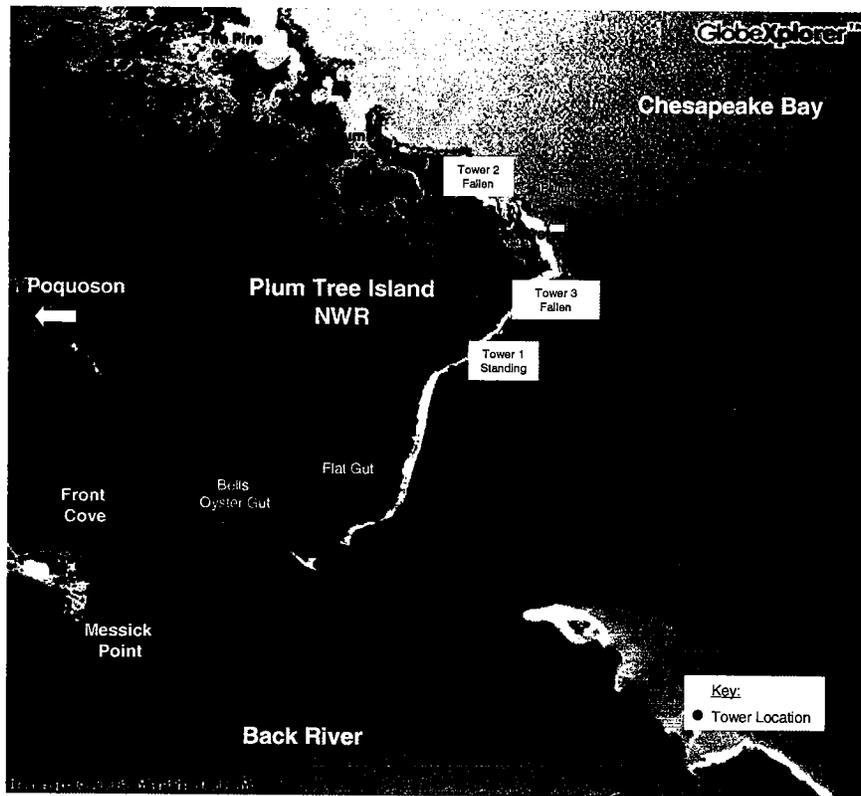


Figure I-1. Aerial Photo of Plum Tree Island NWR and Tower Locations

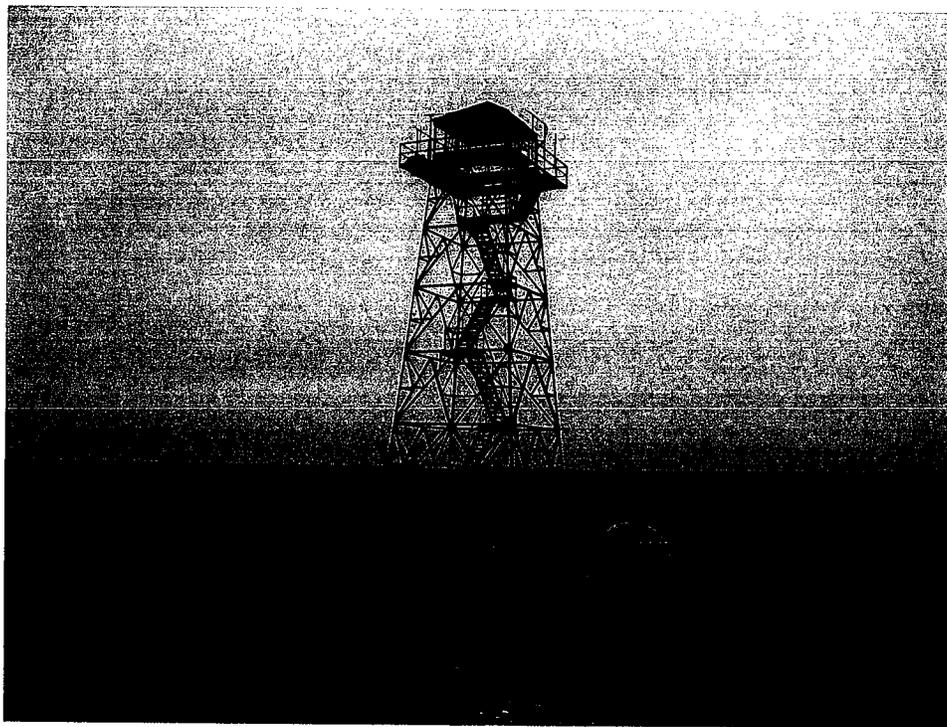


Figure I-2. Standing Tower (Tower 1)

In the interest of safety and to help reduce the risk of human injury, the Norfolk District U.S. Army Corps of Engineers, in cooperation with the USFWS, evaluated specific alternatives for removal of one, two, or all three of the tower structures. The No Action alternative was also evaluated.

The determination to recommend a specific Proposed Action was based on various criteria including actual costs, predicted effectiveness, engineering, and environmental considerations. The nine alternatives include:

No Action

Remove Tower(s) by ATV and Crane/Barge

1. All Three Towers
2. Two Towers (Standing Tower and Tower in Water)
3. One Tower (Standing Tower)

Remove Tower(s) Manually, and by Shallow Skiff and Crane/Barge

4. Two Towers (Standing Tower and Tower in Water) (**Proposed Action**)

Remove Tower(s) by Helicopter and Crane/Barge

5. All Three Towers
6. Two Towers (Standing Tower and Tower in Water)
7. One Tower (Standing Tower)

Remove Two Towers and Preserve Portion of Standing Tower

8. Two Towers (Standing Tower and Tower in Water)

2. DESCRIPTION OF THE PROPOSED ACTION

Background

The Plum Tree Island Range is composed of 3,501 acres of land, which is owned by the Department of the Interior, USFWS, for use as a wildlife refuge. The War Department procured the property beginning in 1917, and it continued to be used as an active range until June 1971. The property was transferred in 1972 but still remains an emergency jettison area for Langley Air Force Base.

A surface clearance of the site was conducted in 1959; however, much of the ordnance, which is located beneath the marshy surface of the island, could not be recovered. This danger was demonstrated during an incident in 1958 when an individual visiting the island suffered temporary blindness and a partial leg amputation after a practice bomb exploded (USACE, 1996).

In 1992, a Preliminary Assessment of Eligibility (PAE) of the range was conducted under the Defense Environmental Restoration Program, Formerly Used Defense Sites (DERP, FUDS) by the Norfolk District Corps of Engineers. At that time it was determined that the site was formerly used by the Department of Defense as an Army Aviation Experimental Station and later as an Air Force Bombing and Gunnery Range and eligible for restoration under DERP FUDS for Ordnance & Explosives and Building Demolition/Debris Removal (BD/DR). The BD/DR was for the removal of three (3) observation towers at the range.

In 1992, the Rock Island District, U.S. Army Corps of Engineers (USACE), and the U. S. Army Defense Ammunition Center and School, Savanna, IL (USADACS), prepared a report entitled "Archives Search Report, Findings for the former Plum Tree Island Range, Poquoson, Virginia." This report confirmed the presence of unexploded ordnance at the site and focused primarily on the DoD activities involving munitions and explosives, including practice bombing and small arms fire. Some information on the property ownership history at the time of acquisition was included also.

Existing Land Use

The former Plum Tree Island Range is located at the southwest corner of the Chesapeake Bay near the town of Poquoson, Virginia. Total site acreage consists of 3,501 acres of salt marsh bearing moderate concentrations of numerous wetland vegetation species. It is owned and maintained by USFWS as a wildlife refuge and remains in a relatively undisturbed state since its last DoD and NASA use.

Project Actions

This EA evaluates the desired removal of three obsolete observation towers, two fallen, and one still standing. Although the work plan is not final, some combination of the following procedures will be used. The standing tower will be dropped by a contractor

using mechanical means in combination with a cutting torch. The supports near ground level will be cut, and a small ATV will be used to help in toppling the structure. The metal members will then be cut up into small segments using a torch. These will be loaded onto a rubber tired trailer and towed by an All Terrain Vehicle (ATV) or moved manually to a location on the beach line where a shallow draft boat/barge or a crane/barge can approach close enough to the shoreline to pick the material up and place it on the barge. It will then be disposed of off-site.

There should be no significant ground disturbance associated directly with this activity, but it will be necessary to perform a Munitions and Explosives clearance around the tower site and along the route that the vehicle will use to transfer the scrap to the beach. The clearance will be done by identifying surface munitions and buried munitions using a hand-held magnetometer. If there is an indication of buried metal, the location will be excavated and any munitions will be removed or blown in place if it is not safe to move them.

One of two fallen towers is located further back from the shoreline, and consideration was given to using a helicopter to remove this debris from this, as well as the other towers, which would reduce the amount of munitions clearance that would be needed.

Given that the water around the refuge is very shallow (<2' depth at mean high tide), and because the shallow water will prohibit mobilization of heavy equipment to the Refuge, it is anticipated that the towers will need to be cut into pieces small enough to be handled. The method of cutting will be either mechanical or by cutting torch. Due to the nature of the vegetation on the refuge, protective measures will be employed while using a cutting torch for fire prevention, and contingency control measures will be available in the event a flare-up occurs.

The other two towers are already down on the ground and will also require cutting up prior to removal and disposal. One of these towers is located on the shoreline, while the other is in an area of wetland vegetation.

The tower that is down in the water and partially exposed (tower 2) will be cut into pieces where it lies, so that it can be picked out of the water by the crane and placed directly on the barge. There appears to be sufficient water to get the crane/barge in for a direct pick up with little to no impact to surrounding areas.

The other downed tower (tower 3) is situated in an area where it would be necessary to disturb surrounding wetlands in order to access the site, dismember the structure, and transport the metal pieces to a location accessible to the crane/barge. Because this tower poses no imminent danger as an attractive nuisance, and because it is surrounded by wetland habitat, it will not be removed.

The crane/barge will then take the material from the two dismantled towers to Messick Point (or other designated off-site location) for off-loading to containers. It is anticipated that this procedure will take place at the same time for both towers, limiting the amount

of time the crane/barge will need to be on-site. Materials will then be truck hauled and disposed of or recycled off-site. Although the Norfolk District has concluded that the tower is not likely to survive the fall intact enough to be transported to another location, if part of the tower does survive the demolition and it can be preserved, it will be offered to the city of Poquoson before being disposed of.

The crane boat and crane/barge will be available to the contractor for loading, hauling, and off loading debris to the contractor's trucks for disposal off-site. In addition, the Norfolk District will coordinate efforts with the City of Poquoson for use of the Messick Point boat launch for staging and loading out the debris.

3. ALTERNATIVES CONSIDERED

(See Table III-1)

No Action Alternative

Regulations of the President's Council on Environmental Quality (CEQ) require consideration of a No Action alternative. This alternative also serves as a baseline against which the impacts of the proposed action and other alternatives considered can be evaluated. No Action involves the continuation of existing conditions without implementation of the proposed action or any other alternatives, and would allow continued encouragement of unlawful trespassing, exposure to unexploded ordnance (UXO), and access to the unsafe tower. Under the no action alternative, the status quo would be maintained. All three towers (one standing and two fallen) would remain in place. The Corps and the USFWS would continue to rely on existing Federal, state, and city of Poquoson laws and regulations and other deterrents to prevent trespassing on the Refuge and the climbing of tower structures.

Major Federal, state, and city regulations that offer some protection are summarized below.

Federal – The Corps designated the area around Plum Tree Island NWR a temporary Danger Zone in July 2004. In April 2005 it modified the regulations so that they prohibit disturbance of the sub-aqueous soil in navigable water adjacent to Plum Tree Island. The Danger Zone area covers the southern part of the old bombing range where unexploded ordnance is known to exist. The Danger Zone extends into the water 300 feet from the shoreline or original boundary, whichever is greater. Currently prohibited in the Danger Zone are anchoring; clamming with rakes, shovels, or hoes; dredging; prop dredging; the intentional/unintentional beaching or grounding of vessels or walking on the bottom. The perimeter area and the water are posted with signs that provide this information.

State – The Corps has sought assistance from the Virginia Marine Resources Commission and the Virginia Department of Game and Inland Fisheries to help enforce the Danger Zone restriction.

City – No specific city regulations are currently in place. There are no city laws or statutes to prevent trespassing on NWR or climbing on tower structures.

At the present time, the standing tower and the fallen towers serve no useful function for either the DoD or the USFWS. The standing tower serves as an attractive nuisance, drawing people onto the shore in spite of extensive signage indicating the extreme hazard of UXO. This danger was demonstrated during an incident in 1958 when an individual visiting the island suffered temporary blindness and a partial leg amputation after a practice bomb exploded. In addition, the tower itself attracts people who want to climb it. The tower itself, which has not been maintained, is in poor condition as evidenced by the spalling of the concrete footings and corrosion of the tower itself. These structural problems make the tower a safety hazard to anyone climbing it. For these reasons, No Action is not considered a viable alternative for maintaining public safety.

Alternative 1 – Remove All Three Towers with ATV and Crane/Barge

The standing tower (tower 1) will be felled toward the nearest shoreline. It will be brought down to the ground using mechanical means in combination with a cutting torch. Once on the ground, the individual metal members of the tower will be cut up into small segments using a torch. These will be loaded onto a rubber tired trailer, and towed by an all terrain vehicle (ATV) to a location along the

beachfront where either a crane/barge can be brought in to pick up the material, or the material can be ferried out to the crane/barge via a jet boat.

The tower that is down in the water and partially exposed (tower 2) will be cut into pieces where it lies, so that it can be picked out of the water by the crane and placed directly on the barge. There appears to be sufficient water to get the crane/barge in for a direct pick up with little to no impact to surrounding areas.

The other downed tower (tower 3) is situated in an area where it would be necessary to disturb surrounding wetlands in order to access the site, dismember the structure, and transport the metal pieces to a location accessible to the barge crane. There is the possibility of using a jet boat to remove the dismembered structure, but this will also require disturbance of surrounding wetland habitat.

Given that the water around the refuge is very shallow (<2' depth at mean high tide), and because the shallow water will prohibit mobilization of heavy equipment to the Refuge, it is anticipated that the towers will need to be cut into pieces small enough to be handled. The method of cutting will be either mechanical or by cutting torch. Due to the nature of the vegetation on the refuge, protective measures will be employed while using a cutting torch for fire prevention, and contingency control measures will be available in the event a flare-up occurs.

The crane/barge will then take the material from the dismantled towers to Messick Point (or other designated off-site location) for off-loading to containers. It is anticipated that this procedure will take place at the same time for both towers, limiting the amount of time the crane/barge will need to be on-site. Materials will then be truck hauled and disposed of or recycled off-site.

Alternative 2 – Remove Two Towers with ATV and Crane/Barge

This alternative is the same as Alternative 1 except that the tower that has fallen in the marsh would not be removed.

Alternative 3 – Remove Standing Tower Only with ATV and Crane/Barge

This alternative is the same as Alternative 1 except that only the standing tower would be removed. The two fallen towers would remain in place.

Alternative 4 – Remove Two Towers, Transport Manually, and Remove by Crane/Barge

This alternative is similar to Alternative 2 except that rather than use an ATV to transport the tower debris along the beachfront for removal by the barge/crane, the pieces would be manually transported to a designated site immediately adjacent to the fallen tower and Back River. At times of highest tide, a low draft boat/barge would shuttle the debris from the island to a barge/crane parked in deeper water. Although the standing tower would not likely survive intact being brought to the ground, if part of the tower does survive demolition and can be preserved, it would be offered to the city of Poquoson before being disposed of.

Alternative 5 – Remove All Three Towers by Helicopter

An alternative tower removal action would be to cut the standing tower into a few large pieces and use a helicopter to pick the pieces up and set them down on the beach, so they can be further cut up and transported to the crane/barge loading area. This may require a flight clearance from USFWS and possibly LAFB.

Since one of the fallen towers is located further back from the shoreline, using a helicopter to remove portions of the tower may reduce the amount of UXO avoidance efforts that would be required. The tower that is down in the water (partially exposed) would be cut into pieces where it lies, so that it could be picked out of the water by the helicopter and transported off-site. A similar procedure would be employed for the tower fallen in the marsh.

Alternative 6 – Remove Two Towers by Helicopter

This alternative is the same as Alternative 5 except that the tower that has fallen in the marsh would not be removed.

Alternative 7 – Remove Standing Tower Only by Helicopter

This alternative is the same as Alternative 5 except that only the standing tower would be removed. The two fallen towers would remain in place.

Alternative 8 – Remove and Preserve Portion(s) of Tower 1 (Standing Tower)

This alternative would involve preserving an intact portion or several portions of the standing tower. Portion(s) of the tower would be cut away while the tower is still standing. These intact portion(s) of the tower would then be removed and transported to an off-site location within the city of Poquoson. These intact portion(s) of the tower are intended to provide historical interest at a location accessible to the general public.

Munitions and Explosives of Concern (MEC) - All Tower Removal Alternatives

For any of the tower removal alternatives there should be no significant ground disturbance, but it will be necessary to perform MEC avoidance for all access and egress routes and MEC construction support for working zones and tower removal regardless of the alternative selected. In the event that the standing tower is dropped in place, construction support will consist of subsurface MEC clearance of an adequate fall zone (approximately 200'x200'). This clearance will consist of establishing the fall zone grid and surface/subsurface clearance of MEC from the established grid. MEC items encountered which are deemed safe to move will be moved out of the fall zone. MEC items which are unsafe to move will be disposed of by detonation. During the course of this clearance, all subsurface metallic anomalies down to 3-4 feet will be investigated. Personnel will not be allowed to access any areas without UXO personnel providing anomaly avoidance support unless those areas have been previously marked safe for personnel access. MEC avoidance support will be on-site during any operation for the duration of this project.

The entire steel structure will be removed down to the concrete foundations. Any parts of the steel connection system or any other remaining steel will be removed from these foundations. At the request of USFWS, the concrete foundations will remain in place.

All Alternatives

All alternatives would implement a time-of-year restriction that no construction activity would occur on the Refuge from May 15th until September 10th (as recommended by USFWS in letter dated November 9, 2005).

Table III-1. Plum Tree Island NWR - Tower Removal Alternatives

Action	No Action	Alternative 1	Alternative 2	Alternative 3	Alternative 4 (Proposed Action)	Alternative 5	Alternative 6	Alternative 7	Alternative 8
Dismantle and Remove by Helicopter						X	X	X	
Dismantle and Transport by ATV, Crane & Barge		X	X	X					X
Dismantle and Transport manually, and by Shallow Skiff, Crane & Barge					X				
Remove Tower 1 (Standing)		X	X	X	X	X	X	X	X
Remove Tower 2 (Fallen in Water)		X	X		X	X	X		X
Remove Tower 3 (Fallen in Marsh)		X				X			
Preserve Intact Portion of Standing Tower		*	*	*	*	X	X	X	X

*Intact portion of standing tower will likely not survive fall, but pieces that do survive dismantling would be made available to interested parties.

4. AFFECTED ENVIRONMENT

Location

Plum Tree Island NWR is located entirely within the city of Poquoson, VA at the southwest corner of the Chesapeake Bay (Figure IV-1). The Refuge is a peninsula with some small adjacent islands. A stretch of two miles of saltmarsh connects the main part of the refuge to the mainland. There is no motor vehicle access to the refuge. Major nearby cities include Newport News, Norfolk, Hampton, and Portsmouth. Historic Williamsburg is located about 20 miles west of the Plum Tree Island NWR. The refuge is about 70 highway miles southeast of Richmond and 170 highway miles south of Washington, D.C.

Plum Tree Island NWR is one of four refuges that comprise the Eastern Virginia Rivers National Wildlife Refuge Complex. The Refuge is situated on the southwestern corner of the Chesapeake Bay in the city of Poquoson and is strategically located almost midpoint on the Atlantic Flyway. It consists of 3,501 acres of saltmarsh, shrub-scrub, and wooded habitats that provide a haven for waterfowl, marsh-birds, and shorebirds.

Previously owned by the U.S. Department of Defense, the area was used as a bombing range. Much of the area remains dotted with unexploded ordinance. Due of the unexploded ordinance hazard, Plum Tree Island Refuge and the area adjacent to it is considered a danger zone.

The majority of the refuge is under tidal influence as tidal flooding occurs twice daily on an estimated 1,000 acres of low-lying saltmarsh. During severe storm events and high tides, an additional 1,500 acres are flooded. Hundreds of craters created by intensive bombing dot the terrain.

The principal military installations on the Virginia's Hampton Roads Peninsula are: Fort Monroe, home of the Training and Doctrine Command (TRADOC); LAFB, the site of the National Aeronautics and Space Administration Research Center and Headquarters for the Air Combat Command (ACC); Fort Eustis, home of the Army Transportation Corps and a major training installation; the Yorktown Naval Weapons Station; and Camp Peary. Across Hampton Roads harbor are Naval Air Station (NAS) Oceana, Little Creek Amphibious Base, Fort Story, and Naval Station Norfolk.

Climate

The peninsula is almost entirely surrounded by water, with the Chesapeake Bay immediately to the east and the Atlantic Ocean farther to the east. Climate is temperate maritime, having an average annual temperature of 59.4°F. Winter daily averages are 41°F and for summers, 77 °F. Records for the extremes are 10°F and 104°F. Total annual precipitation is 44.63 inches, distributed fairly evenly throughout the year.

Winds prevail from the southwest. Thunderstorms occur, on the average, 37 days out of the year, and most occurrences are in the summer. During fall, winter, and spring, storms frequently occur with winds coming from the northeast. These 'northeasters' can produce localized flooding and severe

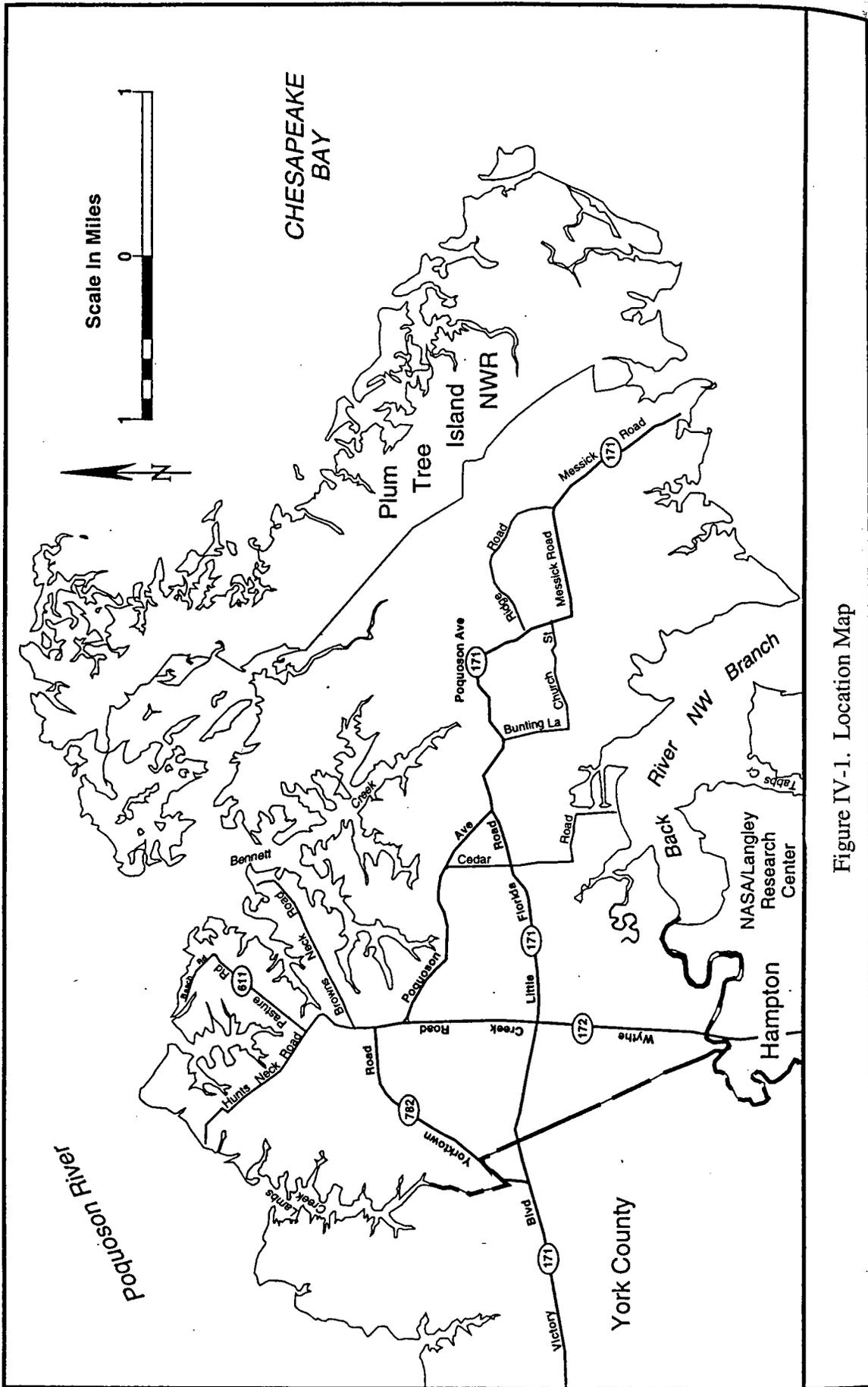


Figure IV-1. Location Map

shoreline erosion. Coming from the southeast between mid-summer through fall, tropical storms and hurricanes occasionally pass through the region.

History of Refuge

Because of its isolation and topography, the area that is now the Refuge was historically used for hunting, livestock grazing, and fishing. Between 1917 and 1920, the Federal Government acquired three parcels of private land for the establishment of Plum Tree Island Range to support experimental activities at Langley Field, which became Langley Air Force Base in 1948. Various facilities to support the bombing range mission were constructed in the next two decades. In 1933, a new observation tower 25 feet tall was constructed, and two existing towers were repaired. The Range was used extensively as a bombing, gunnery, and rocket range until 1959. Between 1959 and 1971, NASA used the area to test free flight aircraft models and to conduct low altitude flight tests of model airplanes. In 1972, the area was transferred to the Department of Interior for use as a wildlife refuge in conjunction with an outgrant to NASA for continued use for test and research. Also, the Tactical Air Command, Langley Air Force Base reserved the right to use the land as an emergency jettison area.

In 2003, the Eastern Virginia Rivers National Wildlife Refuge Complex began administering the Plum Tree Island National Wildlife Refuge. Back Bay National Wildlife Refuge in Virginia Beach had previously managed it as an unstaffed satellite. Due to the presence of unexploded ordnance on the area, the USFWS has been unable to expand management or allow the public to utilize the Refuge.

Current Conditions

There are numerous documented incidents of bomb casings found on the refuge and seen at low tide along the shoreline around the island. There has also been an incident of a person being injured by ordnance.

In July 2004, the U.S. Army Corps of Engineers designated the area around Plum Tree Island NWR a temporary Danger Zone. In April 2005, it modified the regulations so that they prohibit disturbance of the sub-aqueous soil in navigable water adjacent to Plum Tree Island. The temporary Danger Zone area covers the southern part of the old bombing range where unexploded ordnance is known to exist. The Danger Zone extends into the water 300 feet from the shoreline or original boundary, whichever is greater. The action was needed to foster public safety until the Corps can complete a study to fully analyze the current risk and the interagency team can develop a plan to address the site. The former range is being addressed under the FUDS program, which is executed by the Corps of Engineers.

During a site visit in June 2004 (after Hurricane Isabel), two refuge staff members observed what appeared to be 40 unexploded ordnance items in the intertidal zone scattered in the shallow waters along the southern portion of the refuge. The officials also observed recent evidence of trespassing and noted that many of the "closed area" signs were deteriorated or missing.

To provide for wildlife protection and public safety of the Refuge, the USFWS patrols the area and conducts biological studies. However, because of staffing limitations and the inherent danger of the area, patrols and studies are minimal, and are insufficient to prevent trespassing. Since the creation of the bombing range, no public access has been allowed to the main tract of the Refuge. Upon the

discovery of surface munitions along the shore and tidal areas of the southeastern portion of Plum Tree NWR, the USFWS, ACOE, and numerous other Federal, state, and city organizations determined the need for increased restrictions as a result of public safety concerns. A Danger Zone was established that extends into the water 300 feet from the shoreline or original boundary, whichever is greater. Multiple agencies police the zone to inform the public and enforce the restriction. Currently prohibited in the Danger Zone are anchoring; clamming with rakes, shovels, or hoes; dredging; prop dredging; the intentional/unintentional beaching or grounding of vessels or walking on the bottom. The perimeter area is posted with signs that provide this information. For more information, visit http://www.nao.usace.army.mil/Regulatory/Harborsecurity/Plum_PN.htm

Attempts to clear the military munitions from the Refuge have only been partially successful largely due to the nature of the fragile wetlands. The disruption of wetland soils causes the soils to become vulnerable to invasive species germination, thus making removal of subsurface ordinances biologically impractical and contrary to the Refuge's primary objectives.



Figure IV-2. "No Trespassing" signs along perimeter of Refuge



Warning Plum Tree Island Danger Zone

Munitions Findings

In June 2004, the U.S. Fish and Wildlife Service surveyed Plum Tree Island by boat. They observed what appeared to be about 40 munitions items in the shallow waters along the southern portion of the refuge. Erosion is believed to have unearthed the munitions from the former bombing range. Increasing exposure along the shoreline.



Suspected munitions items found in shallow waters

History

Plum Tree Island National Wildlife Refuge, formerly Plum Tree Island Range, was used for aerial bombing and gunnery practice from 1917 to the late 1950s. The U.S. Fish and Wildlife Service acquired it in 1972. Public access has never been permitted on any part of the former bombing range.

Munitions - military ammunition, components, or explosives

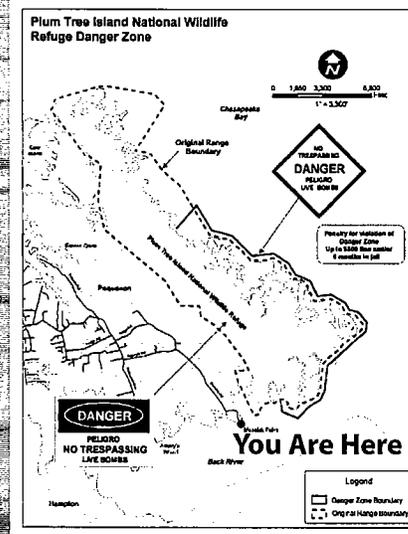
Warning

Although many of the munitions appear deteriorated and resemble rusty scuba tanks, internally they may be fully functional. Only munitions experts can tell for sure. Picking up or disturbing munitions items could result in serious injury or death.

What's Being Done?

The U.S. Army Corps and Virginia Marine Resource Commission have designated the shallow water around the southern part of the old bombing range a Danger Zone. The Danger Zone is delineated by day mark signs in the water. No Trespassing signs have also been posted around the refuge.

Beginning in 2005, the U.S. Army Corps will conduct a study to evaluate the risks at Plum Tree Island. This study will evaluate both explosive hazards and potential chemical hazards. The Corps will remove exposed munitions items where feasible and collect soil and surface water samples for analysis. Restrictions will remain in place until further notice.



Points of Contact

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Joe McCauley
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US Army Corps of Engineers
Norfolk District

August 2005

Figure IV-3. Plum Tree Island NWR Danger Zone Sign/Map

Population

Poquoson is part of the Norfolk-Virginia Beach-Newport News Metropolitan Statistical Area (MSA), which encompasses nine cities and six counties in southeastern Virginia and one county in northeastern North Carolina. Poquoson's population was one of the fastest growing in the region between 1970 and 1990, increasing 102 percent in that time period compared to 32 percent for the MSA. Since then, however, the rate of growth has decreased from an average annual rate of 3.6 percent (1970-1990) to 0.4 percent (1990-2004). The most recent estimate of the city's population is 11,600 as of 2004 (Weldon Cooper Center, University of Virginia). Poquoson's residents are distributed more heavily in the western and south-central portions of the city.

Transportation

The overall transportation network in the region, to include air, land, and sea, is excellent. The air transportation network includes two major commercial airports. Newport News-Williamsburg International Airport is located on the Peninsula near Newport News and Williamsburg. Norfolk International Airport is located in northern Norfolk. Military airfields exist at Langley Air Force Base, Fort Eustis, and Camp Peary on the Peninsula, and at the Oceana Naval Air Station and the Norfolk Naval Station south of the James River.

The land transportation network includes the eastern U.S. terminus of a major interstate highway (I-64) with major spurs into Newport News and Chesapeake (I-664), Norfolk Naval Station Complex (I-564), Norfolk (I-264 and I-464), and Virginia Beach (I-264). Poquoson can be reached via VA 171 (Victory Boulevard) or VA 172 (Wythe Creek Road).

The Hampton Roads area contains some of the largest seaports and shipbuilding facilities in the world.

PHYSIOGRAPHY, GEOLOGY, TOPOGRAPHY, AND SOILS

Plum Tree Island NWR is situated in the Atlantic Coastal Plain Physiographic Province. The low-lying Coastal Plain is characterized by deposits typical of deltaic alluvial plains; substrata vary widely from one location to another, depending upon the recent depositional environment of the area. Sediments may be sandy, silty, clayey, or loamy (or a combination), with a great deal of variation within a relatively small area. The bedrock of the Coastal Plain is situated at a depth of about 13,000 feet beneath these sediments. Soils on the Coastal Plain are generally fertile, and wetlands, both tidally influenced and fresh water, are relatively abundant. They are a highly valuable resource as they provide a vital link in the food chain for most marine organisms. The marsh areas provide shelter and breeding grounds for marine organisms, waterfowl, shorebirds, and some mammals.

Plum Tree Island NWR is underlain by a wedge of unconsolidated and semiconsolidated sediment that dips and thickens to the east. This sediment lies on a consolidated pre-Cambrian basement rock, which generally consists of deformed igneous and metamorphic rocks. The Coastal Plain sediments, which are composed of sand, gravel, and clay with some limestone, range from Recent to Cretaceous or older. In the Norfolk area, located just south of Poquoson, these sediments are approximately 2,800 feet thick and range in age from late Mesozoic to Recent. Although the sediment has not been subjected to deformation, thickness and lithologic composition can be highly variable. Mineral resources of sand,

gravel, and peat are available in some of the surface formations in the Coastal Plain

Plum Tree Island NWR is extremely flat, low lying, and featureless, with elevations ranging from 0 to 10 feet above mean sea level, and most of the refuge is within the 100-year flood plain. The area is traversed by numerous bays and tidal creeks. Streams are shallow and their channels wide and meandering. Except for dredged channels, water depths in the inland bays and connecting waterways are generally less than 10 feet. Because of the elevations, the area is quite often subject to tidal flooding caused by hurricanes and northeasters that frequent the area. Flooding of the low-lying land adjacent to the entrances has caused loss of life, damage to property, and blocking of land traffic arteries. Some of the land in the adjoining City of Poquoson was formerly tidal marsh or under water and has been reclaimed by use of fill material.

Soils in the Coastal Plain were developed from unconsolidated marine sediments. The texture of these soils is generally sandy silt from flood plain deposits, clayey silt on fluvial terraces, fine silty sand on higher marine terraces, and clayey silt from Coastal Plain peneplain. These soils are deep but their drainage characteristics range from well-drained to poorly drained. Wetness and poor drainage are prevalent in a number of locations in the region. Low-lying and upland soils are tidal marsh and manmade land (fill material).

Primary soils found in the project area, in decreasing order of abundance, are the Axis (salt water marsh, primarily mineral, submerging uplands), Nimmo (coarse, loamy mixed soil, seasonal water table at or near the surface), and the Tomotley (fine, loamy mixed soil, seasonal water table at or near the surface). Other soils found to a lesser degree include Augusta, Dragston, Munden, and filled areas. These soils, with the exception of the filled areas, are generally loamy, mixed soils with seasonal water tables 12 to 36 inches from the surface (Newhouse 1993).

Plum Tree Island NWR is located on the western side of the southern Chesapeake Bay and close to the mouth of the bay. This location makes the area particularly vulnerable to damages associated with storm activity. The shoreline of the refuge extends slightly less than 20 miles along the Chesapeake Bay, Poquoson River, and Back River and its northwest branch. The adjoining Poquoson city limits encompass numerous creeks, coves, bays, and marsh islands. Storm tides, created by high winds and low barometric pressure, accompanied by wave action, have resulted in varying degrees of erosion along much of the Poquoson and refuge shoreline.

The shoreline and nearshore are important components in the ecology of the subject area. The major waterways are the Poquoson River to the north and the Northwest Branch of the Back River to the south. Inlets and small bays include Lloyd Bay and Bennetts Creek to the north and Front Cove, Long Creek, Landing Creek, Watt Creek, and Topping Creek to the south. The shoreline of the subject area is comprised of primarily extensive marshes, with small, narrow beaches located between Back Cove and Long Creek and along the northern end of Cow Island. Nearshore habitats, which are important to shellfish, finfish, and many species of migratory birds, are characterized by Anderson et. al. (1975) as narrow along the Back River shoreline and intermediate along the Poquoson River shoreline. Nearshore refers to the distance between the shoreline and the point at which the water bottom is at 12 feet below mean sea level.

Due to the flat topography and predominantly low elevations in the area, there is little transition between marshes and upland ridges. There are two primary, parallel ridges that run northeast to southwest through the center of the subject area. One is located just west of the existing Refuge

boundary and adjacent to the NASA Test Site Facility. The other includes all of Black Walnut Ridge.

The location of these uplands, adjacent to marshes and open water, creates a “critical-edge habitat,” which is valuable to a wide variety of wildlife. Species diversity and abundance is usually at its greatest for any given area within the edge habitat. The edge provides food, cover, breeding habitat, and travel corridors for both resident and migratory wildlife. It also serves as a natural filter, protecting the water quality and integrity of the adjacent wetlands (USFWS, 1993).

LIVING RESOURCES

Located on the Chesapeake Bay, the terrestrial and aquatic habitats of the Refuge are ideally suited for migratory birds and fish. Primarily salt marsh, the Refuge provides a suitable environment for numerous species of plants and wildlife. Elevations range from mudflats that are submerged at high tide to approximately five feet above mean sea level. The topography is relatively flat, except for a series of forested hummocks that are remnants of ancient dune lines. Refuge wetlands include an estimated 1,000 acres of low-lying, tidal salt marsh that flood twice daily. During monthly high tides and storms, an additional 1,500 acres may also flood. Hundreds of craters created by intensive bombing dot the terrain.

Hundreds of species depend on healthy marsh/estuarine system to feed, rest, and reproduce. This is particularly true in and around the area of the Refuge. To date, approximately one hundred different bird species have been observed. Some species of special interest include northern harrier, black duck, sedge wren, sharp-tailed sparrow, bald eagle, peregrine falcon, black-necked stilts, and little blue heron. Mammals include white-tailed deer, raccoon, muskrat, red fox, among others. Endangered and threatened sea turtles (primarily loggerhead turtles) are known to utilize the waters surrounding the Refuge. The northeastern beach tiger beetle is known to occur on the beaches of Plum Tree Island (pers. comm. With Cyrus Brame, USFWS, Sept. 2005)

Fish and shellfish also benefit from the protected marsh. Striped bass, mullet, spot, and white perch are some of the fish found off the Refuge shores. Oysters, clams, and blue crabs utilize the shallow waters and mudflats.

Aquatic Resources

Submerged Aquatic Vegetation (SAV) communities are those in which the plant life present requires complete submersion all or most of the time. In areas where the vegetation is not completely submersed at all times, only the tops of plants are exposed at periods of low tides, or when weather conditions cause the temporary removal of water from the water body in which they occur. The predominant form of SAV in the more saline portions of tidal tributaries of the Chesapeake Bay is eel grass (*Zostera marina*), which grows in dense patches on the benthos in the depth zone where light penetration is good (the phototrophic zone). SAV requires light for photosynthesis, and its growth, survival, and depth penetration are directly related to light availability.

Although they are not typically mapped as vegetated wetlands, shallow estuarine waters are among the most productive aquatic habitats. Shallow estuarine waters within the photic zone provide excellent conditions for growth of phytoplankton, bacteria, algae and submerged aquatic vegetation (SAV). Due to high primary production, these areas also provide good foraging habitat for consumers such as

shorebirds, wintering waterfowl and anadromous fish. The photic zone varies with season and turbidity, but is typically less than 4 feet MLW. Although bathymetric data for the study area are not available, the abundance of low-order tidal tributaries, intertidal wetlands, and SAV suggests that many near-shore portions of the study area would meet the above definition of shallow water.

Since 1984, the Virginia Institute of Marine Science (VIMS) has compiled information from aerial and ground surveys of the Chesapeake Bay to determine baywide distribution and abundance of SAV. It has evaluated the distribution of SAV in the Chesapeake Bay using aerial photography and ground-truth surveys. Twenty-one major sections of the bay have been identified for detailed discussion of SAV distribution.

In 2002, SAV area in segment MOBPH (Mobjack Bay and vicinity) decreased to 3,538.29 ha., 8% less than in 2001 (3,849.57 ha.). This segment accounted for 37% of SAV in the Lower Bay Zone and 10% of the Bay total. This decline has continued through 2004. Since 2002 there has been a decrease of an additional 484 ha. (1196 acres) within the MOBPH segment.

Table IV-1. SAV IN MOBJACK BAY SEGMENT -MOBPH (1991-2004)

Year	Acres	Hectares
2000	9,124	3,694
2001	9,510	3,850
2002	8,739	3,538
2003	8,452	3,422
2004	7,543	3,054

Table IV-2. SAV IN SUBSEGMENT (2004) – SEE FIGURE IV-4

Subsegment	Acres	Density (%)
F4	10.93	70-100
G4	35.97	70-100
R2	20.05	10-40
S4	31.14	70-100

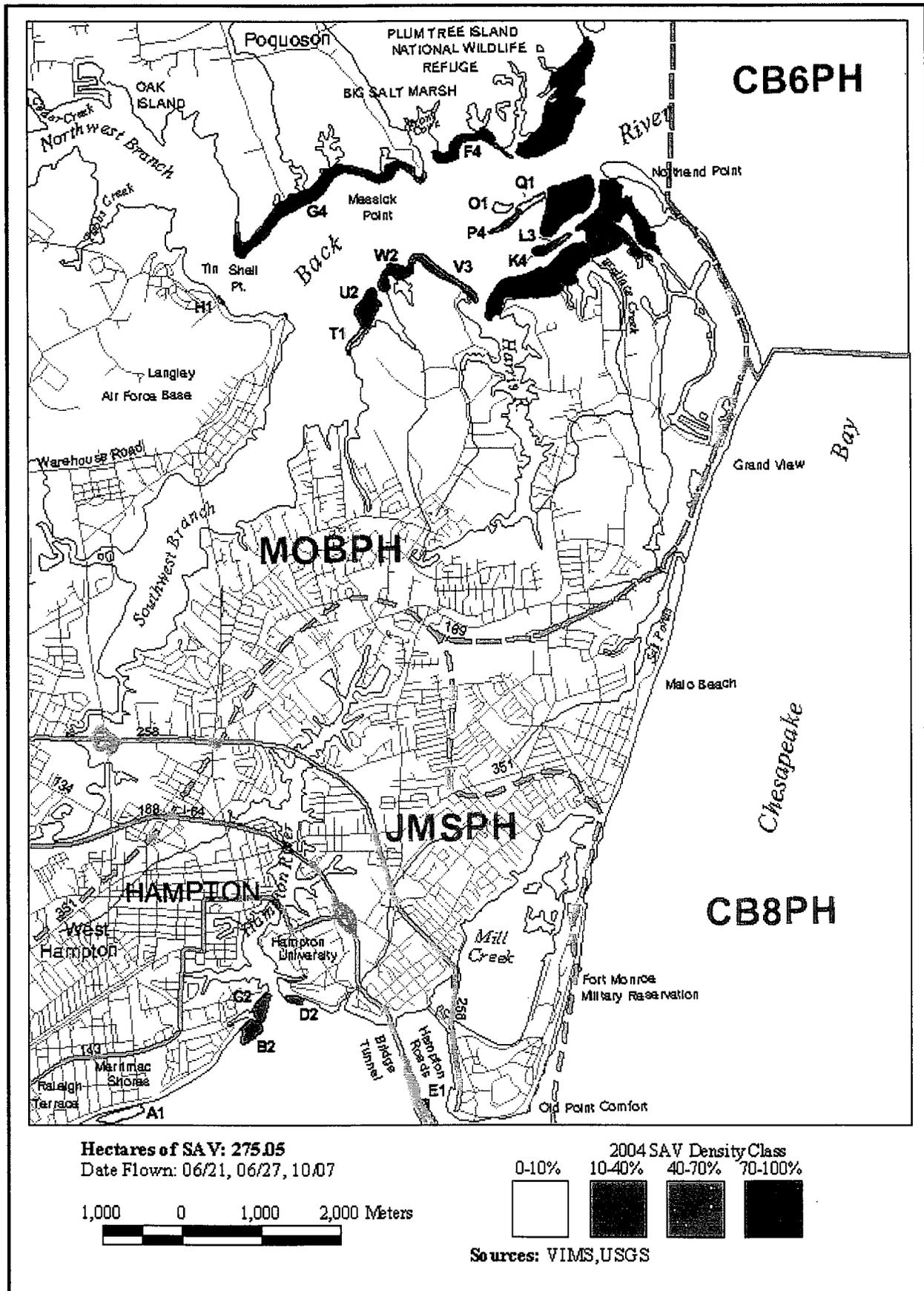


Figure IV-4 - 2004 SAV Distribution Map for Hampton, VA Quadrangle (147)

“Wetlands” is a collective term for marshes, swamps, bogs, and similar areas characterized by perennial water-saturated soils and vegetated with plants that have adapted to these conditions. Wetlands may exist in poorly drained areas, in depressions on the landscape, and between water and dry land along the edges of streams, rivers, lakes, and coastlines. Inland wetlands receive water from precipitation, ground water, and/or surface water. Coastal and estuarine wetlands receive water from precipitation, surface water, tides, and/or groundwater. Surface water sources include storm water runoff.

The following narrative describing wetlands in the study area is taken from a USFWS report prepared for a Corps of Engineers project at Messick Point (Sherfy, 1997):

"The dominant classes of wetlands in the study area are estuarine subtidal and estuarine intertidal. These wetlands typically occur at or below the mean tide mark in areas of brackish water. Subtidal wetlands and intertidal wetlands that are tidally inundated twice daily are typically monocultures of saltmarsh cordgrass (*Spartina alterniflora*). Portions of these marshes that are only occasionally inundated have more diverse plant communities, including salt meadow hay (*Spartina patens*), salt grass (*Distichlis spicata*), glasswort (*Salicornia virginica*), marsh orach (*Atriplex patula*) and groundsel-tree (*Baccharis halimifolia*). Some of these habitats may also consist of black needlerush (*Juncus roemerianus*) or common reed (*Phragmites australis*) monocultures."

Tidal wetlands are abundant in and around Poquoson. The major hydrological source for these wetlands is lunar tides. The largest undisturbed segments are found in the Plum Tree Island National Wildlife Refuge. These wetlands are dominated by salt-tolerant plants such as saltmarsh cordgrass, saltmeadow hay, and big cordgrass. The upper fringes of tidal marshes are typically bordered by a scrub/shrub zone containing marsh elder, groundsel bush, wax myrtle, and common reed. Saltmarsh cordgrass occurs in more regularly inundated marshes, known as low marshes, while salt meadow hay occurs in irregularly flooded marshes at or above the mean high tide line (high marshes). Tidal marsh habitat is the most common wetland type associated with the tidal portions of the creeks and open waters surrounding Poquoson. Tidal marshes provide roosting and feeding habitat for such birds species as wading birds, waterfowl, and rails and are important in maintaining water quality, habitat diversity, and aquatic productivity.

The tidal marshes in the vicinity of Poquoson have been inventoried by VIMS. These detailed inventories showing marsh locations, plant types, and acreages are presented in the following table.

Table IV-3. VIMS TIDAL MARSH INVENTORY

Location	Tidal Marsh Acreage
Section VIII - Poquoson River Area	Total = 460
Part 1 - Chisman Creek	200
Part 2 - Poquoson River Proper	151
Part 3 - Bennett Creek Area	109
Section IX - Plum Tree Island Wildlife Refuge	Total = 4103
Part 1 - Poquoson River Area	2944
Part 2 - Back River Area	1159
Section X - Back River (Northwestern Branch) and Brick Kiln Creek	Total = 517.2

Source: VIMS Tidal Marsh Inventory, Silberhorn (1974)

Plum Tree Island NWR lies immediately east of the city, and consists almost exclusively of tidal and non-tidal wetlands. National Wetlands Inventory (NWI) maps indicate that the majority of these wetlands are estuarine intertidal, although palustrine forested and scrub-shrub wetlands occur in the western portions of the refuge. Scattered upland areas are located within the refuge, although they are limited in distribution and size. Owing to historical disturbance factors associated with the refuge property (e.g. military activity), presence of *Phragmites* (common reed) in and adjacent to the areas mapped as upland would be expected.

Due to the flat topography and predominantly low elevations in the area, there is little transition between marshes and upland ridges. The two primary, parallel ridges that run northeast to southwest through the center of the subject area. One is located just west of the existing Refuge boundary and adjacent to the NASA Test Site Facility. The other includes all of Black Walnut Ridge. These ridges are dominated by loblolly pine (*Pinus taeda*) and fringed with saltbushes (marsh elder and groundsel tree). Understory is comprised primarily of greenbrier (*Smilax sp.*), poison ivy (*Rhus radicans*), myrtle (*Myrica sp.*), and blackberry (*Rubus sp.*). Other forested upland segments can be found west of North Lawson Road, east of Poquoson Avenue, and south of Church Street (Sherfy, 1997). The composition of these forested areas is much the same as described above.

Resident fish species in the lower Chesapeake Bay and in the vicinity of Poquoson include Atlantic silversides, Atlantic croaker, striped anchovy, spot, weakfish, hogchoker, bluefish, naked goby, oyster toadfish, skillettfish, blackcheek tonguefish, summer flounder, and black seabass. Bluefish, flounder, and seabass are all considered to be commercially important species, and spot and croaker are also popular game fish. Temperature appears to be the major factor affecting distribution of resident fishes in the lower bay in winter, while food availability is the major factor in summer. Principal finfish uses of the lower Chesapeake Bay and adjoining study area are (1) nursery and spawning grounds for both resident and anadromous fish, (2) adult feeding grounds, and (3) spawning grounds for important forage species, such as the bay anchovy and Atlantic silverside.

Essential Fish Habitat - The Magnuson-Stevens Fishery Conservation and Management Act of 1976 (MSFCMA) established 8 Regional Fishery Management Councils (FMC's) responsible for the protection of marine fisheries. A 1996 amendment to the Act instituted a new mandate to identify and provide protection to important marine and anadromous fisheries habitat EFH. FMC's, with assistance from NMFS, are required to delineate EFH in fisheries management plans for all Federally-managed fisheries in order to conserve and enhance those habitats. EFH may be applied to individual fish species or to an assemblage of species. EFH is defined in the MSFCMA as "those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity." "Fish" is defined as finfish, crabs, shrimp, and lobsters in the Gulf of Mexico.

The MSFCMA specifies that each Federal agency shall consult with NMFS when proposing any activity that may have adverse impacts on designated EFH. Most of the lower Chesapeake Bay and CIDMMA vicinity contains EFH for eggs, larvae, juveniles, and/or adult life stages of various species, including windowpane flounder (*Scophthalmus aquosus*), bluefish (*Pomatomus saltatrix*), Atlantic butterfish (*Peprilus triacanthus*), summer flounder (*Paralichthys dentatus*), black sea bass (*Centropristus striata*), king mackerel (*Scomberomorus cavalla*), Spanish mackerel (*Scomberomorus maculatus*), cobia (*Rachycentron canadum*), red drum (*Sciaenops ocellatus*), dusky shark (*Charcharinus obscurus*), and sandbar shark (*Charcharinus plumbeus*).

The proposed project area is part of a 10 minute x 10 minute square of latitude and longitude that includes the waters of the lower Chesapeake Bay that support the following species with a Fishery Management Plan (FMP).

Habitat Areas of Particular Concern (HAPC)

The National Marine Fisheries Service (NMFS) designated a "habitat area of particular concern" (HAPC) for the sandbar shark, but not for any other Atlantic highly migratory species (HMS) due to a general lack of scientific information detailing HMS-habitat associations. The larger area within which the project site is located has been identified as one of these areas; however, there are no management or fisheries restrictions in place in or around the project area at this time.

Table IV-4. ESSENTIAL FISH HABITAT

Species	Eggs	Larvae	Juveniles	Adults
windowpane flounder (<i>Scophthalmus aquosus</i>)				X
bluefish (<i>Pomatomus saltatrix</i>)			X	X
Atlantic butterfish (<i>Peprilus triacanthus</i>)	X	X	X	X
summer flounder (<i>Paralichthys dentatus</i>)		X	X	X
black sea bass (<i>Centropristus striata</i>)	n/a		X	X
king mackerel (<i>Scomberomorus cavalla</i>)	X	X	X	X
Spanish mackerel (<i>Scomberomorus maculatus</i>)	X	X	X	X
cobia (<i>Rachycentron canadum</i>)	X	X	X	X
red drum (<i>Sciaenops ocellatus</i>)	X	X	X	X
dusky shark (<i>Charcharinus obscurus</i>)		X		
sandbar shark (<i>Charcharinus plumbeus</i>)		X	X	X
sandbar shark (<i>Charcharinus plumbeus</i>)		HAPC	HAPC	HAPC

Back River and Plumtree Point (at Plum Tree Island NWR) are included within an area of the lower Chesapeake Bay that is designated as a HAPC for the sandbar shark. This designation denotes EFH that is particularly important to the long-term productivity of the species and/or is particularly vulnerable to degradation. The intent of the designation is to focus greater attention on conservation efforts. Females move into the lower bay during the summer (Springer, 1960). They typically bear 8 to 12 young and depart the bay shortly thereafter apparently without feeding. The young average approximately 24 inches at birth. They feed on a variety of fish and crustaceans, but blue crabs are a particularly important food item (Medved and Marshall, 1981). They remain in the bay until the onset of winter, when they migrate to warmer waters off the coast and/or southward. They may return to estuary mouths and coastal bays in the mid-Atlantic region the next year in late spring. The sandbar shark uses the lower Chesapeake Bay as a "pupping ground," where females give birth to live young. The total HAPC for the sandbar shark in the lower Chesapeake Bay is approximately 89,000 acres of open water.

Blue crabs are a commercially important estuarine species of the lower Chesapeake Bay and are harvested as both hard-shell and soft-shell crabs for the local seafood market, as well as exported from the Chesapeake Bay area. The bay waters offshore of the study area are highly productive blue crab spawning grounds. Blue crabs are harvested in significant numbers in the waters that adjoin the study area by both recreational and commercial fisherman. Recreational fisherman are typically found running trot-lines in the shallower near-shore areas. Commercial activity is concentrated in deeper waters near Thimble Shoals (Sherfy, 1994) although there is some activity in the near shore areas using pound nets and haul seines.

The Chesapeake Bay and its tributaries historically produced high numbers of Eastern oysters (*Crassostrea virginica*). However, the disease organisms MSX (*Haplosporidium nelsoni*) and "dermo" (*Perkinsis marinus*), and overfishing have caused these populations to be nearly eradicated. Oyster abundance in Chesapeake Bay is now at its lowest level in history. Scientists estimate populations are no more than 1% of historic levels (Barber and Mann, 1991).

Another commercially valuable shellfish species is the hard clam, *Mercenaria mercenaria*, which has a patchy distribution in the Hampton Roads Harbor area. Within Chesapeake Bay, hard clams are most abundant in lower bay areas with high salinity and coarse-grained sediments (Funderburk, et al. 1991). Although hard clams can be found in shallower waters, the highest densities of clams are found in the deeper waters offshore of the study area (Sherfy, 1994). According to Virginia Marine Resources Commission (VMRC) lease information records (2004), there are numerous leased oyster grounds and public grounds in the Chesapeake Bay and its tributaries in the waters surrounding Poquoson.

Principal nektonic species of commercial importance are listed in appendix 1 of this document, and a general listing of benthic organisms common in and around the lower Chesapeake Bay area is also found in appendix 1. Micro- and macro-organisms in the planktonic community are numerous and include diatoms, dinoflagellates, foraminifera, skeleton shrimp, jellyfish, stinging nettles, and larval forms of fish, crustaceans, and other organisms.

Terrestrial Resources

A variety of vegetation types exists on the upland areas that are the terrestrial communities at elevations above the influence of surface waters. Upland shore zones are dominated by typical terrestrial field grasses, trees, shrubs, and weeds. These zones are utilized by invertebrates, insects,

waterfowl and upland birds, mammals, and humans. In many cases, the physical nature of these upland regions is heavily influenced by human activities, especially development and agriculture. Several species that depend upon the aquatic habitat in the watersheds also rely upon these terrestrial environments for food, cover, or nesting sites. Examples of these species include the bald eagle, Canada goose, river otter, beaver, and raccoon.

Major forest communities in the study area include: oak-hickory, southern mixed pine-oak, and northern pine-oak. Other forest communities, such as white cedar swamps, bald cypress swamps, and southern mixed hardwood forest, intermingle with the major forest communities in the coastal plain region.

Generally these forests are dominated by deer, raccoons, opossums, foxes, rabbits, squirrels, and other small rodents. Many of the predators, such as wolves, bears, bobcats, and foxes are rare or have been completely eradicated. More common predators are likely to be hawks and owls.

ENDANGERED SPECIES

State and Federal Regulations

The Endangered Species Act (ESA) of 1973 (16 USC 1531-1543) regulates activities affecting plants and animals classified as endangered or threatened, as well as the designated critical habitat of such species. Federal agencies are required to provide for the conservation of threatened and endangered species and are prohibited from carrying out any action that would jeopardize a listed species or destroy or alter its critical habitat. Reauthorized in 1988, the provisions of the ESA apply only to those species listed in the Federal Register as endangered or threatened.

An “Endangered Species” is any species that is in danger of extinction throughout all or a significant portion of its range. Threatened species are defined as those species that are likely to become endangered within the foreseeable future throughout all or a significant portion of their range. Excluded are species of the Class Insecta determined by the Secretary to constitute a pest whose protection under the provisions of this Act would present an overwhelming and overriding risk to man. The term “species” includes any subspecies of fish or wildlife or plants, and any distinct population segment of any species or vertebrate fish or wildlife that interbreeds when mature. Actions affecting species proposed for listing would require the same coordination with state and Federal agencies as actions affecting listed species.

USFWS and the NMFS are the Federal agencies responsible for ESA compliance. Overall, USFWS is responsible for terrestrial and freshwater species and migratory birds, and NMFS protects marine species and anadromous (traveling upriver to spawn from the ocean) fish. The Department of Agriculture Animal and Plant Health Inspection Service oversees listed terrestrial plants.

The Commonwealth of Virginia also provides protection to animal species deemed Threatened or Endangered within the state (Virginia Code §29.1-230 et seq.). The Virginia Department of Game and Inland Fisheries (VDGIF) is responsible for compliance with the state program. The Virginia Department of Conservation and Recreation (VDCR) Division of Natural Heritage maintains a database of sensitive species in the state. The Commonwealth of Virginia also provides protection to plant and insect species deemed Threatened or Endangered within the state (Virginia Code §3.1-1020 et seq.). The Virginia Department of Agriculture and Consumer Services (VDACS) oversees the

program for plant and insect species.

In addition to the species listed as Threatened and Endangered, Federally-listed candidate species and state-listed special concern species were identified. The Candidate and special concern species are not legally-protected under endangered species legislation, but these species should be considered in the planning process. The Migratory Bird Treaty Act of 1918 (MBTA) provides Federal protection for migratory species by prohibiting the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nest, except when specifically authorized by the Department of the Interior.

Although some marine mammals are protected under the ESA, all marine mammals are protected under the Marine Mammal Protection Act (MMPA) of 1972. The Act establishes a Federal responsibility to conserve marine mammals, with management vested in the Department of Commerce for cetaceans and pinnipeds other than walrus. The Department of the Interior is responsible for all other marine mammals. The nature of the concerns regarding potential impacts to marine mammals is similar for both Acts. Thus, marine mammals that are known to frequent the study area are addressed in this section.

Federally Endangered or Threatened Species

Several species of Federally listed marine turtles may occur in the marine and estuarine waters of the lower Chesapeake Bay. The most common is the loggerhead turtle (*Caretta caretta*), Federally listed as threatened. The loggerhead is an oceanic and estuarine species which reaches its northern nesting limit along the barrier beaches of the Delmarva Peninsula and feeds within the barrier bays and the Chesapeake Bay. It is present in the bay from spring through fall. Other marine turtles that may be found in the region include the endangered Atlantic ridley (*Lepidochelys kempii*) and the threatened green turtle (*Chelonia mydas*). These may feed in Virginia waters during the summer months; however, their occurrence is rare (F&WS, August 1984). None of these sea turtles is known to nest on beaches in the study area.

Two Federally threatened species, the piping plover (*Charadrius melodus*) and the northeastern beach tiger beetle (*Cicindela dorsalis dorsalis*), are known to occur on the sandy beaches of the Grandview Nature Preserve in the city of Hampton, located across Back River from Poquoson, and also on the beaches of the Plum Tree Island Refuge (pers. comm. with Cyrus Brame, USFWS, September, 2005). Although no breeding attempts by piping plovers have been documented in the study area, successful nesting of this species in adjacent habitats suggests that habitat management efforts in the study area could provide additional habitat for this species (USFWS, Sherfy, 1997). Piping plovers nest on sandy substrates above the high tide line, and forage in intertidal areas. The tiger beetles are most commonly found in sandy intertidal areas.

The Virginia Department of Conservation and Recreation, Division of Natural Heritage (DNH) maintains a Biological and Conservation Data System (BCD) for occurrences of natural heritage resources within the project area. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

Known or potential populations of threatened or endangered species and species of special concern within the area surrounding the proposed project were identified through coordination with VDGIF, VDCR, and USFWS (see the following table).

Table IV-5 . SPECIES OF POTENTIAL CONCERN IDENTIFIED THROUGH COORDINATION WITH AGENCIES

Common Name	Scientific Name	Status
Piping plover	<i>Charadrius melodus melodus</i>	FT
Least tern	<i>Sterna antillarum</i>	SS
Black-necked stilt	<i>Himantopus mexicanus</i>	NS
Wilson's Plover	<i>Charadrius wilsonia wilsonia</i>	SE
Yellow-crowned night-heron	<i>Nyctanassa violacea violacea</i>	SS
Great blue heron	<i>Ardea antillarum</i>	NS
Green heron	<i>Butorides virescens</i>	NS
American Oystercatcher (1)	<i>Haematopus palliatus</i>	NS
Seaside sparrow (1)	<i>Ammodramus maritimus</i>	NS
Short-billed Dowitcher (1)	<i>Limnodromus griseus</i>	NS
Northeast Beach Tiger Beetle (1)	<i>Cicindela dorsalis dorsalis</i>	SE
Northern diamond-backed terrapin (1)	<i>Malaclemys terrapin terrapin</i>	FS
Atlantic sturgeon	<i>Acipenser oxrhynchus</i>	SS
Loggerhead sea turtle (1)	<i>(Caretta caretta)</i>	FT, SE
Kemp's ridley sea turtle (1)	<i>(Lepidochelys kempii)</i>	FE, SE
Bald eagle (1)	<i>Haliaeetus leucocephalus</i>	FT, SE
Peregrine falcon (1)	<i>Falco peregrinus</i>	SE
Atlantic bottlenose dolphin (1)	<i>Tursipos truncates</i>	Depleted

FE= Federally-endangered; FT= Federally-threatened; FS= Federal Species of Concern; SE= state-endangered; ST= state-threatened; SS= state special concern; NS= no status

The USFWS has confirmed that there are no American bald eagle nests on any of the tower structures proposed for removal (Cyrus Brame, pers. comm.).

The following information was provided by USFWS in a letter to the Corps dated November 9, 2005:

“The fragile salt marsh and shore line along the Chesapeake Bay and Back River support a wide array of wildlife and vegetation. Some species may be impacted from project work. Of these species, there are several of special concern:

Northeast Beach Tiger Beetle (*Cicindela dorsalis dorsalis*)
Northern Diamondback terrapin (*Malaclemys terrapin*)
American Oystercatcher (*Haematopus palliatus*)
Short-billed Dowitcher (*Limnodromus griseus*)
Seaside sparrow (*Ammodramus maritimus*)

Other species of concern that will not be greatly affected by any of the project alternatives, due to their wide range and mobility, are:

American Bald Eagle (*Haliaeetus leucocephalus*)
Peregrine Falcon (*Falco peregrinus*)
Osprey (*Pandion haliaetus*)

- *The Beach Tiger Beetle utilizes the refuge beaches, in particular the transitional zone (the sand between high and low tides). Living larvae are laid in the sand and emerge as diminutive whitish beetles. Periods of the beetle’s activity are from June 1st to September 15th.*
- *Some of the bird species of concern are believed to nest in the early spring on the refuge. The Oystercatcher nests in the upper portions of the sandy beaches by carving out a small indentation in the sand.*
- *The Short-billed Dowitcher and the Seaside Sparrow nest in marshy areas. The Seaside Sparrow nests in wet portions of medium high cordgrass. The Short-billed Dowitcher nests in depressions in grass and lines the nest with grass, leaves and twigs.*
- *The Northern diamondback terrapin nests during the early summer months on sandy dunes and upper beaches. Adults make frequent trips to water sources. Hatchlings emerge in late summer to early fall.”*

Sea Turtles and Turtle Migration

Of the seven sea turtle species found throughout the world, five appear seasonally in the lower Chesapeake Bay. All five are Federally-listed species. The most common is the Federally-threatened loggerhead turtle (*Caretta caretta*). Loggerheads account for close to 90 percent of the summer sea turtle population. VIMS has estimated that between 2,000 and 10,000 young loggerheads use the Chesapeake Bay each summer as foraging areas. A significant number of Kemp’s ridley (*Lepidochelys kempii*) also summer in the Chesapeake. The other marine turtles that may be found in

the region include the endangered leatherback (*Dermochelys coriacea*), Atlantic hawksbill (*Eretmochelys imbricata*), and the Atlantic Green Sea Turtle (*Chelonia mydas*). These three species are found only rarely in the Chesapeake Bay area.

The Loggerhead sea turtle is Federally-listed as threatened and state-listed as endangered. It is a common visitor to the Chesapeake Bay and its estuarine tributaries during the spring, summer, and fall. Hampton Roads is considered an estuarine tributary to the Chesapeake Bay. The loggerhead's diet consists of benthic crustaceans (primarily horseshoe crabs), bivalves, jellyfish, sponges, crabs, shrimp, barnacles, fish, and sea grasses. Nesting has been reported on the barrier islands and in Back Bay National Wildlife Refuge. Juveniles become residents for the summer and occupy channel edges, foraging back and forth along the bottom within a home range of 10 to 80 square kilometers.

The Kemp's ridley is the second most abundant sea turtle in the Chesapeake Bay and is Federally- and state-listed as endangered. The only known nesting ground of Kemp's ridley is a single location along the Gulf of Mexico. Young Kemp's ridley turtles feed on sargassum weed and associated species. Adult Kemp's ridley turtles feed primarily on shelled benthic invertebrates including blue crabs. Research suggests that these turtles rely heavily upon the Chesapeake Bay during juvenile stages.

Based on information from VIMS, turtles are present within the Chesapeake Bay each year from May to November when temperatures are from 16 to 18 degrees Celsius (°C). The peak migration into the Chesapeake Bay occurs during late May and early June. Virginia coastal water temperatures drop to 1 to 4 °C during most winters prompting turtle migration out of the Chesapeake Bay to warmer waters during October and November.

COASTAL ZONE RESOURCES

The Coastal Zone Management Act (CZMA) of 1972, as amended, establishes a policy: 1) to preserve, protect, develop and, where possible, restore and enhance the resources of the Nation's coastal zone; and 2) to encourage and assist states in their responsibilities in the coastal zone through development and implementation management programs to achieve wise use of the land and water resources of the coastal zone, giving full consideration to ecological, cultural, historic, and esthetic values, as well as the needs for compatible economic development (16 U.S.C. 1452).

CZMA delegates responsibility to coastal states to exercise their responsibilities as owners of coastal zone areas to develop and implement management programs to achieve wise use of the land and water resources. The CZMA acknowledges the state as the best level for developing a comprehensive coastal zone management program. Virginia is one of 24 states with an approved CZM program. The Secretary of Commerce is authorized to award Federal grants to assist states in developing and administering management programs.

Coastal Zone Management

The Commonwealth of Virginia has developed and implemented a Federally approved Coastal Resources Management Program describing current coastal legislation and enforceable policies. The Federal actions subject to federal consistency include: commercial fishing, recreational fishing in freshwater tidal rivers, encroachments on subaqueous lands, encroachments on wetlands, encroachments on primary sand dunes, land disturbing activities needing erosion and sediment control,

actual or potential wastewater discharges, control of septic and other on-site domestic waste systems, coastal land management, and air pollution control.

Federal lands, such as Plum Tree Island NWR, which are “lands the use of which is by law subject solely to the discretion of or which is held in trust by the Federal Government, its officers or agents,” are statutorily excluded from the Coastal Zone Management Act’s (CZMA) definition of the Commonwealth of Virginia’s “coastal zone” 16 USC Section 1453 (1). If, however, the proposed Federal activity affects coastal resources or uses beyond the boundaries of the federal property (i.e., has spillover effects), the CZMA Section 307 Federal consistency requirement applies.

A network of core agencies and coastal localities in the commonwealth administers the enforceable policies of the Virginia Coastal Resources Management Program. The Virginia DEQ serves as the lead agency for the program. Potential threats and concerns to the coastal areas along and adjacent to the Refuge include: erosion and sedimentation, potential over-harvest of the fishery, preservation of wetlands, and pollution from runoff.

COASTAL BARRIER RESOURCES ACT (CBRA)

The Coastal Barrier Resources Act (CBRA) was enacted on 18 October 1982 (Public Law 97-348). Its purposes are to protect undeveloped barrier islands and to restrict future Federal expenditures and financial assistance which encourage development of coastal barriers. Limitations on Federal spending are enumerated in Section 5 of CBRA. These limitations prohibit expenditures carrying out of any shoreline stabilization (erosion) projects except where an emergency threatens life, land, and property immediately adjacent to the unit.

According to the USFWS (Sherfy, 1997), no portion of the study area falls within the CBRA system. Plum Tree Island National Wildlife Refuge is mapped as an "Otherwise Protected Area." Development in Otherwise Protected Areas is limited by the current owners of the property (generally a public resource agency). These areas would be considered for inclusion as Coastal Barriers in the event of a future change in ownership or management practices. Because no Coastal Barriers are identified within the city limits, the expenditure of Federal funds for the proposed project is not prohibited by that legislation (Sherfy, 1997).

CHESAPEAKE BAY PRESERVATION ACT

The Chesapeake Bay Preservation Act was passed to protect environmentally sensitive areas. The Chesapeake Bay, the nation's largest estuary, has experienced serious environmental degradation during the past century. Symptoms of degradation are large declines in submerged aquatic vegetation (SAV) acreage and in finfish and shellfish (oysters and crab) populations, seasonal depletions in dissolved oxygen, and increases in sedimentation. These environmental changes have raised serious concern because they threaten major commercial and recreational activities by damaging key habitats and reducing water quality necessary for Bay species to survive and reproduce. Most scientists attribute these changes, at least indirectly, to ecological stress from human activities, especially land use changes in the Bay watershed related to deforestation, agriculture, use of fertilizers, and more recently, urbanization, pollution, and sewage. Future stress on Bay ecosystems will potentially worsen, as the Chesapeake Bay Commission predicts that the population in the Bay watershed will swell to 17.4 million by the year 2020. The Chesapeake Bay Preservation Act designates Resource

Conservation Areas (RCA) and Resource Protection Areas (RPA) where development is regulated and/or restricted. No RCAs or RPAs will be affected with the proposed project.

HAZARDOUS, TOXIC AND RADIOLOGICAL WASTES INVESTIGATIONS

In 1992, a PAE of the range was conducted under the Defense Environmental Restoration Program, Formerly Used Defense Sites (DERP, FUDS) by the Norfolk District Corps of Engineers. At that time it was determined that the site was formerly used by the Department of Defense as an Army Aviation Experimental Station and later as an Air Force Bombing and Gunnery Range and eligible for restoration under DERP FUDS for Ordnance & Explosives and Building Demolition/Debris Removal (BD/DR). The BD/DR was for the removal of three observation towers at the range. Although there were originally four towers on the Refuge, there were only three at the time of this assessment.

In 1992, the Rock Island District, USACE and the USADACS prepared a report (USADACS), prepared a report entitled that confirmed the presence of unexploded ordnance at the site. This report focused primarily on the DoD activities involving munitions and explosives, including practice bombing and small arms fire.

AIR QUALITY

The area from Norfolk to Isle of Wight County north through York and James City Counties, which includes the study area, has been designated as marginal non-attainment for the new 8-hour O₃ standard since April 2004. There are no human activities at the Refuge which produce or are associated with air pollutants, such as fuel combustion and vaporization of volatile hydrocarbons.

NOISE

The Refuge has few noise sources, with most noise coming from aircraft (jets) flying over the Refuge to and from Langley Air Force base.

VISUAL RESOURCES/AESTHETICS

A visual resource can be defined as an area of unique beauty that is a result of the combined characteristics of the natural aspects of land and human aspects of land use. Since there is no development on the Refuge, the area is a natural environment and has the visual appeal associated with such areas. Visually, the Refuge is a mixture of high and low wetland vegetation interspersed with small tidal waterways known as "guts." The various birds and other wildlife that can be found at the Refuge also add visual interest and appeal to the area.

PUBLIC PERCEPTIONS

Within the Poquoson community there is a certain amount of support for keeping the standing tower as is on the refuge. In a public meeting held on May 24, 2005, several residents stated that the tower is being used as a navigational beacon, has sentimental value, and is part of World War II history. Both recreational and commercial watermen use the tower as a navigational guide when boating in the Messick Point/Chesapeake Bay area. Other residents associate the tower with their community and their lives in it. Since the tower was part of the bombing range, which was particularly active in World War II, some residents view it as a part of recent history.

CULTURAL RESOURCES

There is evidence of Native American occupation in Virginia beginning about 12,000 years ago, and continuing to the present time. The earliest identifiable groups, known as "Paleoindians," apparently lived in groups of extended kin. They pursued a variety of game animals and probably foraged the limited vegetable resources of the boreal forest. During this period, the climate was sub-arctic because of the advance of continental glaciers. The glaciers tied up a significant portion of the world's water budget, and, as a result, sea level was about 100 meters lower than at present. The shoreline of the Atlantic Ocean was well to the east, near the edge of the continental shelf. The Susquehanna River, carrying totally freshwater, flowed east through the area of what is now the Chesapeake Bay; its tributaries, the Potomac, York, James and Elizabeth Rivers, were also freshwater rivers.

From this point, sea level rose fairly rapidly until about 6,000 years ago, drowning the fresh water rivers and creating the complex estuary called the Chesapeake Bay. At that time sea level was 6 or 7 meters below the present level. The climate had also warmed considerably as the glaciers retreated, creating a new set of environmental conditions to which the Native Americans adapted by exploiting new food resources, including the abundant shellfish and finfish of the estuaries. This resulted in changes in the material culture, which are also reflected in the archaeological record, and the beginning of the period known as the Archaic. Because sea level was still lower than at present, the people of that era may have been living and exploiting estuarine resources on banks of the estuary that are now fully submerged. This creates the possibility that there may be submerged prehistoric archaeological sites below the water line along Back River and the Chesapeake Bay.

From Archaic times forward the rate of sea level rise slowed, and the climate stabilized somewhat. Native American populations grew and expanded their food-getting activities. By about 3,000 years ago they were making pottery, and by about 1,000 years ago they had begun to cultivate plants such as corn and squash. They continued to use the rich resources of the Chesapeake Bay and may have engaged in a seasonal movement from the shoreline to the interior. This period is known as the Woodland period. There are numerous terrestrial prehistoric sites in the vicinity of the study area from the Archaic and Woodland periods that clearly indicate the presence of Native Americans during these time periods, but a portion of the living and exploitation patterns may be located below the present water level of the estuaries.

The first permanent European settlement in the southeastern Virginia region did not take place until 1607 with the English settlement at Jamestown. From this settlement the English colonists spread throughout the Chesapeake Bay area, particularly along the rivers and close to the mouth of the Bay. Tobacco was introduced into the colony about 1612 and quickly became the colony's main export crop.

The land surround Amory's Wharf is the original landing of the first English settlers of Poquoson, which is first mentioned in colonial records in a land grant issued in 1631. By 1635, Messick Point was an important shipping point for tobacco and other products from the plantations. After the Revolutionary War, the larger plantations were sold into smaller farms because they were no longer financially viable. For the next 150 years, most of the city's residents earned their living from farming and fishing. World War I and the construction of Langley Air Force Base began to gradually change the rural nature of Poquoson. World War II accelerated this change with a shift from the farming/fishing economy to one of services and retail trade. The population began to grow significantly as it became a bedroom community for the Peninsula. Poquoson, which was part of York

County for over 300 years, became an independent town in 1952 and was chartered as a city in 1975.

As previously stated, before the Plum Tree Island Range was created, the land that made up the range was used for hunting, grazing, and fishing. Between 1920 and 1933, three observation towers were constructed and placed on the Range. These are the towers that are the subject of this EA.

No formal determination has been made for the standing tower regarding its eligibility for listing on the National Register of Historic Places. However, as a result of the proposed removal action, a consensus determination between the Corps of Engineers and the Virginia Department of Historic Resources has been made to consider the tower eligible for listing and to proceed with consultation on that basis. The two fallen towers are not considered eligible since they lack structural integrity.

There is one archaeological site located very close to the site of one of the towers under consideration for removal. When discovered, it contained both prehistoric and historic components. The prehistoric artifacts were classified as Paleo-Indian, middle Archaic, and middle Woodland. The historic elements consisted of stoneware. The site's eligibility for listing on the National Register has not been determined. The only other known site within two miles of the area of potential effect is a historic period site located along the eastern shoreline of the Refuge over a mile from the closest tower. The eligibility of this site has not been determined.

5. ENVIRONMENTAL CONSEQUENCES

Introduction

This chapter provides an evaluation and comparison of potential environmental impacts that may result from implementation of all alternatives considered including the No Action Alternative.

A brief description of the significance criteria for evaluating degrees of impacts to each resource is provided in Table V-1 and focuses on the resources that are most likely to be impacted by each of the alternatives. Table V-2 presents the degree of impact for each of the alternatives including the No Action Alternative and the Proposed Action (Alternative 4).

The Proposed Action involves removal of two (2) tower structures at Plum Tree Island NWR, one currently standing (tower 1) and the other fallen in the water (tower 2). The standing tower (tower 1) would be dropped in place, dismantled, moved to the beach manually, transported by shallow draft skiff, and removed by crane/barge to an off-site location. The tower that is down in the water and partially exposed (tower 2) would be cut into pieces where it lies, so that it can be picked out of the water by the crane and placed directly on the barge. There appears to be sufficient water to get the crane/barge in for a direct pick up with little to no impact to surrounding areas.

Another downed tower (tower 3) is situated in an area where it would be necessary to disturb surrounding wetlands in order to access the site, dismember the structure, and transport the metal pieces to a location accessible to the crane/barge. Because this tower poses no imminent danger as an attractive nuisance, and because it is surrounded by wetland habitat subject to significant disturbance from removal, it will not be removed.

In evaluating Alternatives 1-4, consideration was given to whether or not the top of the standing tower could be salvaged after the tower had fallen. With each of these alternatives, the contractor's intent is to drop the structure by cutting the supports near ground level and using a small ATV to assist in toppling the structure over. Due to the rusted and deteriorated state of the steel structure (the other two tower structures have already fallen), as well as the relatively thin gage of steel used to construct the top portion of the tower, the Corps has concluded that the tower will not survive the fall intact enough to be removed and transported to another location. However, if part of the tower should survive the demolition and it can be preserved, it will be offered to the city of Poquoson before being disposed of.

An alternative tower(s) removal action was evaluated which involved the use of a helicopter (Alternatives 5-7 as presented in Section 3). The proposal involved cutting the tower into a few large pieces and using a helicopter to pick the pieces up and set them down on the beach so they could be further cut up and transported to a crane/barge loading area. Since two of the towers are located back from the shoreline, using a helicopter to remove portions of these tower(s) might reduce impacts to adjacent wildlife habitat and reduce the amount of munitions clearance that would be needed. The standing tower would have to be scaled by workmen to dismember the structure prior to lifting by helicopter. Use of a helicopter would require a flight clearance from USFWS and possibly Langley Air Force Base (LAFB). Also considered was the feasibility of attaching a cable from a helicopter to the top of the tower, while personnel are tethered to the structure, in order to cut the top free of the supports. However, the downdraft from the helicopter rotors presents a safety hazard, and the questionable structural integrity of the supports does not safely allow removal of any potential structural member while the contractor's personnel are tethered to it. After further evaluation, use of a helicopter was not considered feasible for logistical, safety, and economic reasons.

Unlike Alternatives 1-4 which involve dropping the standing tower in place, and Alternatives 5-7 which involve helicopter removal, Alternative 8 involves preserving an intact portion of the standing tower without dropping the tower or use of a helicopter. This alternative provides another option to preserve an intact portion of the tower.

The Corps Norfolk District GeoEnvironmental Engineering Section, along with the demolition contractor, evaluated both the safety and feasibility of implementing Alternative 8. Several different methods were evaluated. The possibility of lowering the top of the tower to the ground using a crane capable of handling the load of the steel top was considered. Personnel would be tethered to the structure, in order to cut the top free of the supports. This poses safety concerns related to personnel having to scale the weakened structure. In addition, shallow water surrounding the Plum Tree Refuge makes it infeasible to barge the heavy equipment needed, such as a crane and bucket-truck, onto the island near the tower. Therefore, Alternative 8 was dropped because it was determined that there is no safe or feasible way to remove the top of tower while it is still standing.

Therefore, the alternatives which involve helicopter removal and Alternative 8 are not discussed further in this environmental consequences section. The narrative below provides additional details regarding the environmental consequences of the remaining alternatives and the No Action alternative. Figure V-1 presents a schematic showing the typical work zones (areas of direct impact) for removal.

The No Action was also evaluated. No Action involves the continuation of existing conditions without implementation of the proposed action or any other alternatives, and would allow continuation of unlawful trespassing and climbing on the tower structures. Under the No Action alternative, the status quo would be maintained. All three towers (one standing and two fallen) would remain in place. The Corps and the USFWS would continue to rely on existing Federal, state, and city of Poquoson laws and regulations and other deterrents to prevent trespassing on the Refuge and the climbing of tower structures. At the present time, the standing tower and the fallen towers serve no useful function for either the DoD or the USFWS. The standing tower serves as an attractive nuisance, drawing people onto the shore in spite of extensive signage indicating the extreme hazard of unexploded munitions. This danger was demonstrated during an incident in 1958 when an individual visiting the island suffered temporary blindness and a partial leg amputation after a practice bomb exploded. In addition, the tower itself attracts people who want to climb it. It has not been maintained, has deteriorated beyond the point of repair, and is likely to fall, as the other two towers have already done. This is clearly a hazard to anyone on the tower or next to it. The tower fallen in the water also poses a safety hazard from a navigation standpoint. For these reasons, No Action is not considered a viable alternative for maintaining public safety.

Table V-1. Criteria for Rating Level of Impacts

Impact Level	Natural Resources ¹	Protected Species and Critical Habitat	Air Quality	Water Resources/Water Quality
<p><i>Short-term</i> = Less than one year, normally during construction and recovery. <i>Long-term</i> = Longer than one year, normally from operations. <i>Cumulative</i> = Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the area.</p>				
Negligible	Impact localized and not detectable, or at lowest levels of detection.	Change in a population or individuals of a species; consequences to population not measurable or perceptible, or other changes not measurable or perceptible.	Impact not perceptible and not measurable; not affecting surroundings	Impact not detectable, no discernible effect on water quality.
Minor	Impact localized and slightly detectable but would not affect overall structure of any natural community.	Change in a population or individuals of a species, if measurable, would be small and localized, or other changes would be slight but detectable.	Impact perceptible but not measurable; would remain localized.	Impact slightly detectable but would not affect overall water quality.
Moderate	Impact clearly detectable; could affect individual species, communities, or natural processes appreciably.	Change in a population or individuals of a species measurable but localized.	Impact detectable and possibly affecting integrity of surroundings. Air quality testing would be required.	Impact clearly detectable and could have an appreciable effect on water quality.
Major	Impact highly noticeable and would substantially influence natural resources, e.g. individuals or groups of species, communities, or natural processes.	Change in a population or individuals of a species measurable and would result in permanent consequence to the population.	Impact would have a significant impact on surroundings.	Impact would have a substantial, highly noticeable, potentially permanent effect on water quality.

¹Soils, topography, aquatic biota

Table V-1. Criteria for Rating Level of Impacts (cont'd)

Impact Level	Sanctuaries and Refuges	Public Safety	Cultural/Historical Resources	Wetlands/SAV
<p><i>Short-term</i> = Less than one year, normally during construction and recovery. <i>Long-term</i> = Longer than one year, normally from operations. <i>Cumulative</i> = Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the area.</p>	<p>Impact localized and not detectable, or at lowest levels of detection.</p>	<p>Impact not perceptible and not measurable; not affecting public safety.</p>	<p>Note: The significance criteria applied to other physical and natural resource categories do not lend themselves to Section 106 evaluation of cultural/historical resources. Further discussion of consequences is included in the narrative portion of this section.</p>	<p>Impact barely perceptible and not measurable; confined to small areas and would not fill or destroy a wetland.</p>
	<p>Impact localized and slightly detectable but would not affect overall structure of any natural community within sanctuary/refuge.</p>	<p>Impact perceptible but not measurable; would remain localized.</p>		<p>Impact perceptible and measurable, but would remain localized; affecting a wetland that is unavoidable, such as repairing a pipeline or burying an upgraded electrical line.</p>
<p>Minor</p>	<p>Impact clearly detectable; could affect individual species, communities, or natural processes appreciably within sanctuary/refuge.</p>	<p>Impact detectable and possibly affecting public safety. Mitigative measures may be required.</p>		<p>Impact sufficient to change a wetland but would not diminish resource's integrity enough to jeopardize its viability. A Section 404 from the Corps of Engineers would be required and implementable, appropriate mitigation would be required.</p>
<p>Moderate</p>	<p>Impact highly noticeable and would substantially influence natural resources, e.g. individuals or groups of species, communities, or natural processes within sanctuary/refuge.</p>	<p>Impact would have a significant impact on public safety. Mitigative measures would be required.</p>		<p>Substantial, highly noticeable change in the wetland, resulting in a significant impact to wetlands.</p>
<p>Major</p>				

Table V-1. Criteria for Rating Level of Impacts (cont'd)

Impact Level	Floodplains	Noise	Public Perceptions	Visual/Aesthetic Resources
<p><i>Short-term</i> = Less than one year, normally during construction and recovery. <i>Long-term</i> = Longer than one year, normally from operations. <i>Cumulative</i> = Cumulative impacts to environmental resources result from incremental effects of proposed actions when combined with other past, present, and reasonably foreseeable future projects in the area.</p>	<p>Impact barely perceptible and not measurable. Crossing floodplains with overhead transmission lines often unavoidable.</p>	<p>Impact not detectable, no discernible effect.</p>	<p>Impact not perceptible and not measurable; not affecting surroundings.</p>	
Negligible	<p>Impact perceptible and measurable, but would remain localized, affecting an area that is unavoidable, such as repairing a pipeline or burying an upgraded electrical line.</p>	<p>Impact slightly detectable but would not affect residential and/or business areas.</p>	<p>Impact slightly detectable but would not measurably affect public perception.</p>	<p>Impact perceptible but not measurable; would remain localized.</p>
Minor	<p>Impact sufficient to change a floodplain's features but with sufficient mitigation that would not diminish floodplain usefulness.</p>	<p>Impact clearly detectable and could have an appreciable effect on residential and/or business areas.</p>	<p>Impact clearly detectable and likely to generate appreciable support of or opposition to plan.</p>	<p>Impact detectable and possibly affecting integrity of surroundings.</p>
Moderate	<p>Change in the floodplain that is measurable and would result in permanent consequence to the environment.</p>	<p>Impact would have a substantial, highly noticeable, and potentially permanent effect on residential and/or business areas.</p>	<p>Impact would have a substantial, highly noticeable effect likely to generate significant support of or opposition to plan.</p>	<p>Impact would have a significant impact on surroundings.</p>
Major				

Table V-2. Alternatives Impacts

	Resource Impact Categories	Water Resources/Water Quality	Air Quality	Protected Species and Critical Habitat	Aquatic Biota	Wetlands and SAV	Sanctuaries and Refuges	Land Use	Noise	Visual and Aesthetic Resources	Recreational and Commercial Use of Waters	Public Safety*	Public Perceptions
	Tower Removal Alternatives												
	NO ACTION	0	0	0	0	0	0	0	0	0	0	0	0
	ALTERNATIVE 1	1	1	2	1	2	2	2	1	0	0	+2	2
	ALTERNATIVE 2	1	1	2	1	1	1	1	1	0	0	+2	2
	ALTERNATIVE 3	1	1	2	0	1	1	1	1	0	0	+2	2
	ALTERNATIVE 4	1	1	0	0	0	0	1	1	0	0	+2	2
	ALTERNATIVE 5	1	1	1	1	1	1	1	1	0	0	+2	2
	ALTERNATIVE 6	1	1	1	1	1	1	1	1	0	0	+2	2
	ALTERNATIVE 7	1	1	1	1	1	1	1	1	0	0	+2	2
	ALTERNATIVE 8	1	1	1	1	1	1	1	1	0	0	+2	1

0=None; 1=Negligible; 2=Minor; 3=Moderate; 4=Major (see Table V-1)

*Positive numbers related to positive impacts to Public Safety

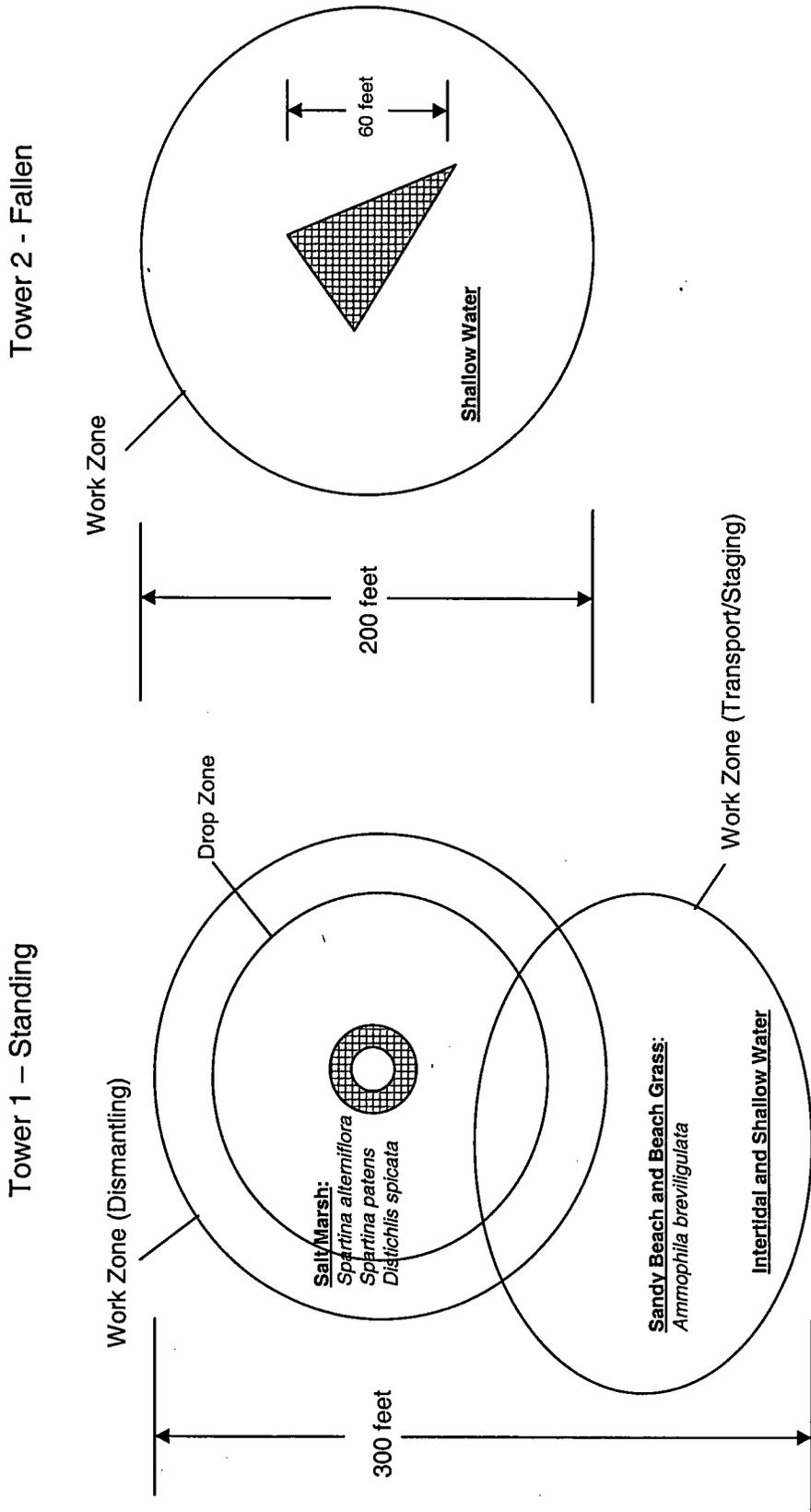


Figure V-1. Tower Removal Work Zones

EVALUATION OF IMPACTS TO RESOURCES

SOILS AND TOPOGRAPHY

No action. There would be no impacts to biological resources with the No Action alternative. Tower(s) would remain in place without disturbance to surrounding habitat.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1 - Remove All Three Towers - The standing tower (tower 1) would be dropped in place, dismantled, moved to the beach manually or by ATV and removed by crane/barge to an off-site location. There may be some temporary and minor soils disturbance within the drop zone and the work zone as the structure is dismantled and structural steel pieces are transported to the beach and removed by crane/barge. Sand compaction along the beach route used by the ATV is likely. Also, when the standing tower is dropped, there is the potential to disturb items below grade, so a complete O&E clearance of the drop zone will be required. If anomalies are encountered, they will be excavated and, if determined to be MEC (or unsure), they will either be: 1) detonated in place; 2) moved to a central on-site location and detonated; and/or 3) avoided altogether. Detonation will disturb surrounding soils and topography and will create depressions or craters of various sizes depending on the O&E encountered. Any soils disturbed or depressions created will be back-filled to existing grade.

Removal of the two fallen towers, one in the water (tower 2) and one in the wetlands (tower 3), would result in varying degrees of soils disturbance. Tower 2 removal, accessible by crane/barge from the water, should result in negligible to no soils disturbance. Subsurface sediments in the water may be disturbed during removal, but this is anticipated to be temporary and minor. Tower 3, which is surrounded by substantial marsh areas on all sides, would likely require a moderate amount of wetlands soils disturbance for site access, dismantling of the tower, and transport to a site accessible to the crane/barge.

Alternative 2 - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Potential soils and topography impacts would be similar to that described above except that impacts to a substantial area of wetland soils would be avoided by not removing the tower fallen in the marsh (tower 3).

Alternative 3 - Remove Only Standing Tower - Under this alternative, only the standing tower (tower 1) would be removed. Soils and topography impacts would be limited to removal of this tower as described above. Impacts to subsurface sediments in the vicinity of the tower in the water (tower 2) and impacts to substantial wetland soils (tower 3) would be avoided.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge – Under this alternative, an ATV would not be used to transport the tower debris along the beach for removal by the crane/barge. The pieces would be manually transported to a designated site immediately adjacent to the fallen tower, and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Sand compaction on the beach would be avoided.

BIOLOGICAL RESOURCES

No action. There would be no impacts to biological resources with the no action alternative. Tower(s) would remain in place without disturbance to surrounding habitat.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1 - Remove All Three Towers - There may be some temporary and minor impacts to biological resources (plants and animals) within the drop zone and the work zone as the structure is dismantled and structural steel pieces are transported to the beach and removed by crane/barge. Most animals would be able to avoid these areas during deconstruction. Any nesting animals (birds, turtles, etc.) would be displaced, and there is a likelihood that nests would be disturbed or eliminated within the construction zone. Detonation of O&E will disturb/temporarily eliminate biological resources in the soils and will create depressions or craters of various sizes depending on the O&E encountered. Any depressions created will be backfilled, and it is anticipated that biological resources would quickly become reestablished in these areas.

Removal of the two fallen towers, one in the water (tower 2) and one in the wetlands (tower 3), would result in varying degrees of disturbance to biological resources. Tower 2 removal, accessible by crane/barge from the water, should result in minor disturbance to aquatic biota. Organisms in the subsurface sediments would be disturbed during removal, but this is anticipated to be temporary and minor. Tower 3, which is surrounded by substantial marsh areas on all sides, would likely require substantial wetlands habitat disturbance for site access, dismantling of the tower, and transport to a site accessible to the crane/barge. Biological resources, including indigenous species described in Section 4 of this document, would be impacted to a moderate degree in the work areas.

Alternative 2 - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Potential biological resources impacts would be similar to that described above except that impacts to a substantial area of wetland habitat and its associated biological resources would be avoided by not removing the tower fallen in the marsh (tower 3).

Alternative 3 - Remove Only Standing Tower - Under this alternative, only the standing tower (tower 1) would be removed. Biological resources impacts would be limited to removal of this tower as described above. Impacts to biological resources (primarily aquatic biota) in the vicinity of the tower in the water (tower 2), and impacts to substantial wetland habitat (tower 3), would be avoided.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge - Under this alternative, an ATV would not be used to transport the tower debris along the beach for removal by the crane/barge. The pieces would be manually transported to a designated site immediately adjacent to the fallen tower, and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Potential ATV impacts to biological resources would be minimized.

Essential Fish Habitat Assessment (Alternative 4) - The 1996 amendments to the Magnuson-Stevens Fishery Management and Conservation Act require Federal action agencies to consult with the NMFS regarding the potential effects of their actions on EFH. EFH is defined as those waters and

substrates necessary to fish for spawning, breeding, feeding, or growth to maturity. Step 1 of the consultation process was accomplished by notifying NMFS that this EA was being prepared. Step 2 is the preparation of an EFH Assessment by the Federal agency proposing the action. The EFH assessment shall include: (1) a description of the proposed action; (2) an analysis of the effects of the action on EFH and associated species; (3) the Federal agency's views regarding the effects of the action on EFH; and (4) a discussion of proposed mitigation, if applicable. Step 3 of the consultation process is completed after NMFS reviews the Draft EA for which the NMFS provides EFH Conservation Recommendations during the established comment period. The fourth and final step in the consultation process is the Federal agency's response to the EFH Conservation Recommendations within 30 days. This response, prepared in writing, must either describe the measures proposed by the agency to avoid, mitigate, or offset the impacts of the action on EFH pursuant to NMFS' recommendations or must explain its reasons for not following NMFS' recommendations.

(1) Description of proposed action: (See Alternative 4 description above)

(2) Analysis of the effects of the action on EFH: Section 4 (affected environment) describes the species and at which life stage EFH has been determined by the NMFS to be in the vicinity of the project. It is notable that one species, sandbar shark (Charcharinus plumbeus), is designated as having a HAPC, which is described in regulations as a subset of EFH that is rare, particularly susceptible to human-induced degradation, especially ecologically important, or located in an environmentally-stressed area.

No adverse effects to EFH species or HAPC are anticipated as a result of the towers removal.

(3) Department of the Army's views regarding the effects of the action on EFH: No adverse effects to EFH species or HAPC are anticipated as a result of the towers removal.

(4) Discussion of proposed mitigation: Not applicable.

THREATENED, ENDANGERED, or CANDIDATE SPECIES

No action. There would be no impacts to threatened, endangered, or candidate species with the no action alternative. Tower(s) would remain in place without disturbance to surrounding habitat.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1 - Remove All Three Towers - With removal of the standing tower there may be some temporary and minor impacts to species of special concern within the drop zone and the work zone as the structure is dismantled and structural steel pieces are transported to the beach and removed by crane/barge. Without time-of-year restrictions (May 15 – September 10) nesting animals (birds, turtles, etc.) may be displaced, and there is a likelihood that nests could be disturbed or eliminated within the construction zone. The Corps will work with USFWS to designate appropriate routes of travel within the work zone and to monitor the presence of special species during the demolition period. Contracted labor will stay within the work zone. Detonation of O&E will disturb and/or eliminate special species and will create depressions or craters of various sizes depending on the O&E encountered. Any depressions created will be backfilled and habitat would quickly become reestablished in these areas. The following special species could be adversely affected with the implementation of this alternative:

- The Beach Tiger Beetle utilizes the refuge beaches, in particular the transitional zone (the sand between high and low tides). Living larvae are laid in the sand and emerge as diminutive whitish beetles. Periods of the beetle's activity are from June 1st to September 15th.
- Some of the bird species of concern are believed to nest in the early spring on the refuge. The Oystercatcher nests in the upper portions of the sandy beaches by carving out a small indentation in the sand.
- The Short-billed Dowitcher and the Seaside Sparrow nest in marshy areas. The Seaside Sparrow nests in wet portions of medium high cordgrass. The Short-billed Dowitcher nests in depressions in grass and lines the nest with grass, leaves, and twigs.
- The Northern diamondback terrapin nests during the early summer months on sandy dunes and upper beaches. Adults make frequent trips to water sources. Hatchlings emerge in late summer to early fall.

Removal of the two fallen towers, one in the water (tower 2) and one in the wetlands (tower 3), would result in varying degrees of potential additional impacts to special species. Tower 2 removal, accessible by crane/barge from the water, should result in minor disturbances. Tower 3, which is surrounded by substantial marsh areas on all sides, would likely require substantial wetlands habitat disturbance for site access, dismantling of the tower, and transport to a site accessible to the crane/barge. Special species inhabiting the marsh, especially birds which nest in these areas, would potentially be impacted by these additional disturbances.

Alternative 2 (Proposed Action) - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Potential special species impacts would be similar to that described above except that impacts within the wetland habitat and its associated special species would be avoided by not removing the tower fallen in the marsh (tower 3).

Alternative 3 - Remove Only Standing Tower - Under this alternative, only the standing tower (tower 1) would be removed. Special species impacts would be limited to removal of this tower as described above. Impacts to special species (primarily within wetlands at tower 3) would be avoided.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge – Under this alternative, an ATV would not be used along the beach to transport the tower debris along the beach for removal by the crane/barge. The pieces would be manually transported to a designated site immediately adjacent to the fallen tower, and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Not using an ATV on the beach would significantly reduce the amount of beach compaction. By avoiding compaction of the sand beach where tiger beetle larvae (instar) are over-wintering, effects to this species will be negligible.

The Service will coordinate with the Corps and its contractors to designate appropriate routes of travel within the work zone and to monitor the presence of wildlife during the demolition period. Contracted

labor must stay within the designated work zone.

AIR QUALITY

No action. There would be no impacts to air quality with the No Action alternative. Tower(s) would remain in place without disturbance to existing conditions.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1 - Remove All Three Towers - Use of an ATV and the crane/barge during the deconstruction and transportation phase would result in a temporary source of emissions. The ATV would be gasoline powered, and the crane/barge would likely be diesel or electric powered.

For industrial diesel engines, these emissions are carbon monoxide (CO), unburned hydrocarbons (HC), nitrogen oxides (NO_x), sulfur dioxide (SO₂), and diesel particulate matter (DPM). Modern diesel engines increasingly employ an array of technologies for the purpose of reducing emissions. These include high pressure common rail injection, catalytic converters, and hydrocarbon traps. Fugitive dust would be minimal because construction would occur in a sand environment.

The proposed project has been evaluated under the Clean Air Act (CAA) Amendments of 1990. The conformity determination considered direct and indirect effects and has concluded that the air emissions relevant to the proposed dredging and dredged material deposition are safely below the final rule's de minimus levels. A full-scale CAA conformity determination, therefore, will not be performed. The action would comply with Section 176 (c) (1) of the CAA Amendments of 1990.

Any measurable effects on air quality will be short-term and minor within the areas of the work and transportation zones as the standing structure (tower 1) and the two fallen structures (towers 2 and 3) are dismantled and structural steel pieces are transported to the beach and removed by crane/barge (towers 1 and 3), or removed in place by the crane/barge (tower 2) and transported to an off-site location. Detonation of O&E may temporarily disturb air quality, but it is not expected to be a significant source of air pollutants.

Alternative 2 (Proposed Action) - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Potential air quality impacts would be similar to that described above, except that the air quality impacts associated with removing the tower fallen in the marsh (tower 3) would be avoided.

Alternative 3 - Remove Only Standing Tower - Under this alternative, air quality impacts would be limited to those impacts associated with removal of the standing tower as described above. Those air quality impacts associated with the removal of towers 2 and 3 would be avoided.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge – Under this alternative, an ATV would not be used to transport the tower debris along the beach for removal by the crane/barge. The pieces would be manually transported to a designated site immediately adjacent to the fallen tower, and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Potential ATV impacts to air quality would be avoided.

WATER QUALITY

No action. There would be no impacts to water quality with the No Action alternative. Tower(s) would remain in place without disturbance to existing conditions.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1 - Remove All Three Towers - There should be no water quality impacts associated with removal of the standing tower (tower 1) as most, if not all, dismantling and removal activities will occur on the upland. Detonation of O&E will disturb surrounding soils and will create depressions or craters of various sizes depending on the O&E encountered. These disturbed soils may be more subject to erosion and transport to adjoining water bodies causing temporary water quality impacts including increased suspended solids in the water column. These impacts will be minimized by back-filling depressions to existing grade.

Removal of the two fallen towers, one in the water (tower 2) and one in the wetlands (tower 3), could result in varying degrees of water quality disturbance. Tower 2 removal, accessible by crane/barge from the water, should result in negligible water quality impacts. Subsurface sediments in the water surrounding the fallen structure may be disturbed during removal, and these sediments may become resuspended in the water column, but this impact is anticipated to be temporary and minor. Tower 3, which is surrounded by substantial marsh areas on all sides, would likely require some wetlands soils disturbance for site access, dismantling of the tower, and transport to a site accessible to the crane/barge. These disturbed soils may be more subject to erosion and transport to adjoining water bodies causing additional temporary and minor water quality impacts.

Alternative 2 - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Potential water quality impacts would be similar to that described above except that impacts to a substantial area of wetland soils would be avoided, as would the associated water quality impacts, by not removing the tower fallen in the marsh (tower 3).

Alternative 3 - Remove Only Standing Tower - Under this alternative, only the standing tower (tower 1) would be removed. Water quality impacts would be limited to removal of this tower as described above. Impacts to subsurface sediments in the vicinity of the tower in the water (tower 2) and impacts to wetland soils (tower 3) would be avoided along with the associated water quality impacts.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge – Under this alternative, an ATV would not be used to transport the tower debris along the beach for removal by the crane/barge. The pieces would be manually transported to a designated site immediately adjacent to the fallen tower, and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Water quality impacts would be similar to alternative 2 described above.

WETLANDS AND SUBMERGED AQUATIC VEGETATION (SAV)

No action. There would be no impacts to wetlands with the No Action alternative. Tower(s) would remain in place without disturbance to surrounding habitat.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1 - Remove All Three Towers - There would be some temporary and negligible wetlands disturbance within the drop zone and the work zone as the standing structure (tower 1) is dropped and dismantled and structural steel pieces are transported to the beach and removed by crane/barge. Detonation of O&E will disturb wetlands in the detonation zone and will create depressions or craters of various sizes depending on the O&E encountered. Any wetlands disturbed or depressions created will be back-filled to existing grade.

Removal of the two fallen towers, one in the water (tower 2) and one in the wetlands (tower 3), would result in varying degrees of impacts to wetlands. Tower 2 removal, accessible by crane/barge from the water, should result in no wetlands impacts as vegetated wetland areas will be avoided completely. Tower 3 is surrounded by substantial marsh areas on all sides and would require a moderate level of wetlands impact for site access, dismantling of the tower, and transport to a site accessible to the crane/barge. Because tower 3 is more remotely located within the marsh, potential wetland impacts would be more extensive than with the other two tower removals. Even these impacts, however, would be expected to be temporary and moderate.

SAV's are located in the shallow waters adjoining Plum Tree Island NWR. For the standing tower (tower 1), a crane/barge will be brought along the shoreline to access the tower's pieces to be placed on the barge and the pieces will then be transported to an off-site location (Messick Point). Bringing the crane/barge into shallow water adjacent to the shoreline may cause some minor and temporary disturbance to SAV's in these shallow bottom areas.

Alternative 2 - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Potential wetlands and SAV impacts would be similar to that described above except that impacts to a substantial area of wetlands would be avoided by not removing the tower fallen in the marsh (tower 3).

Alternative 3 - Remove Only Standing Tower - Under this alternative, only the standing tower (tower 1) would be removed. Wetlands and SAV impacts would be limited to removal of this tower as described above. Impacts to wetlands in the vicinity of tower 3 would be avoided.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge – Under this alternative, an ATV would not be used along the beach or in the vicinity of the tower to transport the tower debris for removal by the crane/barge. Instead, the pieces would be manually transported to a designated site immediately adjacent to the fallen tower, and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Potential ATV impacts to wetland and beach plants would be avoided.

FLOODPLAINS

No action. There would be no impacts to floodplains with the No Action alternative. Tower(s) would remain in place without disturbance to existing conditions.

Tower(s) Removal by ATV and Crane/Barge or Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

All Alternatives - Impacts to floodplains would be negligible.

NOISE

No action. There would be no noise impacts with the No Action alternative. Tower(s) would remain in place without disturbance to existing conditions.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1 - Remove All Three Towers - The standing tower (tower 1) would be dropped in place, dismantled, moved to the beach manually or by ATV, and removed by crane/barge to an off-site location. There may be some temporary and negligible noise impacts associated with these construction activities. Also, detonation of O&E, if required, will cause noise disturbances to varying degrees depending on the O&E encountered. Removal of the two fallen towers, one in the water (tower 2) and one in the wetlands (tower 3), would result in varying additional noise impacts. The closest noise receptors (businesses at Messick Point and residences along Messick Road) are located approximately 1.5 miles from the closest tower site (tower 1) and are separated by the expansive marsh areas of the Plum Tree Island Refuge. The other two towers are even more remotely located approximately 2-3 miles from the closest noise receptors and are also separated from these receptors by expansive marsh and open water areas. Detonation of UXO, if required, will be restricted to certain hours on designated days, and local communities will be notified.

Noise impacts from the diesel or electric-powered crane/barge will be localized in the specific area where deconstruction and transport activities are taking place. In addition, construction activities will occur at sufficient distances (i.e., greater than 1 mile away) from sensitive receptors, such as protected species and human residential areas; thus, no excessive and out-of-character noise levels will be experienced. Therefore, no specific noise mitigation measures will be required.

Alternative 2 - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Potential noise impacts would be similar to that described above except that noise impacts would be lessened by not removing the tower fallen in the marsh (tower 3).

Alternative 3 - Remove Only Standing Tower - Under this alternative, only the standing tower (tower 1) would be removed. Noise impacts would be limited to removal of this tower as described above. Noise impacts in the vicinity of the tower in the water (tower 2) and in the wetland (tower 3) would be avoided.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge – Under this alternative, an ATV would not be used to transport the tower debris along the beach for removal by the crane/barge. The pieces would be manually transported to a designated site immediately adjacent to the fallen tower and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Potential noise effects related to use of an ATV would be avoided.

VISUAL / AESTHETIC RESOURCES

No action. There would be no change to visual/aesthetic resources with the No Action alternative.

Tower(s) Removal by ATV, Crane, and Barge or Tower(s) Removal Manually, and by Shallow Draft Skiff, Crane, and Barge

All alternatives – Removal of one, two, or all three towers is expected to improve the visual and aesthetic appearance of the Plum Tree Island refuge and surrounding water areas by making it a more natural area. The standing structure (tower 1), which is the most visible of the three, is in poor condition and has not been maintained. The corroded and rusty steel members are structurally unsound. This tower has deteriorated beyond the point of repair and is likely to fall, as the other two towers have already done. There would be some temporary and negligible visual impacts associated with construction equipment located at the site(s) of the tower(s) removal.

PUBLIC PERCEPTIONS

No action. This option would have the support of those Poquoson residents who would like the standing tower to remain in its current location. This is a small, but very vocal group that feels strongly that the standing tower should remain on Plum Tree Island. This group consists primarily of watermen who use the tower as an unofficial navigational marker.

Tower(s) Removal by ATV, Crane, and Barge or Tower(s) Removal Manually, and by Shallow Draft Skiff, Crane, and Barge

All Alternatives - Those residents who want the standing tower to remain would be opposed to these options. While this group has been relatively vocal during the study process, it appears to be a relatively small group made up of primarily watermen. The majority of Poquoson residents have not expressed any opinion on the proposed action, so the presumption can be made that they do not have strong feelings one way or another regarding the proposed action.

NAVIGATION and ECONOMIC EFFECTS

No action. This option has the support of local watermen who would like the standing tower to remain in place to provide a point of reference and navigational landmark near the mouth of Back River and nearby Messick Point landing.

Tower(s) Removal by ATV and Crane/Barge or Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

All Alternatives – The watermen who want the standing tower to remain would be opposed to any option requiring removal of the standing tower. They feel that it will be more difficult for them to navigate the around Plum Tree Island, which could delay them, thereby increasing their operating costs. However, contact with the U.S. Coast Guard (Cyrus Brame with J. Heath Blanton, U.S. Coast Guard) indicates that the river and bay in the section adjacent to Plum Tree Island are well marked with navigational aids. No adverse impacts to navigation or economics from implementation of the proposed action are, therefore, anticipated. Interested parties wanting to submit a request for improved navigational aids can contact the U.S. Coast Guard (CDR John Little, Division Chief, Land Area Aids to Navigation Division).

CULTURAL RESOURCES

No action. There would not be any impacts to any archaeological or historical sites that exist within the Refuge with this option.

Tower(s) Removal by ATV and Crane/Barge

Alternative 1- Remove All Three Towers –

The standing tower, as a resource eligible for listing in the National Register of Historic Places, would be adversely affected by its removal from Plum Tree Island. In order to comply with section 106 of the National Historic Preservation Act, consultation with DHR would continue to determine an appropriate mitigation plan for the adverse effect and develop a memorandum of agreement before any removal action can be implemented.

Because there may be some subsurface disturbance within the drop and work zones as the standing tower is dismantled and removed, there is a possibility of adversely affecting unknown cultural resources during this process. The existence of known sites along the shorelines of the Refuge indicates a reasonable possibility of there being other cultural resources in the Refuge in areas that have not been previously investigated. However, the existence of ordnance throughout the Refuge makes an archaeological investigation before construction much more problematical. In order to deal with the possibility of undiscovered cultural resources in the drop and work zones, the following procedure will be followed. A complete Munitions and Explosives of Concern (MEC) clearance of the drop zone will be carried out. If any sub-surface soil disturbance or detonation is required which results in depressions or craters being created, the Norfolk District archaeologist will inspect these areas of disturbance for evidence of cultural resources. If any such resources are observed, the Norfolk District will document the resources present and work with the MEC and demolition team to limit further disturbance, consistent with the project objectives. Similarly, the Norfolk District will have an archaeologist on site when the tower is dropped and removed to monitor this work and determine if any significant archeological resources are present. If any such resources are observed, these will be documented and treated as described above. These procedures have been developed in consultation with the Virginia Department of Historic Resources, and will be documented in a Memorandum of Agreement between the Norfolk District and DHR currently being prepared.

For the tower in the water (tower 2), there should not be any impacts to known resources on land. It is possible that there are cultural resources immediately offshore, similar to the resources that have been found in the known sites along the shore, that could be adversely affected by the crane/barge as it

removes the tower. However, it is impractical to try to determine if such resources exist because of the high probability of unexploded ordnance in this area.

For the other tower (tower 3), there is also a possibility of adversely affecting unknown cultural resources during the removal process. The same process would be followed as is outlined above for the removal of the standing tower except that there would not be a drop zone since the tower is already down.

Alternative 2 - Remove Only Two Towers - Under this alternative, only the standing tower (tower 1) and the tower in the water (tower 2) would be removed. Cultural resources impacts would be similar to that described for alternative 1 except that impacts resulting from the removal of the tower fallen in the marsh (tower 3) would be avoided.

Alternative 3 - Remove Only Standing Tower - Under this alternative, only the standing tower (tower 1) would be removed. Cultural resources impacts would be similar to that described for alternative 1 except that impacts resulting from the removal of the two fallen towers (towers 2 and 3) would be avoided.

Tower(s) Removal Manually and by Shallow Draft Skiff and Crane/Barge

Alternative 4 (Proposed Action) – Remove Two Towers, Transport Manually, and Remove by Crane/Barge – Under this alternative, an ATV would not be used along the beach to transport the tower debris along the beach for removal by the crane/barge. The pieces would be manually transported to a designated site immediately adjacent to the fallen tower, and a shallow draft boat/barge would shuttle the debris from the island to a crane/barge located in deeper water. Cultural resources impacts would be similar to that described for alternative 2.

EXECUTIVE ORDERS

Floodplain Management

The NEPA compliance process requires Federal agencies to consider direct and indirect impacts to floodplains that may result from Federally funded actions. EO 11988 requires Federal agencies to take action to minimize occupancy and modification of floodplains. Furthermore, EO 11988 requires that Federal agencies proposing to locate a project in the 100-year floodplain must consider alternatives to avoid adverse effects and incompatible development in the floodplain. In accordance with these requirements, all of the actions proposed as preferred alternatives will have negligible effects on floodplains.

Protection of Wetlands

EO 11990, *Protection of Wetlands*, requires Federal agencies, including the Army, to minimize the destruction, loss, or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Impacts to any wetlands within or outside the Plum Tree Island NMR property would be minor with Alternative 1 and negligible or none for the other alternatives.

Protection of Migratory Birds

Prior to the start of any deconstruction activities at Plum Tree Island NWR, Corps and USFWS personnel will visit the project site locations to determine the presence of bird nests as they are protected under the Migratory Bird Treaty Act and Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds*. If present, the USFWS will provide direction on an appropriate course of action.

Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires Federal agencies to identify and address disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. The purpose of this EO is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.

Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, state, tribal, and local programs and policies.

There are no human populations in the vicinity of actions proposed, or in their area of influence. Considering the nature of the actions proposed, they have no inherent ability to impact any of the populations groups addressed by this EO.

PUBLIC SAFETY

Environmental Health Risks and Safety Risks to Children

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires Federal agencies to ensure that their policies, programs, activities, and standards address potential risks to children. The order defines environmental health and safety risks as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest (such as the air we breathe, the food we eat, the water we drink or use for recreation, the soil we live on, and the products we use or are exposed to).”

The standing tower serves as an attractive nuisance, drawing people, including young adults, onto the shore in spite of extensive signage indicating the extreme hazard of unexploded munitions. Selection of the No Action alternative would adversely affect public safety by maintaining this attractive nuisance. The Proposed Action recommends removal of this tower in the interest of child safety and public safety in general and would result in a net positive impact. The deconstruction site(s) are remote, accessible only by water, and have restricted access for safety reasons.

ENDANGERED SPECIES ACT

Section 7 of the Endangered Species Act, 16 U.S.C. Section 1536(a)(2), requires all Federal agencies to consult with NMFS for marine and anadromous species, or USFWS for fresh-water and wildlife, if

they are proposing an "action" that may affect listed species or their designated habitat. *Action* is defined broadly to include funding, permitting and other regulatory actions (50 CFR §402). Each Federal agency is to insure that any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. This is done through consultation. If such species may be present, the local government must conduct a biological assessment (BA) for the purpose of analyzing the potential effects of the project on listed species and critical habitat in order to establish and justify an "effect determination" (assistance and coordination may be available from the state, especially with transportation projects).

Discussions have taken place among Cyrus Brame, USFWS, Eastern Virginia Rivers National Wildlife Refuge Complex, Mike Drummond, biologist of the USFWS, and Eric Davis, Endangered Species Biologist and Assistant Supervisor for the Gloucester office Gloucester, VA Ecological Services Office regarding the ESA Section 7 Consultation. Mr. Davis has indicated that if the recommendations provided in USFWS letter dated November 9, 2005 were followed by the Corps, then "No Effect" would be the determination of the action and no further interaction required. However, if the recommendations were not enacted in the project, a "May Effect" would be the determination of the action and an Interservice Section 7 Biological Evaluation Form would need to be submitted.

The recommendations contained in the USFWS letter, including certain time-of-year restrictions and other measures to protect listed species and their designated habitat are incorporated into the proposed action (alternative 4). A "No Effect" determination with implementation of the proposed action is, therefore, anticipated.

COASTAL ZONE MANAGEMENT

Pursuant to the CZMA of 1972 as amended, Federal projects that are located within Virginia's designated coastal management area must be consistent with the Virginia Coastal Resources Management Program. Impacts to coastal zone resources would be minimized by following Virginia's Coastal Resources Management Program guidelines and by implementing erosion control and Best Management Practices (BMPs). No new facilities would be constructed that would cause any negative impacts to the coastal ecosystem. The Proposed Action includes removal of man-made tower structures at Plum Tree Island NWR. This action would maintain the integrity of coastal zone resources at the refuge. Other impacts to coastal zone resources, including wetlands and beaches, would be temporary and minor.

The proposed actions would be constructed in coastal management areas regulated by CZMA and the Virginia Coastal Program (VCP). Due to its location, Plum Tree Island NWR and the proposed action are subject to a consistency determination as part of the Federal Consistency Regulations for activities in coastal areas.

Based upon evaluation of impacts analyzed in the Draft Environmental Assessment, the Norfolk District Corps of Engineers has determined that the proposed project will be undertaken in a manner consistent to the maximum extent practicable with the Commonwealth of Virginia's Coastal Zone Management Program. All applicable water and/or wetland permits have not been applied for at the time of the preparation of this EA but will be obtained prior to project implementation.

Analysis of the Proposed Action and the Enforceable Policies of the VCP

Fisheries Management. The proposed action would not impact fisheries management as the removal of tower structures would not encroach on or influence finfish and shellfish resources or commercial and recreational fisheries. The deconstruction activities would not include possession, sale, or use or release of marine antifoulant paints containing tributyltin.

Subaqueous Lands Management. The proposed action would not impact subaqueous lands management as the removal of tower structures would not adversely impact state-owned bottomlands. Proposed near-shore staging and removal activities will be coordinated with the appropriate agencies and are intended to enhance the subaqueous environment.

Wetlands Management. The proposed action would not adversely impact wetlands management as the towers removal would only temporarily encroach on tidal wetlands and would not destroy or permanently alter any tidal wetlands. Proposed near-shore activities will be coordinated with the appropriate agencies, including USFWS. Towers removal is intended to provide long-term enhancement to wetland habitat.

Dunes Management. The proposed action would not impact dune management as the tower(s) deconstruction would not would not destroy or alter primary dunes.

Non-point Source Pollution Control. The proposed action would involve limited disturbance of soil during deconstruction activities. The deconstruction process would require personnel to follow the guidelines set forth in the Virginia Erosion and Sediment Handbook. Because of the limited amount of disturbance it is not anticipated that a stormwater construction permit would be required. In the event that such a permit is needed, it will be acquired by the contractor prior to tower removal.

Point Source Pollution Control. The proposed construction activities have no potential to introduce pollutants into a stormwater system, as none exists in the vicinity of the project. There are no other point source discharges in the vicinity of the project that would be regulated under VPDES.

Shoreline Sanitation. The proposed action would not impact shoreline sanitation, as the deconstruction would not involve the installation of septic tanks near any streams, rivers or other waters.

Air Pollution Control. During the deconstruction of the towers, local air quality may be temporarily affected by construction vehicle and barge and crane emissions, UXO demolition, and vehicular emissions from truck haulers. Because of the short deconstruction period (less than 1 week) and the minimal nature of support equipment required, effects on short and/or long-term air quality would be insignificant. Additionally, individual project components (dismantling, transport and removal, and ultimate disposal) may be staged over a period of time that will further minimize short-term impacts to air quality.

Coastal Lands Management. The proposed action would not impact Coastal Lands Management, as all components of the proposed action are consistent with current coastal land usage.

Federal Advisory Policies for Geographic Areas of Particular Concern.

Coastal Natural Resource Areas. The Coastal Natural Resource Areas include wetlands, aquatic

spawning, nursery, and feeding grounds, coastal primary sand dunes, barrier islands, significant wildlife habitat areas, public recreation areas, sand and gravel resources, and underwater historic sites. While the proposed action takes place within the boundaries of a National Wildlife Refuge, it would not have any measurable impacts on any of these areas.

Coastal Natural Hazard Areas. The Federal Emergency Management Agency (FEMA), in conjunction with the National Flood Insurance Program (NFIP), has defined various flood hazard zones to help communities identify their risks and vulnerabilities. Under the National Flood Insurance Program, a Coastal High Hazard Area is an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high-velocity wave action from storms or seismic sources. On a Flood Insurance Rate Map, the Coastal High Hazard Area is designated Zone V, VE, or V1-V30. These zones designate areas subject to inundation by the base flood where wave heights or wave runup depths are greater than or equal to 3.0 feet.

When total avoidance of high hazard areas is not feasible for a community, there are various ways communities can minimize the number of units likely to be impacted by coastal storm related hazards. The project will not adversely affect any Highly Erodible Areas or Coastal High Hazard Areas.

Waterfront Development Areas. The area where construction activities will occur is not a designated Waterfront Development Area.

Underwater Historic Sites. There are no known underwater historic sites within the project area. It would be impractical to try to determine if such resources exist because of the probable presence of UXO and the extremely shallow water in this area.

Federal Advisory Policies for Shorefront Access Planning and Protection.

Virginia Public Beaches. Since there are no public beaches in the project area, there would not be any effect on beaches from the proposed action.

Virginia Outdoors Plan. Plum Tree Island NWR is a restricted area due to the extreme hazard of unexploded munitions on and around the island. No trespassing signs are posted around the perimeter of the island. Access for personnel not essential to deconstruction activities will be limited or restricted during deconstruction, as appropriate for safety concerns.

Parks, Natural Areas, and Wildlife Management Areas. As mentioned previously, access to the island is restricted. No change in public use of the area would result from the proposed action.

Waterfront Recreational Land Acquisition. No land disposal or acquisition will occur in conjunction with the proposed project.

Waterfront Recreational Facilities. No waterfront recreational facilities will be developed, disposed of, or otherwise affected by the proposed project.

Waterfront Historic Properties. Removal of the towers will be an adverse effect. Appropriate mitigation will be developed as part of the Section 106 consultation process with VDHR and carried out as part of the project. Construction activities will be monitored by the Norfolk District archaeologist to address effects to any resources discovered in the dismantling and removal process.

CUMULATIVE IMPACTS

Cumulative effects refer to the impacts (effects) on the environment that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions (RFFA's) regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts (effects) can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

The proposed action, when considered in the context of past, present, and future activities, is not expected to contribute to the overall cumulative effects to specific resources. This is due, in part, to the relatively minor, negligible, and temporary impacts associated with the proposed action. Also, because the 3,275 acre refuge is a protected wildlife area, past and present impacts related to human activities have been minimal, and RFFA's that might contribute to refuge impacts in the future are not anticipated.

6. CONCLUSIONS

The Proposed Action involves the removal of two of three existing World War II-era observation towers at Plum Tree Island NWR. One tower to be removed is standing and is in a state of deterioration and disrepair, and is likely to fall, as the other two towers have already done. The other tower to be removed has fallen into the water and is mostly submerged at high tide. At the present time the towers serve no useful function for either the DoD or the USFWS. The standing tower is an attractive nuisance, drawing people onto the shore in spite of extensive signage indicating the extreme hazard of unexploded munitions. This is clearly a hazard to anyone on the tower or next to it. The third tower will not be removed because of its inaccessibility in the middle of the marsh and the disturbance to surrounding habitat that would result from dismantling and removal. The conclusions of this Environmental Assessment are based on an evaluation of the effects that the Proposed Action would have on the human environment as well as on local ecosystems.

This Environmental Assessment does not indicate any potential for the project, as proposed, to cause primary or secondary impacts, or any long term adverse effects on environmental, natural, or historical resources within the project vicinity. No significant beneficial effects would result from the No Action alternative; however, the standing tower structure would continue to be an attractive nuisance posing safety concerns at Plum Tree Island NWR.

Plants and animals in the project area have adapted to constant change caused by the natural forces of winds, waves, currents, and tides. Their populations combat burial and turbid conditions on a daily basis. Therefore, the temporary effects caused by project related impacts to biological resources, soils, wetlands, water quality, and other area resources are not expected to be significant. Recolonization by adjacent communities in affected areas is well documented. Impacts to endangered and threatened species and their habitat will be avoided.

The standing tower, as a resource eligible for listing in the National Register of Historic Places, would be adversely affected by its removal from Plum Tree Island. In order to comply with section 106 of the National Historic Preservation Act, consultation with DHR would continue in order to develop an appropriate mitigation plan for the adverse effect and develop a memorandum of agreement between the Norfolk District and DHR before the removal action would be implemented.

In summary, the expected impacts associated with the action as proposed are minor, of short duration, and will not create any significant or controversial adverse environmental effects; therefore, the preparation of an Environmental Impact Statement (EIS) is not considered to be necessary and a Finding of No Significant Impact (FONSI) will be prepared.

7. LIST OF PREPARERS, and AGENCIES and PERSONS CONSULTED

PREPARERS

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Tim Thompson, Archaeologist, Corps of Engineers, Norfolk District

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Cyrus Brame, U.S. Fish and Wildlife Service, Project Leader, Eastern Virginia Rivers NWR Complex

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Mike Drummond, U.S. Fish and Wildlife Service, Gloucester, VA, Endangered Species Specialist

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Appendix

Pertinent Correspondence



United States Department of the Interior

FISH AND WILDLIFE SERVICE



Eastern Virginia Rivers National Wildlife Refuge Complex

James River/Presquile/Plum Tree Island NWR Division

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Charles City, Virginia 23030-2844

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November 9, 2005

Craig Seltzer
U.S. Army Corps of Engineers
803 Front Street
Norfolk, VA 23510-1096

Dear Mr. Seltzer:

The U.S. Fish and Wildlife Service has the responsibility of protecting wildlife and the habitats needed by those species to nest, rest, feed, and raise their young within the properties of the National Wildlife Refuge System. In evaluating the Army Corps of Engineer's Building Demolition and Debris Removal Project at Plum Tree Island National Wildlife Refuge, we recognize that some impacts may occur as a result of these actions. To minimize the impacts on flora, fauna and ecological systems, we recommend both time-of-year and geographic restrictions be implemented during the demolition process. Please include these recommendations your decision-making process for selecting alternatives and developing the scope of work.

The fragile salt marsh and shore line along the Chesapeake Bay and Back River support a wide array of wildlife and vegetation. Some species may be impacted from project work. Of these species, there are several of special concern:

- Northeast Beach Tiger Beetle (*Cicindela dorsalis dorsalis*)
- Northern Diamondback terrapin (*Malaclemys terrapin*)
- American Oystercatcher (*Haematopus palliatus*)
- Short-billed Dowitcher (*Limnodromus griseus*)
- Seaside sparrow (*Ammodramus maritimus*)

Other species of concern that will not be greatly affected by any of the project alternatives, due to their wide range and mobility, are:

- American Bald Eagle (*Haliaeetus leucocephalus*)
- Peregrine Falcon (*Falco peregrinus*)
- Osprey (*Pandion haliaetus*)

The work design should be developed so these species are not impacted by the project.

SPECIES DETAILS

- The Beach Tiger Beetle utilizes the refuge beaches, in particular the transitional zone (the sand between high and low tides). Living larvae are laid in the sand and emerge as diminutive whitish beetles. Periods of the beetle's activity are from June 1st to September 15th.
- Some of the bird species of concern are believed to nest in the early spring on the refuge. The Oystercatcher nests in the upper portions of the sandy beaches by carving out a small indentation in the sand.
- The Short-billed Dowitcher and the Seaside Sparrow nest in marshy areas. The Seaside Sparrow nests in wet portions of medium high cordgrass. The Short-billed Dowitcher nests in depressions in grass and lines the nest with grass, leaves and twigs.
- The Northern diamondback terrapin nests during the early summer months on sandy dunes and upper beaches. Adults make frequent trips to water sources. Hatchlings emerge in late summer to early fall.

Given the activity of the species highlighted above, no activity should occur on the Refuge from May 15th until September 10th. In addition, beach compaction is a concern throughout the year.

PROJECT SUGGESTIONS

1. Removal of standing tower

The Service's recommendation is that the project be accomplished within the smallest footprint possible. We recognize that Alternative 2 will likely be preferred. However, to eliminate the amount of beach compaction, we ask that the ATV not be used. At one point, the work plan outlined travel up and down the beach, carrying debris to the barge located at deeper water a quarter mile southwest of the tower. Our suggestion is to manually transport the tower debris to a designated site immediately adjacent to the fallen tower and Back River. We also suggest that the tower be felled toward the nearest shoreline. At times of highest tide, a low draft boat/barge can shuttle the debris from the island to a barge parked in deeper water. The objective of this recommendation is to avoid compaction of the sand beach where tiger beetle larvae (instar) are over-wintering.

The Service will coordinate with the Corps and its contractors to designate appropriate routes of travel within the work zone and to monitor the presence of wildlife during the demolition period. Contracted labor must stay within the designated work zone.

As the tower is systematically cut with a torch, special care must be taken to assure sparks do not ignite the marsh grasses and other natural fuels. A plan for extinguishing fires quickly must be developed and followed.

Should the tower fall with minimal structural damage to the upper platform, measures should be taken to attempt to salvage the segment intact and transport to Messick Point. Regardless, portions of the tower will be collected, as determined by Service personnel, for historical interpretive uses.

2. Removal of the fallen tower in the bay

We presume that the fallen tower can be removed by crane due to the proximity to deeper water. If this is not the case, the tower should be cut with a torch at low tide and placed in a designated location until a boat can access the beach at high tide for removal. No activity should take place above the transitional zone (i.e., upper beach, dunes, and marsh).

By following these parameters the impact on wildlife, as a result of this project, should be minimal.

3. No action on the fallen tower in the marsh

The location of the marsh tower is adjacent to a stream in thick marsh and far from the shoreline. The impact of accessing the site, cutting-up the material, and transporting it out would prove highly invasive on the salt marsh and dune environments. Therefore we recommend leaving this tower in place, as long as the Corps has determined that it will not pose any threat of contamination to the marsh.

Thank you for the opportunity to comment on this important issue. Please contact me if I can be of further assistance.

Sincerely,

Cyrus Brame
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ACRONYMS

The following acronyms are relevant to this EA

ACC	Air Combat Command
AST	Above Ground Storage Tank
BMP	Best Management Practice
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CZMA	Coastal Zone Management Act
DCR	Department of Conservation and Recreation
DHR	Department of Historic Resources
DNH	Division of Natural Heritage
DPW/L	Directorate of Public Works and Logistics
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FNSI	Finding of No Significant Impact
HABS	Historic American Building Survey
HAER	Historic American Engineering Record
INRMP	Installation Natural Resources Management Plan
ICRMP	Installation Cultural Resources Management Plan
LAFB	Langley Air Force Base
NAVD 88	North American Vertical Datum 1988
NAS	Naval Air Station
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NPDES	National Pollution Discharge Elimination System
NRHP	National Register of Historic Places
SAVP	Stormwater Pollution Protection Plan
UST	Underground Storage tank
USC	United States Code
SHPO	State Historic Preservation Office
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
VADEQ	Virginia Department of Environmental Quality
VCRMP	Virginia Coastal Resources Management Program
VDNH	Virginia Division of Natural Heritage
VOC	Volatile Organic Compound
VPDES	Virginia Pollution Discharge Elimination System

