Nuclear Ship *Savannah* Decommissioning

Final Environmental Assessment and Finding of No Significant Impact

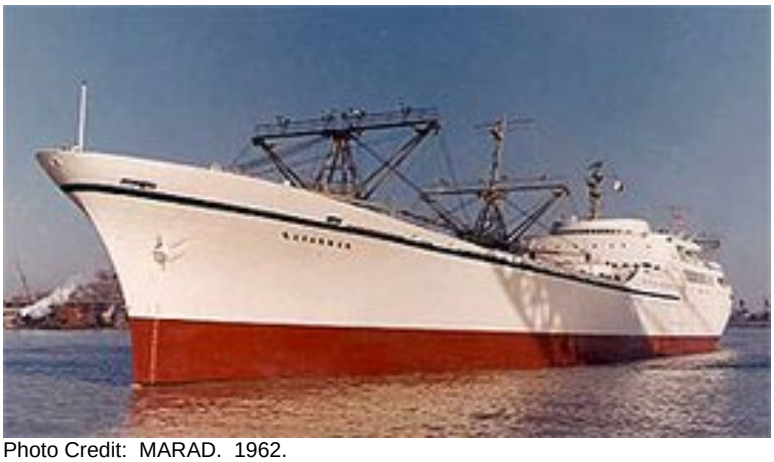

Photo Credit: MARAD. 1962.

Report No. STS-106

March 2008

Prepared for:
U.S. DOT Maritime Administration

Prepared by:
Environmental Engineering Division
Volpe National Transportation Systems Center
U.S. DOT Research and Innovative Technology Administration

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	February 2008	October 2005 – January 2008

4. TITLE AND SUBTITLE
Nuclear Ship *Savannah* Decommissioning – Final Environmental Assessment

5. FUNDING NUMBERS
MA20 CV616

6. AUTHOR(S):
Nicole Grewell[2], Carolyn Junemann[1], Adam Klauber[2], Erhard Koehler[1], Deirdre Morrissey[2], John Osborne[1], Paul Valihura[2], Dan Yuska[1], Arthur Paynter[1]

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
US Department of Transportation
Research and Special Programs Administration
John A. Volpe National Transportation Systems Center
55 Broadway
Cambridge, MA 02142

8. PERFORMING ORGANIZATION REPORT NUMBER
DOT _VNTSC_MARAD_06-01

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)
U.S. Department of Transportation
Maritime Administration
1200 New Jersey Ave, SE
Washington, D.C. 20590

10. SPONSORING/MONITORING AGENCY REPORT NUMBER
STS-106

11. SUPPLEMENTARY NOTES
[1]United States Maritime Administration, [2]John A. Volpe National Transportation Systems Center

12a. DISTRIBUTION/AVAILABILITY STATEMENT
This document is available to the public through the National Technical Information Service, Springfield, Virginia 22161

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

The Maritime Administration owns and maintains the Nuclear Ship *Savannah* (NSS), the world's first nuclear powered merchant ship. The NSS was powered by a pressurized water reactor (PWR) that was originally operated from 1962 to 1970, after which it was deactivated, defueled and partially decontaminated in accordance with the best practices of the day. In 2002, the Agency decided to re-evaluate its circa 1975 long-range decommissioning plan. Therefore, a planning process was initiated to determine the preferred end use of the vessel as well as consideration given for the decontamination and disposal of the remaining low-level radioactive material. The Agency has proposed to prepare the NSS for decommissioning, i.e. final nuclear decontamination, and is using the NEPA process to evaluate potential impacts of the alternatives. At this stage of the planning process, MARAD will be conducting an analysis of the proposed decommissioning of the NSS. Therefore, MARAD has decided to prepare an Environmental Assessment (EA), in accordance with the requirements of the NEPA, as amended (P.L. 91-190).

14. SUBJECT TERMS
National Environmental Policy Act, Environmental Assessment, environmental impacts, nuclear ship, decommissioning, nuclear waste

15. NUMBER OF PAGES
99

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified	Unclassified	Unclassified	Unlimited

Pages 2 through 5 Intentionally Blank

Table of Contents

Tables

Figures

List of Acronyms and Abbreviations

ACHP – Advisory Council on Historic Preservation
AM – Arithmetic Mean
BOD5 – Biological oxygen demand for 5 days test (water quality)
CAA – Clean Air Act of 1970
CAAA – Clean Air Act Amendments
CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS - Comprehensive Environmental Response, Compensation and Liability Information System
CEQ – Council on Environmental Quality
CFR – Code of Federal Regulations
CFC - Chlorofluorocarbon
CO – Carbon monoxide
CWA – Clean Water Act
CZMA – Coastal Zone Management Act
CBRA – Coastal Barrier Resources Act
DO – Dissolved oxygen
DOT – United States Department of Transportation
DCGL - Derived Concentration Guideline Level
EA – Environmental Assessment
EO – Executive Order
EPA – United States Environmental Protection Agency
EPCRA – Emergency Planning and Community Right-to-Know Act
HAER – Historic American Engineering Record
IMO – International Maritime Organization
JRRF – James River Reserve Fleet
MARAD – Maritime Administration
MARSSIM – Multi-Agency Radiation Survey and Site Investigation Manual
NAAQS – National Ambient Air Quality Standards
NAWQA – National Water Quality Assessment Program
NDRF – National Defense Reserve Fleet
NEPA – National Environmental Policy Act of 1970
NHPA – National Historic Preservation Act of 1966
NMFS – National Marine Fisheries Service
NOAA – National Oceanographic and Atmospheric Administration
NO_2 – Nitrogen dioxide
NPS – National Park Service
NRC – Nuclear Regulatory Commission
NSS – Nuclear Ship Savannah
O_3 – Ozone
OPA – Oil Pollution Act
OSHA – Occupational Safety and Health Administration
PAH – Polycyclic Aromatic Hydrocarbons
Pb – lead
PCB – Polychlorinated biphenyl
pH - Measure of the activity of hydrogen ions in a solution
ppm – Parts per million
PM – Particulate matter
PWR – Pressurized water reactor
RCRA – Resource Conservation and Recovery Act
RPV – Reactor Pressure Vessel
SDWA – Safe Water Drinking Act
SO_2 – Sulfur dioxide
TSCA – Toxic Substances Control Act

UFSAR – Updated Final Safety Analysis Report
U.S. – United States
USCG – United States Coast Guard
USFWS – U.S. Fish and Wildlife Service
USGS – United States Geological Survey
VOC – Volatile organic compound

1.0 PURPOSE AND NEED FOR ACTION

1.1. Introduction

The National Environmental Policy Act of 1969 (NEPA) and Council on Environmental Quality (CEQ) implementing regulations establish policies and procedures that ensure environmental information is available to decision makers, regulatory agencies, and the public before federal actions are implemented. NEPA enables a public process intended to help public officials make decisions based on an understanding of environmental consequences, and to take actions that protect, restore, and enhance the environment. Under the provisions of NEPA, federal agencies evaluate the effects of their Proposed Action on environmental and social resources.

The Maritime Administration (MARAD) owns and maintains the Nuclear Ship *Savannah* (NSS), the world's first nuclear powered merchant ship (see Figure 1-1). This vessel was constructed in the late 1950's as the centerpiece of President Eisenhower's *Atoms for Peace* program. After successfully meeting all program objectives, the NSS was removed from service in late 1970, and subsequently defueled in the fall of 1971. In 1973 MARAD concluded that the NSS would not be returned to service, thus rendering its November 1971 defueling the de facto permanent cessation of operations from the licensing standpoint. In 1975 the ship's nuclear facilities were rendered permanently inoperable, and all high-level radioactive components and material was removed. Decommissioning plans developed at the time contemplated placing the *Savannah* into a "mothballed" state for a minimum period of fifty years.

MARAD is currently reevaluating the vessel's disposition status, and has proposed to prepare the NSS for decommissioning. Thus, MARAD's Proposed Action under NEPA is to decommission the NSS. MARAD has come to the conclusion through preliminary scoping that there may potentially be both beneficial and adverse effects to the environment from decommissioning. However, it is believed that the potential negative impacts would not be significant. Therefore, MARAD has decided to prepare an Environmental Assessment (EA). If the decision is made to move forward with the decommissioning after the NEPA process is completed, specific decisions concerning the final disposition of the vessel may be made, along with the appropriate level of environmental review. MARAD, with the help of the Volpe National Transportation Systems Center, has prepared this EA in accordance with the requirements of the NEPA, as amended (P.L. 91-190).

1.2. Background

The NSS was powered by a pressurized water reactor (PWR) that was originally operated from 1962 to 1970. During its operational period (1962-1970), the NSS visited 32 domestic ports and 45 foreign ports, after which it was deactivated, defueled and partially decontaminated in accordance with the best practices of the day. In November of 1972, all 36 Core I spent fuel elements were transferred by the Atomic Energy Commission for reprocessing in South Carolina. All high level radioactive materials were removed at that time, including the fuel core, fuel assemblies, radioactive fluids, the majority of coolant and coolant pumps, demineralizer resins, and contaminated trash (MARAD 1994a). Additionally, any areas of remaining radioactivity were sealed and contained. From 1981 to 1994 the NSS was chartered to the State of South Carolina for public display at the Patriots Point Naval and Maritime Museum. In July 1994 the ship was relocated to the MARAD James River Reserve Fleet (JRRF) site for long-term retention after a three week drydocking and topside repair availability in Baltimore, MD. Although rendered permanently inoperable in 1975, the NSS continues to be regulated under a possession-only license by the United States Nuclear Regulatory Commission (NRC) under 10 CFR Part 50 as a power generation reactor (license number NS-1 and Docket Number 50-238).

In 2002, MARAD decided to consider final disposition of the vessel. Therefore, a planning process was initiated to determine the best end use of the vessel as well as consideration given for the decontamination and disposal of the remaining low-level irradiated material. In 2006 the NSS was removed from the JRRF for a topside maintenance availability, preparatory to drydocking. After an

interim period of layberthing, the NSS was drydocked in early 2008 for routine hull maintenance and preservation. The NSS will be placed at a long-term layberth following the drydocking availability.

At any retention site, including the JRRF, the vessel is locked, alarmed, and patrolled. Radiological surveillance and monitoring is performed regularly to ensure public health and safety. According to a recent radiochemical analysis performed on the NSS in 2005, the NSS's reactor pressure vessel (RPV) and internals package meet the radiological classification requirements of the NRC and the States of Utah and South Carolina for a Class A waste package, the lowest classification of low-level radioactive waste (WPI 2005). Common maintenance activities, including layberthing and drydocking, take place periodically to ensure the vessel's safe upkeep. If the decision is made to implement decommissioning after the NEPA process is completed, the NSS would be towed from the retention location to a decommissioning location.

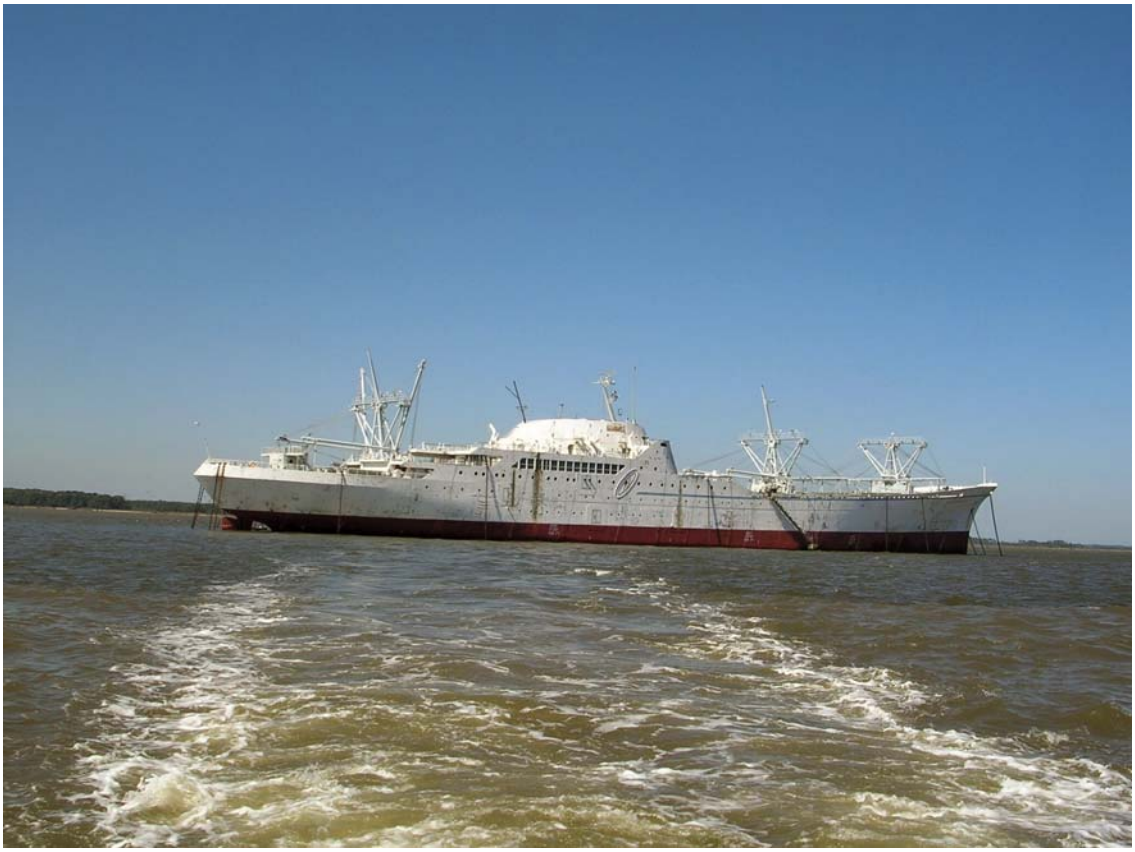

Photo Credit: Paul F. Johnston. Smithsonian Institution. 2005.

Figure 1-1. The *Savannah* moored in JRRF.

Photo Credit: unknown, 2005.

Figure 1-2. A commercial ship in the James River shipping channel passing inboard of the *Savannah*.

1.3. Purpose and Need

The NSS has been in an inactive "mothballed" state for the past thirty three years. As stated previously, the initial lay-up of the NSS completed in 1971 rendered the NSS inactive via cessation of power and de facto permanent defueling. By 1975 MARAD completed initial nuclear mothballing actions on the NSS under the supervision of the NRC. These activities were among the earliest examples of nuclear facility deactivation. Since that time, much experience has been gained, and more specific requirements have been outlined by NRC for the safe storage of nuclear facilities. The NRC completed a Generic Environmental Impact Statement (GEIS) on the decommissioning of nuclear facilities in 1988, along with a supplemental document in 2002, which identified three decommissioning options, all with less than significant impacts: DECON, SAFSTOR, and ENTOMB (NRC 1988, 2002).

As such, the purpose of this federal action is to reevaluate the status of the NSS and to consider decommissioning options for the vessel. The need for this action arises since there has been a long period of inactivity during which new recommendations for decommissioning have been created. During the period of inactivity that has passed under protective storage, the remaining radioactivity within the NSS has substantially decreased. Therefore, MARAD is prepared to consider complete decommissioning of the NSS in the near future. Additionally, completing the decommissioning according to current NRC recommendations would also enhance public health and safety. MARAD would like to terminate their license with NRC. Therefore, MARAD is using the NEPA process to help determine whether to decommission the vessel and the potential impacts of that action.

1.4. Updates to the Final Environmental Assessment

The Final Environmental Assessment will be updated, as appropriate, when significant decommissioning activities are completed. For example, when the initial site characterization activities and Historical Site Assessment are completed, an updated Final Environmental Assessment may be appropriate.

2.0 ALTERNATIVES

The Proposed Action by MARAD is to decommission the NSS. MARAD initially considered various alternatives for the decommissioning of the NSS. After initial analysis, two of these alternatives were selected to be analyzed herein: 1) decommission via NRC's "DECON" method, and 2) decommission via NRC's SAFSTOR method. Other alternatives were considered, but were dismissed as not practicable.

NRC Regulations at 10 CFR 50.82(a)(3) require all licensed nuclear power reactors to complete decommissioning and license termination within sixty (60) years of permanent cessation of operations. For the NSS the effective end date for decommissioning under this regulation is November 2031.

The NSS was drydocked for hull preservation and regular maintenance in January - April 2008. After drydocking, the vessel would be towed via an established maritime route to a layberth and a facility for subsequent decommissioning. The decommissioning would occur at an industrial facility that has the capability, or subcontractor support, to complete the decommissioning work as required by NRC in accordance with all appropriate environmental regulations. While no selection has been made at this time, the prospective industrial facility will be located at a port along the U.S. Atlantic coast. Examples of such ports include the following: Baltimore, MD; Hampton Roads, VA; and Charleston, SC. These locations will be used to represent the range of potential locations that could be selected to complete the work. As such, these locations will be examined in further detail in the affected environment and environmental consequences sections.

2.1. DECON Decommissioning Alternative

The NSS has essentially been in an inactive and inoperable state since it was defueled in 1971, and mothballed in 1975, which has allowed any remaining radioactivity within the vessel to decay over this time. Under this alternative, MARAD would undertake the NRC's "DECON" method to fully decommission the NSS. According to the NRC's guidance on decommissioning (2000), completing DECON means removing or decontaminating the equipment, structures, and portions of the facility and site that contain radioactive contaminants to achieve a level that permits termination of the license after cessation of operations. Therefore, completing DECON on the NSS would remove the remaining low-level radioactive materials. After NRC approval and license termination, this alternative would allow MARAD to proceed with final disposition of the ship.

If the DECON alternative were selected, appropriate facilities would be selected to complete the work (including waste removal, transport, disposal). At that time, the appropriate site-specific environmental review will take place. Decommissioning of the NSS would be completed in accordance with NRC Regulatory Guide 1.184, Decommissioning of Nuclear Power Reactors. This action would permanently remove the remaining low-level radioactive material to levels that would permit the termination of the NSS's NRC license (NS-1).

2.1.1 Waste Removal

Decommissioning activities within the industrial facility will be completed within engineered systems designed to physically isolate the vessel, and to control potential emissions to the human and natural environment. Additionally, the industrial facility will be equipped with waste management infrastructure that provides the necessary support to properly complete the decommissioning (Godoy 2003). No significant facility new construction is expected to be undertaken for this action (beyond those industrial safety related systems required to support decommissioning activities such as ventilation, fire suppression, etc.); however, some construction may be expected on the ship itself.

Currently, only low-level radioactive waste remains on the NSS to be decontaminated. According to the NRC (2005), low-level radioactive waste can include different types of materials, such as filters, cleanup rags, lab supplies, and discarded protective clothing. Most radioactive waste from a nuclear power plant

is low-level; additionally, hospitals and universities also generate low-level radioactive waste. Table 2-1 illustrates how low-level radioactive waste compares to the other classes of radioactive waste.

Table 2-1. Types of Radioactive Waste

Type of Waste	Low-Level				High-Level	Transuranic
Class	A	B	C	GTCC		
Examples	Paper, rags, tools, clothing, filters, reactor coolant, resins, contaminated materials, (A being the lowest class, GTCC the highest)				Spent fuel, fission products, uranium ash	Any waste with alpha-emitting transuranium (from elements heavier than uranium) radionuclides with half-lives greater than 20 years
Radioactivity level	Short-lived (usually less than 100 years)				Long-lived (maybe more than 1000 years)	Long half life but not high radioactivity

Source: NRC 2005

The principle sources of low-level radioactive wastes from nuclear power plants are the reactor coolant (water) and components and equipment that come in contact with the coolant. Low-level radioactive waste does not include spent fuel from the reactor fuel assembly (NRC 2005). In the NSS, all but the low-level radioactive waste has been removed. Additionally, all resins and most of the coolant have already been removed. Final nuclear decommissioning activities for the NSS would include removing the remaining sources of radioactivity. During decommissioning, any remaining large components would be removed, along with any activated metal and/or remaining contamination in other sealed areas (MARAD 2003). A general overview of actions that may take place for the decommissioning of the NSS include disconnecting the reactor pressure vessel (RPV) and its ancillary components (e.g., piping, valves, pumps) within the containment vessel. The RPV and components would then be lifted out of the containment vessel one piece at time, while the RPV itself will be left intact and removed as a single lift. The RPV and components would then be enclosed in appropriate protective cases located onboard the NSS. Lastly, the encased RPV and components will then be lifted off the NSS and placed on an appropriate transport vehicle for transit to the final depository (MARAD 2006a).

2.1.2 Waste Transport

The low-level radioactive waste material would be transported to a disposal location via secure methods and routes typically used to ship low-level radioactive material. NRC and DOT regulate the transport and disposal of radioactive waste, and have specific regulations for shipping and planning for potential accidents. Class A waste is typically shipped in DOT Type A containers, which are strong and appropriate for carrying such materials. Trucks and tractor-trailers, as well as railways and barges, are typically used to transport low-level radioactive wastes, and are placarded to comply with DOT requirements to indicate that hazardous materials are contained within the waste packages. Waste transporters are trained and licensed for the safe handling and transport of these materials. Additionally, local agencies and states have emergency response plans in place in case of accidents (NEI 2006).

2.1.3 Waste Disposal

The packaged low-level radioactive waste removed from the NSS will be disposed of according to Federal regulations and applicable state regulations at an approved facility that accepts Class A waste. Both NRC and individual states govern the operations of waste disposal sites, under strict requirements provided by NRC to protect human health and safety. NRC requirements provide that a site be isolated from water sources, areas of geological activity, and natural resources (NEI 2004).

Potential licensed waste sites capable of receiving waste from the NSS waste include Clive (Energy*Solutions*), Utah (see Figure 2-1), and Barnwell County (Energy*Solutions*), South Carolina (see Figure 2-2). Energy*Solutions'* Clive Operations is licensed by the State of Utah Division of Radiation Control and regulated under Utah Code Title 19 Chapter 3, while the Barnwell Low-Level Radioactive Waste Disposal Facility operates under Radioactive Material License 097 issued by the South Carolina Department of Health and Environmental Control. Due to the nature of the waste handled, these types of facilities are heavily studied and their environmental conditions (i.e. air, water, vegetation, and soil) are well monitored (Energy*Solutions*, undated). It is expected that the site chosen for the disposal of NSS waste, should decommissioning occur, would be similar to the above, if not one of the sites described. Once the NSS is fully decontaminated and all radioactive contaminants above clearance criteria have been removed, the vessel would be towed, if necessary, to its final disposition destination, using established marine routes.

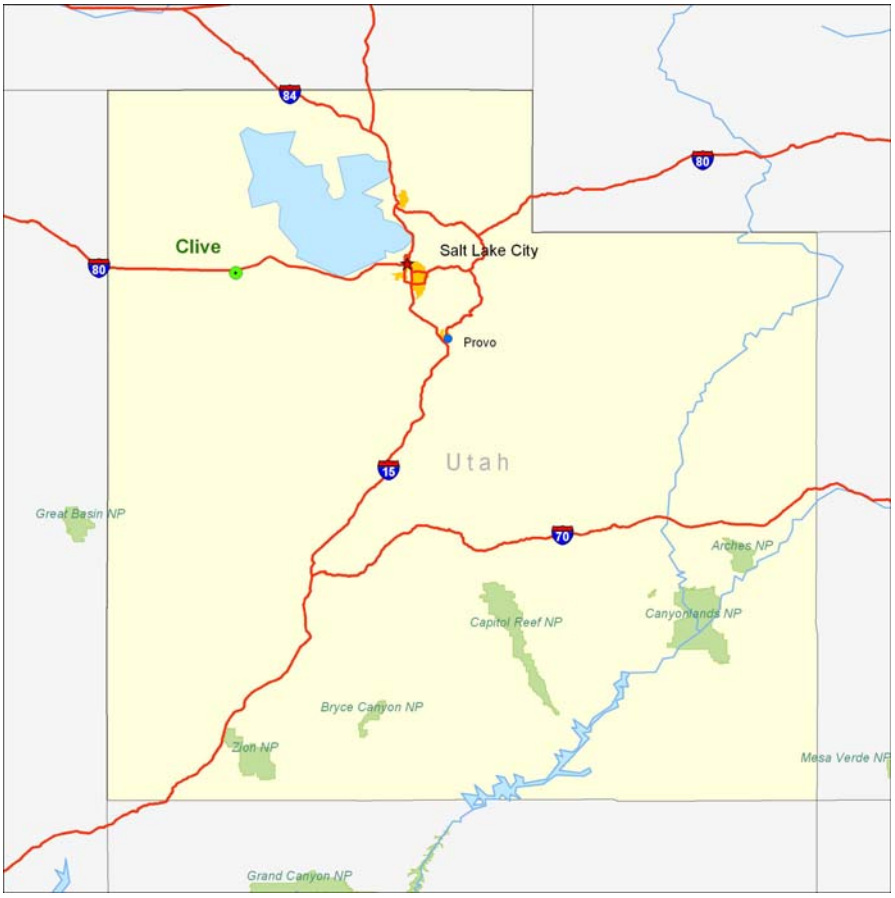

Figure 2-1. Location of Clive Operations.

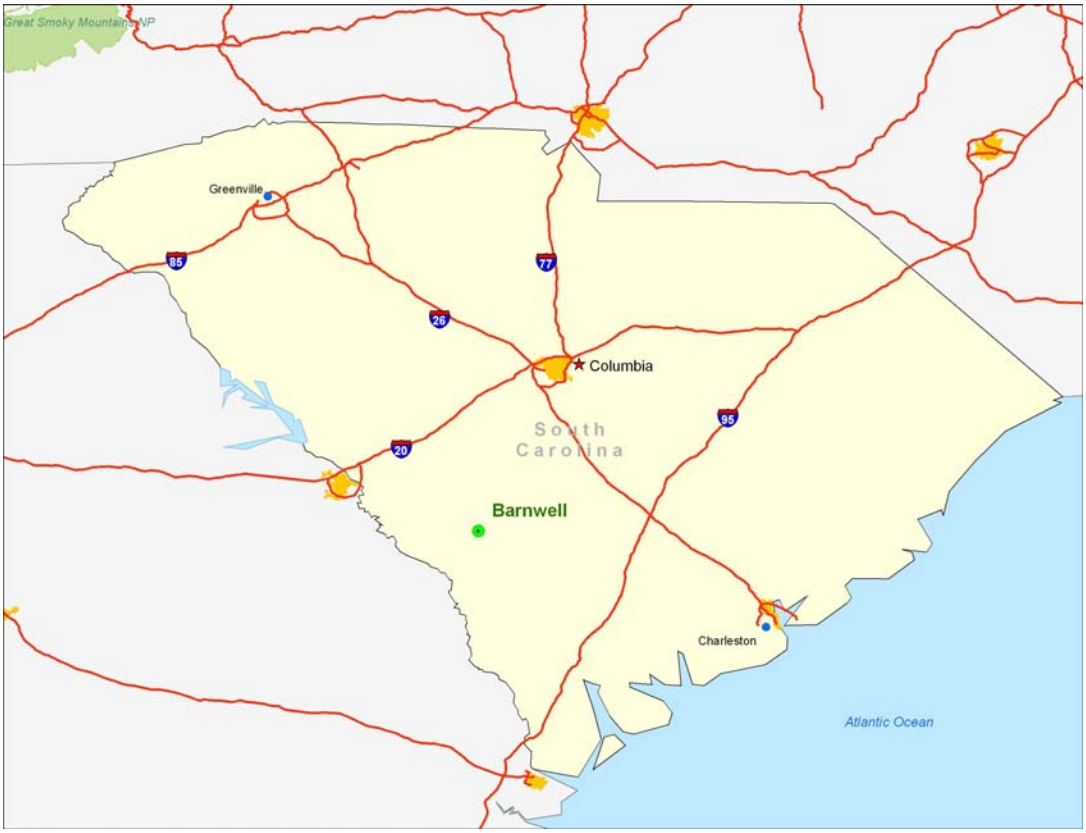

Figure 2-2. Location of the Barnwell Low-Level Radioactive Waste Disposal Facility.

2.2. SAFSTOR Decommissioning Alternative

The NRC decommissioning guidance suggests a second alternative to consider, SAFSTOR. Undertaking SAFSTOR places a facility in a safe, stable condition and maintains that state until the facility is subsequently decontaminated and dismantled to levels that permit license termination. During SAFSTOR, a facility is left intact, but the fuel is removed from the reactor vessel and radioactive liquids are drained from systems and components and then processed. Radioactive decay occurs during the SAFSTOR period, thus reducing the levels of radioactivity in and on the material and potentially the quantity of material that must be disposed of during decontamination and dismantlement (NRC 2002).

SAFSTOR is a time-flexible decommissioning choice compared to DECON. According to NRC regulations (10 CFR 50.82) the NSS nuclear facility license must be terminated within 60 years after the cessation of operations. Therefore, the NSS must complete DECON by the year 2031. SAFSTOR is a decommissioning method that permits a licensee to make use of the allowable 60 year time period between cessation of operations and license termination. Following the storage period, the facility would need to be decontaminated and dismantled to radiological levels that allow termination of the license. During the prolonged period of storage, NSS would undergo continued maintenance, security, and surveillance. In 2008 concerns regarding the SAFSTOR approach include future uncertainties about the availability and cost of LLW disposal sites, and the availability of an industrial capacity for decommissioning within the nuclear industry, both of which could mean higher costs for decontamination and dismantlement. Future LLW disposal site concerns were previously expressed by the NRC (NRC 2002).

As stated previously, the NSS was dry-docked for hull preservation and regular maintenance in January - March 2008. After drydocking, the vessel would be towed via an established maritime route to a layberth and a facility for subsequent decommissioning. MARAD performed initial mothballing work on the NSS in

1975, and prepared the vessel to rest in protective storage; therefore, the fuel and other high-level radioactive materials have already been removed. MARAD effectively completed many of the steps to prepare the vessel for SAFSTOR during that time, but fell short of the full range of NRC SAFSTOR criteria, including removal of low-level nuclear material, since SAFSTOR had not been formally defined at that time. In fact, the NSS mothballing was one of the earliest U.S. deactivation efforts, and provided experience that contributed to subsequent SAFSTOR development. Since the initial mothballing was completed before SAFSTOR guidelines were created, additional tasks are now necessary to comply with contemporary SAFSTOR requirements for continued long-term retention, including the following (Areva 2007):

- Performing a detailed historical site assessment. This assessment will follow current regulatory guidance in the *Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM)*. It will consider all available data on radiological and hazardous contaminants and is expected to entail a "reunion" of former crewmembers to help gather as much information relevant to the decommissioning as possible.
- Developing derived concentration guideline levels (DCGLs) for residual radioactivity. MARAD anticipates that these DCGLs will be developed using the RESRAD-Build computer code to support the regulatory standards for unrestricted release.
- Characterizing the ship for residual radioactivity. The characterization program will follow MARSSIM guidance. Hazardous and toxic contaminants will also be addressed.
- Making safety improvements. These activities will involve improving access to and egress from several areas, verification of electrical system safety, removal of hazardous substances (such as residual CRD system hydraulic oil), and removal or mitigation of hazardous and toxic materials.
- Improving ventilation in radiologically controlled areas. This will include the containment vessel.
- Further draining of the primary coolant system. Approximately 1450 gallons of coolant water remain the system. As much as possible of the remaining water will be drained, solidified, and disposed of as low-level radioactive waste.
- Removing a limited amount of contaminated equipment. Equipment to be removed will include the three buffer seal charge pumps and piping associated with these pumps.
- Reducing radiologically controlled areas. Selected areas – such as the health physics lab and the hot chemistry lab – will be released from radiological controls.

As stated above, a small amount of low-level radioactive material was left in the coolant system and must be removed, in addition to a limited amount of contaminated equipment. The amount of low-level radioactive material required to be removed under this alternative would be less than that is required under DECON. All activities for SAFSTOR would be accomplished according to MARAD's SAFSTOR Plan (Areva 2007) in accordance with NRC requirements. Current best practices include using MARSSIM for planning and evaluating compliance with NRC regulations. Any low-level radioactive material that is removed in compliance with SAFSTOR guidelines will be transported and disposed of as described under the DECON alternative; or packaged and retained in secure storage onboard the ship until DECON activities are undertaken.

There are several advantages to using the SAFSTOR option of decommissioning. Most predominantly, pursuing this action will bring the NSS up to current safety standards under NRC regulation. A SAFSTOR effort will also significantly improve the quality and capacity of MARAD to function as a competent and compliant licensee. The range of SAFSTOR activities planned is substantially a prerequisite to a full DECON effort, meaning that selection of SAFSTOR now does not preclude a later adjustment to DECON.

A typical SAFSTOR decommissioning action taken at cessation of operations allows for substantial radioactive decay to reduce the radiological waste inventory during the SAFSTOR retention period. On the NSS, substantial decay has already occurred over the years that have passed under protective storage, and some amount of additional radioactive decay would continue with additional time under SAFSTOR. Allowing time for further decay in turn could also mean that there would be potentially less radioactive waste, and therefore, less waste-disposal space would be required (NRC 2002). However, on the NSS the time allowed for further decay would only create diminishing returns, since the high level

waste has been removed and only low level radioactive waste remains which has been already been decaying over the past 30 years. Thus, decay time is not a factor for MARAD in making this decommissioning decision.

Typical ongoing activities that would need to continue for the safe keeping of the NSS during SAFSTOR storage include performing at least the following tasks:

- Preventative and corrective maintenance on plant systems that will be operating and/or functional during storage.
- Maintenance to preserve structural integrity.
- Maintenance of security systems.
- Maintenance of radiation effluent and environmental monitoring programs.
- Processing of any radioactive waste generated (usually small amounts).
- Physical preservation of records and technical data.

Most of the ongoing activities required would be performed at the retention site. However, certain maintenance activities may need to be performed at industrial facilities, in which case the NSS would be towed to the appropriate port facility. Any maintenance completed would be performed according to NRC guidance and in compliance with all relevant regulations to protect safety and the environment.

The SAFSTOR Alternative would require MARAD to maintain its license with NRC, as well as to continue regular maintenance and surveillance of the NSS over an extended period of retention. Such retention would be accomplished in full compliance with current NRC guidelines and regulation. Choosing the SAFSTOR alternative and deferring DECON would increase the future cost of DECON activities, with the introduction of cost uncertainties related to future industrial decommissioning capacity and LLW disposal site availability. However, it would provide a substantial improvement in MARAD's competency and capacity as a licensee, and would allow MARAD to pursue DECON at any time following completion of SAFSTOR activities.

2.3. No Action Alternative

As required by NEPA, this alternative will be analyzed in the document as the basis for comparison with the other alternatives. Under this alternative, the low-level radioactive materials would not be removed from the NSS. The NSS was dry-docked for hull preservation and regular maintenance in January 2008. After drydocking, the NSS would be returned and moored at the JRRF or layberthed until decommissioning can occur at a later date. All monitoring, surveillance, security and radiological testing activities for the NSS would resume. These activities are currently necessary (and would continue to be should this alternative be selected) to ensure that the NSS continued to be moored in a safe estate, and to ensure that the NSS does not pose a risk to the environment or human health and safety. Regular maintenance and inspections would resume in order to maintain the structure and upkeep of the vessel; topside repair and drydocking activities would also be undertaken, as necessary, under this alternative. These activities would be accomplished as previously prescribed and performed by MARAD in accordance with ship operations plans with consideration to EPA and OHSA laws and guidance.

The No Action Alternative would allow MARAD the option to reconsider DECON, SAFSTOR and other alternatives at a later date. However, under the No Action Alternative MARAD would fail to comply with current NRC guidance for the safe keeping of nuclear facilities. It would also require MARAD to maintain its license with NRC, as well as to continue the regular maintenance and surveillance of the NSS. Consequently, the No Action Alternative does not meet MARAD's purpose and need for action.

2.4. Alternative Initially Considered but Dropped from Further Analysis: ENTOMB Decommissioning Alternative

According to NRC's NUREG-0586, Final Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities (NRC 1988), ENTOMB is the complete isolation of radioactivity from the environment

by means of massive concrete and metal barriers until radioactivity has decayed to levels which permit unrestricted release of the facility and thereby termination of the license. If this alternative were selected, the NSS would be placed in a permanent location and all radioactive material and/or radioactive areas would be encased in barriers to prevent the escape of radioactivity and any deliberate or inadvertent intrusions to the property.

ENTOMB is typically considered for nuclear power facilities that contain high-level nuclear material and massive concrete and metal barriers for long-term storage are an inexpensive solution compared to disassembly and decontamination. The NSS has only low-level nuclear material and permanently encasing this material following ENTOMB protocols would be an excessive action. Additionally, extra precaution and cost would be necessary by MARAD for long-term storage upkeep and maintenance to ensure the NSS would remain afloat compared to a land based facility. More importantly, ENTOMB does not achieve MARAD's plan to place the NSS in a practicable decommissioned state and to allow license termination. Therefore, this alternative was eliminated from further analysis.

2.5. Comparison of the Alternatives

Table 2-2 below compares the potential consequences of the Proposed Action Alternative and the No Action Alternative. Even though the No Action Alternative does not meet the purpose and need established by MARAD, it was analyzed to provide a baseline against which to compare the alternatives.

Table 2-2. Environmental Consequences of Alternatives

Impact Category	No Action Alternative	DECON Alternative	SAFSTOR Alternative
Air Quality	Minimal short-term adverse impacts	Minimal short-term adverse impacts	Minimal short-term adverse impacts
Water Quality	Minimal adverse impacts	Negligible adverse impacts	Minimal adverse impacts
Navigation	Negligible to no adverse impacts	Negligible to no adverse impacts	Negligible to no adverse impacts
Hazardous Materials	Minimal adverse impacts	Minor adverse impacts	Minimal adverse impacts
Public Health and Safety	Negligible adverse impacts	Minor adverse impacts	Negligible adverse impacts
Socioeconomics and Environmental Justice	No disproportionate impacts	No disproportionate impacts	No disproportionate impacts
Coastal Resources	Minimal adverse impacts	Minimal adverse impacts	Minimal adverse impacts
Wildlife and Vegetation	Minimal adverse impacts	Minimal adverse impacts	Minimal adverse impacts
Section 106 Resources	No impacts	Minor adverse impacts, potential beneficial impacts	Minimal adverse impacts
Section 4(f) Resources	No impacts	Minor adverse impacts, potential beneficial impacts	Minimal adverse impacts

3.0 AFFECTED ENVIRONMENT

3.1. No Action Project Area Description

Under the No Action Alternative, the NSS would be returned to the reserve fleet after layberthing. The NSS would continue to be maintained at its retention site at the JRRF (see Figure 1-1), in accordance with the decommissioning plan developed by the Office of Advanced Ship Development in 1975. At the end of January 2008 the JRRF contained 44 moored ships; 38 of which are within the MARAD inventory designated for disposal. The JRRF is located on the James River in southeastern Virginia. The JRRF is approximately 30 miles upstream from the Chesapeake Bay in Norfolk, VA, and is approximately 45 miles from the Atlantic Ocean. The site is leased from the U.S. Army Transportation Center, Fort Eustis. The vessels assigned to the JRRF are anchored in an approximately one square mile area on the James River near Fort Eustis. The vessels are anchored together in rows in a bow-to-stern alignment according to type and size. The land-based facilities of the JRRF are located at Fort Eustis and consist of buildings and sheds that provide administrative and support services to the fleet (MARAD 1994b). Fort Eustis is described in further detail in the affected environment as a typical industrial facility under the Proposed Action.

3.2. Proposed Action Project Area Description

The decommissioning of the NSS is a multi-step process that would involve several locations. First, the vessel would be towed from drydocking to the place of decommissioning via established navigation routes. Secondly, the decommissioning would occur at an industrial facility that has the existing capability, or subcontractor support, to complete the decommissioning work as outlined by NRC in accordance with all federal regulations (including NUREG-1757). The industrial facility that is eventually selected will most likely be located on the east coast of the U.S. Examples of city ports with industrial facilities (Baltimore, Hampton Roads, and Charleston) will be discussed throughout this section to further elucidate the affected environment at a port facility. However, once a port selection is made, the appropriate level of specific environmental analysis will occur to supplement this document. After the decommissioning is completed, the third area potentially affected by the Proposed Action would be the transportation corridor (be it highway, railway, or maritime) through which the low-level radioactive material will travel to its ultimate burial. Lastly, two potential waste sites are being considered to receive and dispose of the low-level radioactive material: Barnwell County, SC, and Clive, UT.

The Affected Environment covers a variety of typical disturbed areas, such as navigation routes, ports, industrial facilities, transportation routes, and waste disposal sites. The Affected Environment will be organized by resource with attention to attributes of all potential project locations for both the no action and Proposed Action. Because this is a marine-related activity, navigation will be considered. Other transportation involved with the Proposed Action is expected to be minimal. Therefore, transportation will be analyzed throughout this analysis through the consideration of waste transport itself, and any potential impacts to other resource categories it may cause.

3.3. Physical and Human Environment

3.3.1 Air Quality

EPA defines ambient air in 40 C.F.R. §50.1 as “that portion of the atmosphere, external to buildings, to which the general public has access.” In compliance with the 1970 Clean Air Act (CAA) and the 1977 and 1990 Clean Air Act Amendments (CAAA) 42 U.S.C. §7401 *et seq.,* EPA promulgated the National Ambient Air Quality Standards (NAAQS) for the protection of the public health and welfare, allowing for an adequate margin of safety. To date, EPA has issued NAAQS

for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO_2), particles with a diameter less than or equal to a nominal 10 micrometers (PM_{10}), ozone (0_3), nitrogen dioxide (NO_2), and lead (Pb). An area that has air quality as good as or better than the national ambient air quality standards is termed as being in "attainment." An area with air quality poorer than the national ambient air quality standards is termed as being in "non-attainment." An area may be in an attainment area for one pollutant and a non-attainment area for others.

General trends across the U.S. have shown an improvement in air quality. Nationally, PM_{10} concentrations have decreased 31% since 1988. Programs aimed at reducing direct emissions of particulates have played an important role in reducing PM_{10} concentrations, particularly in western areas. Direct emissions of PM_{10} have decreased approximately 25% nationally since 1988. $PM_{2.5}$ concentrations have also decreased 10% nationally since 1999. With the exception of the Northeast, the most regions posted modest declines in $PM_{2.5}$ from 1999 to 2003. A variety of local and national programs have resulted in a 5% decrease in estimated direct emissions of $PM_{2.5}$ over the past 5 years (EPA 2004a). Considering the six criteria pollutants, EPA's most recent Air Trends Report (2003) found that from 1970 to 2003, total emissions of the six principal air pollutants dropped by 51 percent. Additionally, from 1990 to 1999, air toxics emissions have declined by 30% (EPA 2004b). The decommissioning will most likely occur in a heavily urbanized area on the east coast of the U.S. These areas frequently have less clean air quality than more pristine areas due to heavy traffic and other emissions sources.

Industrial ports along the Atlantic coast are usually urbanized, but still may vary in air quality. For example, the Hampton Roads/Fort Eustis area is heavily urbanized, and is a designated maintenance area for O_3. This means that Hampton Roads/Fort Eustis area was previously designated in nonattainment for O_3, but is currently attaining the NAAQS and is subject to a maintenance plan. Hampton Roads/Fort Eustis is in attainment for all other criteria pollutants. Baltimore also has higher ozone levels; the city is in nonattainment for both O_3 and $PM_{2.5}$. Charleston, however, has better air quality and is in attainment of all standards.

3.3.2 Water Quality

There are two primary Federal regulations that ensure the protection of water resources: the Safe Drinking Water Act (SDWA) and the Clean Water Act (CWA). The SDWA emphasizes the protection of drinking water resources specifically, and pollution prevention strategies. The CWA focuses on eliminating pollutant discharge into source waters. In accordance with the CWA, EPA has developed national recommended water quality criteria for priority pollutants in ambient water for the protection of aquatic life and human health (EPA 2004c). These criteria have been adopted as enforceable standards by most states. States and Tribes may adopt policies and provisions regarding water quality standards implementation, such as mixing zone, variance, and low-flow policies. Such policies are subject to EPA review and approval (EPA 2005).

Section 305(b) of CWA requires states to report biennially to EPA on the quality of its waters. In general, the 305(b) report describes the quality of surface waters, groundwater, and wetlands and existing programs to protect water quality. Information is presented on how well a water source supports its designated uses (e.g., swimming, aquatic life support, water supply) as well as likely causes (e.g., sediment, nutrients) and sources of impairment. These data related to the sources are presented to give a general, overall picture of the relative contribution made by different categories of pollution on a statewide and river basin basis.

The National Water Quality Assessment (NAWQA) Program, under the U.S. Geological Service, indicates that the Nation's waters generally are suitable for irrigation, drinking water supply, and other home and recreational uses. Major challenges that continue to affect streams and ground water in parts of every study unit include point and non-point sources of pesticides, nutrients, metals, gasoline-related compounds, and other contaminants. Findings from the 51 watershed areas examined show that contamination of streams and ground water is widespread in agricultural and urban areas, and contamination is characterized by complex mixtures of

nutrients, trace elements, pesticides, VOCs, and their chemical breakdown products. The study also found that water quality and aquatic-ecosystem health are controlled by a combination of factors, including chemical use, land use, land-management practices, and natural features, such as geology, hydrology, soils, and climate (USGS 2004).

Water quality is monitored using physical, chemical, and biological measurements. Standard indicators reveal the health of a water body. Some key water quality indicators include:

- **Dissolved Oxygen**: oxygen in water essential for the survival of aquatic and marine organisms. Dissolved oxygen (DO) can vary due to natural daily and seasonal cycles. Pollution can also cause a decrease in DO.
- **Biochemical Oxygen Demand**: the biochemical oxygen demand for the 5 days (BOD5) test indicates the quantity of biologically oxidizable carbon and nitrogen in a certain body of water. Decomposing matter uses DO can reduce the oxygen available for organisms. The quantity of BOD5 discharged from point sources is regulated via permits to maintain dissolved oxygen standards.
- **pH**: is the measure of hydrogen ion concentration. A low pH indicates "acidity," high pH values are "basic," and a pH of 7 is neutral. High pH levels are often associated with high phytoplankton (algae) densities, which can be detrimental to other organisms.
- **Fecal Coliform Bacteria**: type of bacteria present in the digestive track and excrement of all warm-blooded animals. While the bacteria may not be harmful, its presence may indicate that the water carries pathogenic microbes. Proper waste treatment and disposal reduces this type of pollution
- **Nutrients**: human use of certain chemicals can increase oxygen-consuming materials into water. The most common of these materials are the fertilizers phosphorus and nitrogen. Discharges of these two fertilizers increase algal blooms decreasing dissolved oxygen and increasing pH.
- **Turbidity**: decreases the light penetration of water. Clay, silt, and fine organic and inorganic matter causes sunlight to scatter and be absorbed instead of reaching lower levels in the water column. Increased turbidity can indicate increased erosion/run-off from land. Drinking water has turbidity limits and water bodies with high turbidity will be less biologically productive.
- **Heavy metals**: human activities increase the concentration of materials such as cadmium, copper, lead, and mercury above naturally occurring levels. These metals can be harmful to humans and wildlife.

Water quality in major ports throughout the U.S. tends to be less pristine than surrounding areas. Normal port operations involve many activities, some of which may adversely affect water quality through discharging of waste water, dredging, or accidental leaks of toxic substances (NRDC 2004). For example, the Elizabeth River watershed, in which the port of Hampton Roads is located, is considered the most highly polluted body of water in the Chesapeake Bay watershed (Alliance for the Chesapeake Bay 2006). An assessment of contaminant levels in the surface waters of Fort Eustis was conducted in conjunction with an evaluation of the public health effects of contaminants at EPA National Priorities List (NPL) sites. Fort Eustis was proposed for EPA NPL in January 1994 and listed in December 1994 (CDC 1996). The site was listed due to contamination of sediments and nearby waters with PCBs, chlordane, dichlorodiphenyldichloroethane (DDD), dichlorodiphenyldichloroethylene (DDE), DDT, other pesticides, Pb, and PAHs. However, water quality analysis on the adjacent Skiffes Creek showed that dissolved oxygen and other criteria met Virginia standards (Tetra Tech 1999).

Baltimore Harbor was identified as impaired by toxic substances, nutrients, and suspended sediments. In 1998 the impairment listings were refined to include specific impairing substances and increased spatial resolution based on an analysis of bulk sediment contaminant concentrations compared to non-regulatory screening values. As a result, the Inner

Harbor/Northwest Branch was listed for fecal coliform, chromium, zinc, lead, and polychlorinated biphenyls (PCBs) (Maryland Dept. of Environment 2005).

The Charleston Harbor area was found to have high concentrations of nickel in 1998. The recording station near the Mount Pleasant wastewater plant discharge has recorded decreasing concentrations of total nitrogen, suggesting improving conditions for this parameter. At the Fort Johnston Pier, there is a decreasing trend in nitrogen and an increasing trend in fecal coliform concentrations. The last station, near the Fort Johnston quarantine station, has recorded increasing trend in suspended solids as well as detection of diethyl phthalate. In addition mercury was detected in sediments at this location below a median effects range level (SCDHEC 1999).

3.3.3 Vessel Traffic and Navigation Channels

Navigation in U.S. waters is governed by the United States Coast Guard (USCG). The USCG's Inland Rules apply to inland U.S. waters while the International Rules apply to all vessels upon the high seas and in all waters connected therewith navigable by seagoing vessels.

MARAD undertakes a large number of navigation safety measures in the process of preparing vessels for tows. Standard operating procedures address detailed towing configurations and preparatory steps. Various plans are in place prior to a tow, which include safety measures required by the USCG and other agencies. Usually, for a given port, the USCG Captain of the Port (COTP) will establish regulated navigation areas.

The Port of Hampton Roads, just 18 miles from the open sea, is one of the world's busiest ports and is the second largest port on the U.S. East Coast in terms of general cargo. The port has *25* square miles of waterways and primary navigation channels maintained at depths of 50 feet. In 2001, general cargo tonnage totaled 11.5 million tons, and total cargo handled by the port was over 37 million tons (HRMA 2003). As a major port, there are thousands of vessel movements annually in the Hampton Roads area. Bulk cargo such as coal, petroleum products, grain, sand and gravel, and fertilizer constitute more than 90 percent of the heavy vessel (cargo) movements (NOAA, 2003). Naval traffic is estimated at 3,500 vessel movements annually (Norfolk Naval Shipyard Port Operations 2003).

Baltimore and Charleston are also major ports with significant vessel traffic. Both Baltimore and Hampton Roads have restricted areas regulated by the USCG Captain of the Port (See 33 CFR 165.503). Entry into or remaining in these zones is prohibited unless authorized by the USCG COTP. Charleston has other restrictions due to remnants of unexploded ordinance from World War II. The area is open to unrestricted surface navigation but all vessels are cautioned not to anchor, dredge, trawl, lay cables, bottom, or conduct any similar type of operation because of residual danger from mines on the bottom.

3.3.4 Hazardous Materials and Waste Management

Not only must hazardous materials within surrounding environment of the project area be considered, but also the hazardous materials that may be in the vessel itself. As stated previously, ports and shipyards are not pristine locations, and the surrounding area eventually selected may contain other hazardous waste sites. For example, the Port of Norfolk/Hampton Roads has nationally listed hazardous waste sites in the vicinity, including the Norfolk Naval Base and the US Navy Defense Fuel Support Point (Craney Island). These sites are listed in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) database, which contains information on hazardous waste sites, potentially hazardous waste sites, and remedial activities across the nation.

Additionally, industrial facilities located in port areas may typically handle several kinds of hazardous materials. In port areas, industrial facilities are likely to handle hazardous materials typically found in the vessels they service. Hazardous and toxic materials incorporated into ship

structures during construction are often found throughout older ships. Such materials may include PCBs, asbestos, ozone-depleting substances, mercury, lead, fuel, oils, and lubricants. For many years these materials were widely used throughout the U.S. and the world for a variety of industrial, shipbuilding, and materials applications. These elements, several of which are likely to be contained in the NSS, will be described in more detail below.

PCBs were used for a number of purposes throughout many industries, including shipbuilding, because of their insulating properties. Shipboard media that potentially contain PCBs include gaskets, grout, thermal insulation, transformers, capacitors, dielectric fluids in electric transformers, ballasts for fluorescent lighting, and electrical cables. Prior to 1980, PCBs were often added or used in materials without being listed. Due to this practice, the presence of PCBs cannot always be determined through a review of specification documents.

Asbestos was used extensively in the shipbuilding industry as a fire retardant and insulator, and is often found in the materials of older ships. Potential locations include adhesives, tiles, cable coverings, heat shields, and acoustic and thermal insulation.

Ozone-depleting substances such as chlorofluorocarbons (CFCs) and halons were introduced in the 1930s and were widely used as refrigerants and in solvents. Halon has been used extensively in fire fighting systems. All Class I CFCs were banned from production in the U.S. in 1996. Halon production was banned in the U.S. in 1994. Class II hydrochlorofluorocarbons are scheduled for a production ban beginning in 2015.

Mercury is found in older equipment, including lighting fixtures, switches, gages, and other equipment. Lead was a major constituent in paints and was used extensively throughout the U.S. It is also found in other coatings, some plumbing joints, and gaskets. Lead-based paint was discontinued in 1980 but is found extensively in older structures, including ships.

Fuel, oils, and lubricants are not by definition hazardous materials, but may contain contaminants if improperly stored (MARAD 1997). Fuel, oils, and lubricants, while not hazardous materials per se, are regulated under 33 U.S.C. §2702, the federal Oil Pollution Act (OPA), 33 U.S.C. §1251-1376, the Clean Water Act (CWA), and international marine pollution regulations. The NSS has already been defueled and drained of oil so there should be minimal fuel or oils on board.

A number of U.S. Federal and International regulations govern hazardous materials. The terms *hazardous substances, hazardous wastes,* and *hazardous materials* have very specific legal and scientific definitions under these regulations, and substances regulated under one statute may not be under another. The following sections provide summary definitions and overviews of key regulations.

Hazardous wastes are regulated under 40 U.S.C. §6901, the Resource Conservation and Recovery Act (RCRA) in a “cradle-to-grave” regulatory approach. RCRA lists approximately 450 hazardous wastes. RCRA generally regulates the day-to-day management of these wastes, such as handling, transport, storage, and disposal. RCRA regulations provide for specific standards and requirements for facilities that generate, transport, store, or dispose of listed hazardous wastes. Public vessels are not subject to RCRA regulations governing hazardous waste storage, reporting, labeling, and handling until the waste is transferred to a shore facility. However, MARAD internal policies prohibit the storage of hazardous wastes aboard NDRF vessels.

Hazardous substances are defined under the CWA and 42 U.S.C. §6901, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), and 42 U.S.C. §11001 *et seq.,* the Emergency Planning and Community Right-to-Know Act (EPCRA) as chemicals that are harmful to public health and welfare or which may affect aquatic life or the environment if spilled or released to the environment.

Hazardous materials are defined under DOT regulations as chemicals that present risks to safety, health, and property during transportation (USCG 2000, MARAD 1997). Other key laws that govern hazardous substances, wastes, or materials include the Toxic Substances Control Act (TSCA) and the International Convention for Prevention of Pollution from Ships (MARPOS 73/78). TSCA (15 U.S.C. §2601 *et seq.)* regulates the introduction of new chemicals or new uses of old chemicals into U.S. industry. MARPOL 73/78 was developed by the International Maritime Organization (IMO), and sets forth the primary international regulations governing pollution control for ships.

Low-level mixed waste (mixed waste is RCRA hazardous waste containing radionuclides) is conditionally exempted from some RCRA storage, treatment, transportation, and disposal regulations, given they comply with requirements outlined by the NRC. The exempt wastes must then be managed as radioactive waste in accordance with NRC or NRC Agreement State regulations. Non-hazardous wastes are solid wastes that also may require special treatment for disposal. Solid wastes are typically disposed of in modern landfills, which are well-engineered facilities that are located, designed, operated, and monitored to ensure compliance with federal regulations. Solid waste landfills must be designed to protect the environment from contaminants which may be present in the solid waste stream (EPA 2006a).

In consideration of the Proposed Action by MARAD, it should be noted that a number of agencies are involved in approving or regulating the Proposed Action, and have plans and procedures in place related to the management of hazardous materials. Depending on the port, certain approvals and permits may be required. For example, materials such as explosives, blasting agents, liquid hydrogen, and various poisons require hazardous materials permits. Additionally, in the event of an incident, ports usually have emergency plans in place in order to facilitate quick and appropriate responses by trained personnel. When the decommissioning port is selected, MARAD will follow the procedures for obtaining appropriate permits and approvals.

3.3.5 Public Health and Safety

In considering the NSS itself, MARAD is responsible for ensuring safety within the perimeter of the vessel. NRC is responsible for ensuring that MARAD is in compliance with NRC regulations for public health and safety. For individual ports, the USCG and the Port Authority, or similar office, usually maintain health and safety plans as well as emergency response plans for the port area. They are often responsible for inspecting commercial vessels for compliance with Federal laws and regulations, responding to oil spills and hazardous material releases into the marine environment, enforcing safety and security zones, investigating marine causalities such as collisions, groundings, and fires, issuing licenses and Mariner's documents to merchant seamen, and monitoring the transfer of bulk liquid products at marine facilities. MARAD may decide to add additional requirements if there are decommissioning specific requirements outside of the typical work activities. When the decommissioning port is selected, MARAD will determine the applicable health and safety plans to follow in that area.

The Proposed Action involves only the removal, transportation, and disposal of regulated materials. Since transportation corridors are disturbed areas, no construction is planned, and transportation will occur according to regulations, there should minimal impacts to public health and safety via transportation.

3.3.6 Socioeconomics and Environmental Justice

Socioeconomics are the basic attributes and resources associated with the human environment, particularly population and economic activity. Impacts on these indicators can influence other components of the human environment, such as housing and provision of public service. Additionally, Executive Order 12898 (EO 12898), Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations of 1994, mandated that federal agencies specifically analyze impacts on human health and environmental conditions of minority

and low-income communities. It requires federal agencies to adopt strategies to address environmental justice concerns within the context of agency operations. EO 12898 and its accompanying memorandum have the primary purpose of ensuring that federal agencies identify and address disproportionately high and adverse human health or environmental effects on minority and low-income populations that could result from federal projects and programs.

The Proposed Action involves no new construction, only the removal, transportation, and disposal of regulated materials. Since transportation corridors are disturbed areas, and no construction is planned, there should no measurable impacts to socioeconomics or environmental justice via transportation. Therefore, the rest of this section will focus on the resources associated with given port areas. The populations and economies of the identified port cities vary. However, the largest employer for all three cities was the Federal Government. In terms of environmental justice, roughly 30 percent of people in the U.S. are considered in minority populations, and approximately 12 percent live below the poverty line (U.S. Census Bureau 2006). In the ports used as examples, all three cities had either average or above average populations of minorities. Since a specific location has not yet been chosen for the decommissioning action, it is difficult to accurately represent the socioeconomic environment with any specificity. These numbers would likely fluctuate depending on the specific location chosen. When the decommissioning port is selected, MARAD will determine the specific socioeconomic situation for that area and the appropriate level of evaluation if necessary.

3.4. Natural and Biological Environment

3.4.1 Coastal Resources

The coastal ocean, which includes oceans and coasts, bays and estuaries, and the Great Lakes, is economically, politically, and socially critical to the nation. More than half of the U.S. population lives in coastal counties. Coastal areas are hubs of commerce, home to many major American corporations, ports and transportation networks. The coasts are used by millions of Americans annually for recreation and support a surging tourist trade. Coastal waters are rich in living and nonliving marine resources that sustain prosperity and economic growth nationwide. Moreover, a healthy, vibrant coast means vigorous and growing economic opportunities (NOAA 2005a).

Coastal ports are often core industrial centers for the local area. Major industries that depend on coastal areas include recreational and commercial fisheries, aquaculture, tourism, and cargo trade. Rapid population growth and resulting residential and commercial development place competing demands on natural resources (NOAA 2005b).

Significant coastal issues include high rates of coastal development, non-point source pollution impacts, shoreline erosion, and sea level rise (NOAA 2005a). Polluted runoff, habitat protection, riparian buffers, wetlands, fisheries, sustainable development, waterfront redevelopment, septic systems, and erosion and sediment control are some of the issues coastal areas are grappling with (NOAA 2005b). In order to address some of these issues, some ports may encourage sound economic development while aiming to minimize the impact people have on vital coastal resources, such as fisheries.

The Coastal Zone Management Act (CZMA) provides the framework necessary to sustain the economic and ecological value of coastal areas. This law, which is administered by the National Oceanic and Atmospheric Administration (NOAA), recognizes a national interest in our coastal and ocean areas. It allows states and territories to determine how best to balance conservation of the coastal environment with human uses that depend on coastal resources (NOAA 2005a).

Coastal Barrier Resources Act (CBRA), Public Law 97-348 (96 Stat. 1653; 16 U.S.C. 3501 et seq.), enacted October 18, 1982, designated various undeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System (System). Areas so designated were made ineligible for direct or indirect Federal financial assistance that

might support development, including flood insurance, except for emergency life-saving activities. Exceptions for certain activities, such as fish and wildlife research, are provided, and National Wildlife Refuges and otherwise protected areas are excluded from the System (USFWS 2006a).

Coastal barriers occur on all the coastlines of the U.S. One of the longest and best-defined chains of coastal barriers in the world occurs along the U.S. shoreline bordering the Atlantic Ocean and the Gulf of Mexico. This chain contains over 400 barriers and totals about 2,700 miles of shoreline. The coastal barriers from Maine to Texas show a high degree of regional diversity, controlled by differences in climate and in the physical processes shaping barrier shorelines. Long, continuous barriers with small ebb-tidal deltas are produced by longshore currents along wave-dominated coasts. These barriers are typified by the coastal barrier islands along the south Texas coast which are long, generally narrow, and cut by widely separated tidal inlets with large sand accumulations in the back-barrier bays, and small or nonexistent seaward shoals. As indicated by the U.S. Fish and Wildlife Service (USFWS), similar barrier islands are also found in parts of Louisiana, the Florida panhandle, southeast Florida, the south shore of Long Island, the Cape Cod segment of the Massachusetts coast, and North Carolina's Outer Banks (USFWS 2006b).

There are areas of special status within the U.S.'s coastal and marine waters which are federally protected. Fourteen protected areas make up the National Marine Sanctuary System, including several along the Atlantic and Gulf coasts: Stellwagen Bank (MA), Monitor (NC), Gray's Reef (GA), Florida Keys (FL), and Flower Garden Banks (TX/LA). (NOAA 2005b).

For ports along the east coast of the U.S., there are many varied shorelines, diverse coastal zones, and differing habitats for wildlife. Potentially sensitive habitats include intertidal and freshwater marshes, which are highly productive, serving as important wildlife habitat and nursery areas for fish, shellfish, and waterfowl, including several species of commercial and recreational importance (MARAD 2004). Some ports may also contain endangered or threatened species (see Section 3.4.2).

The Proposed Action involves no new construction, only the removal, transportation, and disposal of regulated materials. Since transportation corridors are disturbed areas, and no construction is planned, there should be no measurable impacts to wildlife coastal resources via transportation. Therefore, the rest of this section will focus on the coastal resources associated with given port areas. The shorelines along the James River are predominately composed of solid manmade structures, fine and coarse-grained sand beaches, riprap, exposed tidal flats, and fringing intertidal salt marsh. Shorelines in smaller tributaries are predominately composed of sheltered tidal flats, fringing intertidal and supratidal salt marsh, and fresh marsh (MARAD 2004.)

The Fort Eustis/Hampton Roads area is adjacent to the network of barrier islands from Virginia to Maryland. The barrier islands comprise a large part of the coastal habitat and serve as a buffer against storms and are at the intersection of diverse habitats, supporting a rich array of life (Nature Conservancy 2006). The most sensitive habitats in the vicinity of Fort Eustis/Hampton Roads include intertidal and freshwater marshes, which are highly productive, serving as important wildlife habitat and nursery areas for fish, shellfish, and waterfowl, including several species of commercial and recreational importance (MARAD 2004).

Baltimore, Fort Eustis, and Hampton Roads are within the Chesapeake Bay watershed system. As the nation's largest estuary, the Chesapeake Bay contains a diverse collection of habitats including oyster reefs, seagrass beds, tidal wetlands, sandy shoals and mudflats. In order to address the diversity of habitats, the Chesapeake Bay Virginia and Maryland Reserve established a multi-site system for preservation (NERRS 2005A). The shorelines of Chesapeake Bay are varied. Where there are natural shorelines, they consist of sandy beaches with marine grasses in the tidal and non-tidal areas. Many of the natural shorelines have been modified with revetments (a structure or facing for supporting an embankment) or bulkheads to mitigate shoreline erosion, which is an issue in the Bay. Erosion rates in Chesapeake Bay vary from one to 36 ft per year

(SERC 2001).

The example port of Charleston also has varying coastlines, coastal areas, and preserves. Coastal areas, such as the ACE Basin (named for the Ashepoo, Combahee and Edisto rivers), located between the open ocean and upland areas, have a high diversity of habitats and microhabitats, supporting diverse and abundant communities of plants and animals. As habitats are modified, ecological processes in these habitats also change and some of these changes may be significant. One of the greatest threats to habitat diversity in the ACE Basin is the conversion of existing habitats to structurally and biologically simpler habitats such as agricultural fields, pine plantations, and urban or residential areas. In addition to the direct loss of habitat, the resulting fragmentation of the remaining forested and wetland areas results in decreased species diversity. As a consequence of fragmentation in the ACE Basin, ecotones where the vegetative communities previously graded slowly from wetland to upland forest have been changed to sharper boundaries between wetland areas and what are now agricultural fields or suburban developments (SCDNR 2005). Depending on the decommissioning port selected, further review and analysis of the local site's coastal resources may be necessary to better understand the affected environment at that location.

3.4.2 Wildlife and Vegetation

The Proposed Action involves no new construction, only the transportation and disposal of regulated materials. Since transportation corridors are disturbed areas, and no construction is planned, there should be minimal impacts to wildlife and vegetation via transportation. Therefore, the rest of this section will focus on the wildlife and vegetation associated with port areas listed below, including waterfowl, fish habitat, wetlands, and threatened and endangered species.

The USFWS has jurisdiction over terrestrial and freshwater ecosystems, while the National Marine Fisheries Service (NMFS) has jurisdiction over marine ecosystems. Various laws and guidance have been established for the protection of wildlife species.

Waterfowl are a prominent and economically important group of migratory birds of the North American continent. Migratory waterfowl utilize numerous shoreline areas and wildlife refuges across the U.S., which have been established to provide resting and nesting areas for migratory waterfowl and other birds. The Migratory Bird Treaty Act (16 U.S.C. §703-712; Chapter 128; July 13, 1918; 40 Stat. 755; as amended) protects all common wild birds found in the U.S., except the house sparrow, starling, feral pigeon and resident game birds such as pheasant, grouse, quail, and wild turkeys. Resident game birds are managed separately by individual states. The Migratory Bird Treaty Act makes it unlawful for anyone to pursue, hunt, kill, capture, collect, possess, buy, sell, trade, ship, import or export any migratory bird, including feathers, parts, nests, eggs, or migratory bird products. EO 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds,* directs federal agencies taking actions having or likely to have a negative impact on migratory bird populations to work with USFWS to develop an agreement to conserve those birds. In addition to avoiding or minimizing impacts to migratory bird populations, agencies are expected to take reasonable steps that include restoring and enhancing habitat, preventing or abating pollution affecting birds, and incorporating migratory bird conservation into agency planning processes whenever possible.

All marine mammals are protected by the Marine Mammal Protection Act of 1972, which prohibits the taking of marine mammals in U.S. waters. About 78 species of whales and dolphins are known in U.S. waters, along with several species of seals, sea lions, and walruses. Fish habitat is protected under Section 305(b)(2)-(4) of the Magnuson-Stevens Act. Essential Fish Habitat (EFH) is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. § 1802(10)).

Wetlands are areas where water covers the soil, or is present either at or near the surface of the soil all year or for varying periods of time during the year, including during the growing season

(EPA 2006b). Section 404 of the CWA is the major legislation governing wetlands, which provided for the regulation of the discharge of dredged and fill material into U.S. waters and wetlands. Since no new construction will be a part of this project, and all transportation will occur via typical routes, the project area will not likely to wetlands; hence, impacts to wetlands are not expected.

Eelgrass (*Zostera marina* and *Z. japonica*) beds are important habitats in marine and estuarine waters because they provide habitat for small organisms, which are a source of food for larger species. Additionally, they provide protective cover for migrating salmon, other fish, and many other kinds of marine life. Eelgrasses stabilize sediments through their network of roots, and also supply organic material to near-shore areas. Eelgrass beds occur in large shallow bays, small pocket beaches, or in narrow fringing beds along steeper shorelines (PSAT 2002). Other important marine vegetation within U.S. waters includes kelp. Kelp beds are composed of large brown algae, principally *Nereocystis leutkeana*, and provide foraging habitat and shelter for fish, invertebrates, crustaceans, and sea birds.

One of the more prominent legislations protecting wildlife and vegetation is the Endangered Species Act, which "provides for the conservation of endangered and threatened species of fish, wildlife, and plants, and for other purposes." As of 2005, there were over twelve hundred listed endangered or threatened species across the U.S.

For prospective port locations, the major wildlife in the affected environment includes submerged aquatic vegetation, fish, crustaceans, and birds. Depending on the time of year, migratory birds may be present along the Atlantic Flyway. Wildlife along the Atlantic coast is similar across the ports and many common species can be found. However, when the final decommissioning port is selected, further site review may be necessary to identify any sensitive areas (e.g. critical habitat, essential fish habitat) or specific endangered or threatened species. For example, Fort Eustis has essential fish habitat designations for nine species of fish:

- Windowpane flounder (*Scopthalmus aquosus*)
- Bluefish (*Pomatomus saltatrix*)
- Atlantic butterfish (*Peprilus triacanthus*)
- Summer flounder (*Paralicthys dentatus*)
- Black sea bass (*Centropristus striata*)
- King mackerel (*Scomberomorus cavalla*)
- Spanish mackerel (*Scomberomorus maculatus*)
- Cobia (*Rachycentron canadum*)
- Red drum (*Sciaenops occelatus*)

Several threatened and endangered species were listed in the regions of the three example ports, including:

- Peregrine falcon
- Bald eagle
- Least tern
- Piping plover
- Delmarva fox squirrel
- Shortnose sturgeon
- Loggerhead sea turtle
- Kemp's ridley sea turtle
- Leatherback sea turtle
- Green sea turtle
- West Indian manatee

Sea turtles, specifically, are present in the Chesapeake Bay from the beginning of April to the end of November each year. They are present year round in the Charleston area and may be present along transit routes. Whales may also be present on transit routes. Specifically, Northern right whales and humpback whales, both endangered, may be found in nearshore waters while fin and sperm whales, also endangered, are found typically in offshore waters (NOAA 2006). The West Indian manatee is a native of Florida, but has been known to migrate to South Carolina inshore waters during the summer. Manatees are frequently sited in the Charleston Harbor and its tributary creeks and rivers during this time (USFWS 2006).

Ship moorings occasionally provide unique habitat; Peregrine falcons (*Falco peregrines*), a federally endangered species, have been known to nest on a ship mooring within the JRRF. Additionally, Bald eagles (*Haliaeetus leucocephalis*), a federally and state listed threatened species, have been sighted in the Mulberry Island area of Fort Eustis (Terwilliger 1999). Once an industrial facility is selected, an appropriate level of environmental review would reveal whether any threatened or endangered species were known to inhabit the project area.

3.5. Other Resources

Several other resources were considered in this study. However, after initial analysis, the following resources were dropped from detailed study because it was determined that the Proposed Action would have no significant impacts on them.

Floodplains. Executive Order 11988-Floodplain Management states that each agency shall take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by floodplains in carrying out its responsibilities. The Proposed Action would have no effect on area floodplains, as it does not constitute development within a designated floodplain. Accordingly, EO 11988 is not applicable to the Proposed Action.

Geology. The Proposed Action involves transportation of a vessel and low-level radioactive waste. Transportation of the vessel will not involve geology. Transportation of the low-level radioactive waste will be conducted via licensed carriers and disposed of at licensed waste sites. These sites maintain strict standards, including geologic considerations, as mandated by NRC. Therefore, geology will not be involved under this Proposed Action.

Noise. The towing of vessels in the project area is consistent with the level of ship traffic in the region. Because high levels of ship traffic already occur in the region, the proposed tows, decontamination work, or transport and disposal of waste are not expected to affect noise levels in the region or contribute adversely to the acoustic environment.

Upland Resources. The Proposed Action is not expected affect the area's upland resources, such as prime and unique farmlands, etc., because the project area is restricted to vessel tows along aquatic and coastal habitats and other typical transportation routes.

Land Use. The Proposed Action does not involve any new construction or conversion of land use. The Proposed Action will take place at an industrial facility that typically handles similar work. The Proposed Action involves transport of waste over routes suitable for such wastes and permanent disposal of waste at a licensed facility that accepts such waste. Therefore, no impacts to land use are expected.

Visual Resources. The Proposed Action involves no new construction and will occur at an industrial facility and over common transportation routes. Therefore, no alteration of viewscapes or aesthetics is expected due to the Proposed Action.

4.0 ENVIRONMENTAL CONSEQUENCES

4.1. Physical and Human Environment

4.1.1 Air Quality

4.1.1.1 No Action Alternative

Under the No Action Alternative, the NSS would not be decommissioned and would be returned to the reserve fleet. The vessel would be shifted from the shipyard/drydock facility to the JRRF. Tugboat activities resulting from this tow would have minimal short-term negative impacts to the air quality along the navigation route.

The NSS would continue to be moored in the JRRF and resume all regular safety, security, and maintenance activities. These activities may have some short-term negative impacts on the air quality, mainly through maintenance activities (such as air compressors operating, paint scraping, welding and other similar activities) and fleet craft operations, but these impacts would be minor.

4.1.1.2 DECON Alternative

Waste Removal

Under the DECON Alternative, there are several activities that could contribute negatively to air quality. Since the ship does not currently operate, only secondary emissions from the decommissioning activity would occur. First, there is the towing associated with transporting the vessel to the decommissioning location, and then the decommissioning action itself. The impacts associated with towing would occur regardless of the port selected. These impacts would only involve a towing action for one vessel and would therefore be considered negligible. They would also be short lived, lasting only around the days that the transportation would occur.

The decommissioning activities would occur according to the DECON method as implemented by NRC. Additionally, the activities would occur in compliance with health and safety plans as developed in compliance with NRC rules and regulations. During the removal of the low-level radioactive waste, other areas within the ship may be disturbed, dislodging dust or other construction materials. These effects would be considered negligible since the decommissioning will be completed in a closed environment and according to established procedures. Nonetheless, any fugitive dust that may be dislodged should be kept to a minimum using control methods outlined in state regulations. For example, the Virginia Regulations for the Control and Abatement of air pollution suggest the following mitigatory techniques:

- Use of water or chemicals, when possible, for dust control,
- Installation and use of hoods, fans, and filters to enclose and vent the handling of dusty materials, and
- Covering of open equipment for conveying materials (Commonwealth of Virginia 2006).

If any fuel-burning equipment is used for the decommissioning activities, appropriate permits for the use of that equipment will be sought as deemed necessary. Since the decommissioning activities will occur within an industrial facility, and will be completed within engineered systems designed to physically isolate the vessel and control potential disturbances, major adverse impacts to air quality are not expected. Since protective measures will be taken, and because the work will be completed according to specified procedures, release of air quality pollutants is unlikely. Any adverse effects that would occur would be minor and short lived.

Waste Transport

The transport of the low-level radioactive waste from the port to its final destination would occur via trucks, railways, or barges registered to handle such material over routes typical for transporting such materials, including major highways. The transportation of the waste would generate a minor amount of emissions associated with the shipment. No new permanent or mobile sources of emissions would occur under this action, however. Since the transport would be handled in a typical way over established routes, the impacts of this action are expected to be minimal.

Waste Disposal

This phase of the action entails transferring the waste from the transport vehicle to the waste site. Disposal of the waste at a licensed site would allow for the waste to be permanently disposed of in a safe manner without accidental releases into the air. This action should not have a measurable adverse effect on air quality.

4.1.1.3 SAFSTOR Alternative

As mentioned in Section 2.2, additional tasks are required for NSS to comply with contemporary SAFSTOR requirements. The associated actions involve planning activities, safety improvements, and small-scale decontamination activities. The latter two may result in minor localized disturbance of air quality within the vessel. Any adverse impacts should be minor and short-term. Regarding the small-scale decontamination activities, transport and disposal for a small amount of low-level radioactive waste would be included in the action. Impacts would be similar though less than those discussed in the DECON alternative above. Therefore, decontamination activities would likely have no measurable adverse effect on air quality, neither through transport nor disposal. Additionally, by bringing the NSS into compliance with SAFSTOR, there may be beneficial impacts to localized air quality through further decontamination.

In addition to the preparatory activities, regular maintenance and monitoring would continue under SAFSTOR. The NSS would be continued to be moored at a retention site, so these activities would either occur within the JRRF or another approved port facility. When industrial maintenance and/or drydocking are required, the NSS would be towed to the site of these activities. Towing activities may have minor short-term negative impacts to air quality along the tow route. However, these effects would not be long term. Maintenance activities associated with the upkeep of the NSS under SAFSTOR, (such as air compressor operation, paint scraping, welding, and other similar activities) would also cause minimal and short-term adverse impacts, affecting only the localized area during the time of the disturbance. Since the upkeep will be performed to NRC guidelines and in compliance with applicable regulations, no major adverse impacts are expected.

4.1.2 Water Quality

4.1.2.1 No Action Alternative

Under this alternative there is some risk to water quality, though it is not considered to be significant. The NSS could potentially pollute the water in the James River as the vessel continues to deteriorate.

4.1.2.2 DECON Alternative

Waste Removal

No significant impacts are expected as a result of implementing the DECON Alternative. As

described in Section 2.1 the NSS would only be decommissioned at a facility that could control potential discharges to the water. All potential decontamination activities should occur well within the structure of the ship, and thus should not impact the water quality of that port. The waste removed will not be discharged into the water, but will be taken to an appropriate facility for proper handling and disposal.

The only wastewater that could be generated from the action would be if water is used as a cleaning medium. Any wastewater would be minimal and handled appropriately. The NSS is not expected to disturb the sediments, and procedures associated with the proposed tows are not expected to create an adverse impact. Some negligible oxidizing of metal (rust) from the NSS' hull could occur. This marginal quantity of rust could enter the water at the decommissioning port.

Waste Transport

Water quality of either surface or ground waters should not be affected with the safe transport of decommissioned material to it disposal site. In the event of an emergency, such as a collision of the vehicle carrying the materials from the NSS, accurate placards displaying cargo risks would alert responders to take the necessary measures to avert environmental and water contamination (RSPA 2003). If the waste is transported by barge, a negligible amount of pollution could enter the water via exhaust. However, this is expected to cause only negligible adverse impacts from shipping the low-level radioactive waste.

Waste Removal

Once waste reaches disposal sites it is kept from entering water. Specific provisions of 10 CFR 61.41 mandate that all reasonable measures will be taken to protect ground and surface water from low-level radioactive waste at approved disposal facilities (NRC 2005). The two possible facilities (Chem-Nuclear Systems or Envirocare) have the expertise to avoid any impact to water when handling and disposing of the hazardous waste from the NSS. Therefore, contamination of either surface or ground water should not occur during the disposal associated with the DECON Alternative.

4.1.2.3 SAFSTOR Alternative

As mentioned in Section 2.2, certain activities would take place to bring NSS into compliance with SAFSTOR requirements. The actions that could affect water quality include the initial maintenance, safety improvements, small-scale decontamination, and similar actions prescribed under SAFSTOR. All decontamination and improvement activities will be completed on board according to NRC guidance and isolated from water sources. Following appropriate procedures will ensure no significant adverse impacts will occur to water quality during preparatory activities.

Transport of small amounts of low-level radioactive waste will occur via established methods and will also be isolated from water. Disposal of the small amounts of low-level radioactive waste would occur at approved disposal facilities (similarly as described under the DECON alternative), and would not incur significant adverse impacts.

In addition to preparatory activities, including the removal of small amounts of low-level radioactive waste as prescribed under SAFSTOR, regular maintenance and monitoring would also continue to occur. The NSS would be continued to be moored at a retention site, so these activities would either occur within the JRRF or another approved port facility. When industrial maintenance and/or drydocking are required, the NSS would be towed to the site of these activities. Towing activities may have minor short-term negative impacts to air quality along the tow route. However, these effects would not be long term. Maintenance activities associated with the upkeep of the NSS under SAFSTOR, (such as air compressor operation, paint scraping,

welding, and other similar activities) would also cause minimal and short-term adverse impacts, affecting only the localized area during the time of the disturbance. Since the upkeep will be performed to NRC guidelines and in compliance with applicable regulations, no major adverse impacts are expected.

4.1.3 Vessel Traffic and Navigation Channels

4.1.3.1 No Action Alternative

Under the No Action Alternative, the NSS would be returned and moored at the JRRF until decommissioning at a later date. Vessels at the JRRF are moored in the James River. The James River ship channel passes within the JRRF anchorage, and ships can be moored on either side of the channel; however, vessels are currently concentrated on the west side of the channel. There are approximately 44 ships currently moored at the JRRF. Based on the current vessel traffic in the Hampton Roads area, and the number of dead-ship tows that occur annually, potential effects on navigation would be negligible (MARAD 2004).

4.1.3.2 DECON Alternative

Waste Removal

Under the DECON Alternative, the NSS would be towed to a capable industrial facility for decommissioning activities. This would likely cause short-term, negligible impacts to the shipping lane as the NSS is towed. The place of decommissioning would be a typical industrial facility that has the existing capability, or subcontractor support, to complete the decommissioning work as outlined by NRC in accordance with all federal regulations. Decommissioning activities within the industrial facility will be completed with engineered systems designed to physically isolate the vessel and control potential emissions to environmental media. Additionally, the industrial facility will be equipped with waste management infrastructure that provides the necessary support infrastructure to properly complete the decommissioning (Godoy, 2003). Since all of the work will be completed by trained personnel according to OSHA and NRC standards, no accidents are expected. Any port with the above industrial capabilities is likely to be a port with established traffic.

Under the DECON Alternative, the NSS may need to be towed to the decommissioning location. If so, navigation safety will be assured through the substantial number of vessel inspections, reviews, tow approvals, and certificates that will be developed for the vessel prior to the initiation of tow activities. MARAD vessels to be towed are subject to detailed inspections to ensure that they are safe for towage. The USCG, which has primary responsibility for ensuring the safety of vessel traffic and enforcement of navigation rules in the areas of the potential tows, will review and formally approve tow configurations, safety measures, and routes. Based upon current vessel traffic at potential ports, and the precautions for safe towage, no significant adverse impacts to navigation are expected at any port as a result of the DECON Alternative.

Waste Transport

Once decommissioning activities are completed, the waste will be transported from the industrial facility to a licensed waste site capable of receiving waste from the NSS. The waste will be hauled via truck, train, or barge, away from the coast and disposed of at an approved facility that handles Class A waste. Given the relatively small amount of waste to be transported, no significant adverse impacts to navigation are expected at any of the proposed ports as a result of this action.

Waste Disposal

Under the DECON Alternative, the low-level radioactive material would be disposed of according

to federal regulations and at an approved facility such as Barnwell of South Carolina or Clive of Utah. Both of the potential facilities are located inland away from navigable waters. Therefore, no adverse impacts to navigation are expected as a result of the DECON Alternative.

4.1.3.3 SAFSTOR Alternative

Activities required to bring NSS into compliance with SAFSTOR requirements would occur at layberth, or the vessel would be towed to an appropriate facility that has the capability to complete the work. The minimal tows associated with the preparatory activities for SAFSTOR should have negligible impacts to navigation as the vessel would be towed via established navigational routes. Transport of any waste removed from the ship may occur via truck, train, or barge. Given the minimal amount of waste, transport and disposal should have minimal adverse impacts on navigation.

In the longer term, the NSS would be moored at a retention site and moved only via tow for the purpose of upkeep. Based on the current traffic in the port complexes studied, and the number of dead-ship tows that occur annually, potential adverse effects on navigation would be negligible (MARAD 2004).

4.1.4 Hazardous Materials and Waste Management

4.1.4.1 No Action Alternative

If the NSS remains moored in the JRRF, the vessel could continue to deteriorate and pose an increasing environmental risk over time, even though residual radioactive contamination would continue to decay. Vessel deterioration could also pose a risk for pollution by non-hazardous wastes on board the NSS. However, monitoring of the ship would continue to protect the low-level radioactive waste remaining within the ship, as well as the integrity of the ship in general. Therefore, no significant adverse impacts are expected.

4.1.4.2 DECON Alternative

Waste Removal

If the NSS is selected for decommissioning there will be a number of approvals, licenses, and other procedures required prior to towing it to an approved facility. The procedures are dictated by MARAD, USCG, EPA, private insurers, and local governments to ensure that the NSS and the prospective decommissioning facility meet appropriate maritime standards and are in full compliance with environmental, navigation, safety, and other considerations.

In general, wastes generated during shipyard activities are considered industrial or regulated wastes versus hazardous wastes. However, the most obvious concern for hazardous materials is the Class A low-level radioactive waste present on the vessel. In addition, other possible hazardous materials that may be removed include PCBs (primarily in the electrical cables, gaskets, grout/caulking, and miscellaneous electrical components), asbestos (insulation materials and wallboard), mercury in electrical switches and other components, lead (paint), molds, and limited amount of ozone depleting substances (in refrigerants). The removal of hazardous materials from the NSS is required to be in accordance with local, state and federal regulations. The NRC license for the NSS, which is maintained by MARAD, has been amended to include parameters for decommissioning. Under this license, the handling of wastes during the decommissioning (including mixed wastes) by decommissioning personnel (including third parties), will be managed completely under NRC requirements such that the RCRA requirements set forth by EPA may be obviated. If this is not the case, the contractors completing the work will be subject to all applicable RCRA, as well as state and local, requirements. Additionally, marine surveyors will attend the site during the decommissioning to ensure appropriate actions occur. In either situation, MARAD will have the work completed as specified by law and therefore no

significant adverse impacts are expected.

Fuels and oils aboard the NSS to the extent they are present will be treated as a hazardous material if activities require the removal of these substances. MARAD will perform additional surveys prior to decommissioning. In 1994, all known fuel and lube oils were removed from the ship. Due to the handling and movement of these hazardous materials during removal, there is a potential risk for these substances to become dispersed. However, due to the mitigative measures in place during the decommissioning to isolate the vessel, impacts from hazardous materials should be minor.

Other non-hazardous wastes may be disturbed and removed during the decommissioning process. Although decommissioning may increase the risk of dispersion of these wastes, due to controlled environment and the fact that these wastes are non-hazardous, no significant adverse impacts are expected due to waste removal.

Waste Transport

The waste generated aboard the NSS will likely be divided between hazardous low-level (potentially mixed) radioactive waste, non-radioactive hazardous materials, and non-hazardous waste. The radioactive waste would be transported in tightly sealed containers and carried via highway, railway, or barge following the procedures detailed in 10 CFR Part 61 (RSPA 1998). The hazardous material from the NSS would be secured in the requisite DOT Type-A secure containers and disposed of according to RCRA requirements. In addition, the containers would be identified with placards allowing handlers and emergency personnel to treat the contents with necessary care and minimize any possible environmental impacts. The non-radioactive materials would be transported according to regulations stipulated in 49 CFR, which specifies quantity limits, packaging, permits, and labeling (RSPA 2003). Any non-hazardous waste not included in the other transports will be transported and disposed of by typical methods appropriate to the type of waste. Since all of the wastes will be transported by trained workers according to regulated procedures, no accidents are expected. No significant adverse impacts are expected due to the transport of these materials.

Waste Disposal

Title 10 CFR 61 stipulates that permits from NRC are necessary before disposing of low-level radioactive waste. As stated above, MARAD has amended their current NRC license to include decommissioning and disposal activities. Any radioactive or mixed-radioactive waste will therefore be managed according the NRC requirements. The disposal-permitted waste would be disposed at pre-approved facilities. In this case the sites would be Barnwell of South Carolina and/or Clive of Utah. According to NRC, a typical PWR decontamination would produce 18,340 m^3 of waste to be stored. The waste taken from the NSS is expected to be significantly less, since 1) the fuel has been removed to the Savannah River Plant for reprocessing, 2) some decommissioning work has already been completed, and 3) the plant is significantly smaller than a typical PWR. Therefore, the DECON Alternative should not have a significant adverse impact on waste management.

It is expected that these disposal sites would also be capable of disposing of non-radioactive hazardous material. Therefore, the hazardous material would be disposed according to NRC regulations and are not expected to cause significant adverse environmental impacts. Any non-hazardous waste not included in the other transports will be transported and disposed of by typical methods appropriate to the type of waste, and minimal adverse impacts should result from this action.

4.1.4.3 SAFSTOR Alternative

Activities under SAFSTOR may require similar activities to those described in the waste removal section of the DECON alternative. The preparatory activities would involve some maintenance and waste removal activities which may involve the disturbance of hazardous and radioactive materials. All activities for SAFSTOR would be accomplished according to MARAD's SAFSTOR plan in accordance with NRC guidelines. Current best practices include using MARSSIM for planning and evaluating compliance with NRC regulations. Given the adherence to NRC guidance and performance of the work in a controlled environment, no significant adverse impacts are expected.

Similarly, given the small amount of waste and careful adherence to appropriate standards for transport and disposal, no significant adverse impacts are expected from any waste transport and disposal associated with the SAFSTOR alternative. Monitoring and maintenance of the vessel under SAFSTOR would safeguard any remaining radioactive or other hazardous material on board. Additionally, with the additional time delay under SAFSTOR, the low-level radioactive waste would continue to decay and decrease over time. Therefore, no significant adverse impacts are expected.

4.1.5 Public Health and Safety

4.1.5.1 No Action Alternative

Under the No Action Alternative, the NSS would be returned to the reserve fleet. MARAD would continue its regular maintenance and monitoring duties on the ship in order to ensure that it does not pose a threat to public health and safety. Therefore, no significant adverse impacts would be expected.

4.1.5.2 DECON Alternative

Waste Removal

The decontamination work would be completed by trained workers who will isolate the vessel to ensure that all of the waste is contained. The aggregate occupational radiation dose to workers from a DECON decommissioning activity is significantly less than an average nuclear facility worker would receive. According to NRC, the exposure to occupational workers for this kind of activity would be considered minor. Public exposure to radiation would be significantly less than that of workers.

Inhalation is considered the dominant exposure pathway for public radiation exposure. According to NRC's GEIS on decommissioning, the inhalation radiation dose to the public from airborne radionuclide releases during DECON is estimated to be negligible (NRC 1988). These minor adverse exposures to the public would be offset by the beneficial impacts of permanently removing the low-level radioactive waste from the area and properly disposing of the remaining waste. In considering the proposed locations, the effects would be the same regardless of the location selected, though varying populations may be exposed. MARAD completed further detailed analysis on safety in the Updated Final Safety Analysis Report (UFSAR), prepared for submittal to NRC.

Waste Transport

The radiation dose to the public from the transportation of radioactive wastes is estimated to be adverse but minor, and considerably below the average background levels of radiation. Since these levels are below background, the adverse impacts would be expected to be negligible.

Waste Disposal

Under the DECON Alternative, the low-level material would be disposed of according to federal regulations and at an approved facility such as Barnwell, SC or Clive, UT. According to NRC, a typical PWR decontamination would produce 18,340 m^3 of waste to be stored. The waste taken from the NSS is expected to be significantly less, since 1) the fuel has been removed to the Savannah River Plant for reprocessing, 2) some decommissioning work has already been completed, and 3) the plant is significantly smaller than a typical PWR. The waste would be disposed of at a licensed waste site that is regulated and monitored by NRC; therefore, no significant impacts would be associated with this action.

4.1.5.3 SAFSTOR Alternative

Under SAFSTOR, preparatory activities, including maintenance and the removal of additional low-level radioactive material, would be completed by trained workers who will isolate the vessel to ensure that all of the waste is contained. Exposure pathways and potential impacts would be similar to those described under the DECON alternative; however, since there would be less waste removal and disturbance under the SAFSTOR alternative, potential impacts may be less than those described previously. Isolation of the vessel and adherence to safety guidelines throughout the decommissioning process will ensure that any impacts to public health and safety would be minor to negligible.

NRC's GEIS (1988) suggests that impacts to public health and safety from all stages of SAFSTOR would be negligible. Additionally, under SAFSTOR, only a few additional radioactive components would need to be removed; the amount low-level radioactive waste that would need to be disposed of due to SAFSTOR would be minor. Any waste would be disposed at an approved facility capable of properly handling the materials. Therefore, no significant impacts to public health and safety are expected from the transport or disposal of waste associated with SAFSTOR.

Regular maintenance and monitoring would continue to occur to prevent and correct any potential issues and preserve the structural integrity of the vessel. These programs would ensure that the NSS is safeguarded and would protect public health and safety. Therefore, no significant adverse impacts to public health and safety would be expected from this alternative.

4.1.6 Socioeconomics and Environmental Justice

4.1.6.1 No Action Alternative

Returning the NSS to the reserve fleet is the status quo alternative. Therefore, there would be no impacts to socioeconomics or environmental justice concerns for this action.

4.1.6.2 DECON Alternative

Waste Removal

Towing actions associated with the DECON Alternative would not have an adverse effect on socioeconomics or environmental justice concerns. The decontamination process will provide a temporary influx of work and money into the local economy at the selected port. This effect on socioeconomics would be beneficial but minor. Depending on the port city selected, the population size potentially exposed will vary. A given port city identified may also have higher proportions of a certain minority group. However, since any potential exposure of radiation to the public is considered negligible, there would not be a disproportionate burden of impacts on minority or low-income communities.

Waste Transport

The transport of the waste via appropriate methods, containers, modes, and routes would not have a measurable effect on socioeconomics. Because the transport would occur over major routes that are regularly used, this action would not have an impact on the transportation overall, and hence would not disproportionately impact certain communities.

Waste Disposal

Given the modest amount of low-level radioactive waste being disposed of from one vessel, its disposal at an approved facility would have little effect on the local economics or environmental justice within communities. Although the original siting of the disposal site is outside of the scope of this analysis, it should be noted that in order to be allowed by NRC to receive radioactive wastes, disposal facilities are heavily studied and their environmental conditions are well monitored.

4.1.6.3 SAFSTOR Alternative

Since no significant impacts to the public are expected through the preparatory activities, waste removal, or disposal associated under SAFSTOR, no disproportionate impacts are expected to environmental justice communities via the reasoning presented under the DECON alternative. Undertaking a SAFSTOR action for the next twenty-four years would require regular upkeep, maintenance, and monitoring of the vessel, all of which may have a minor beneficial impact on local socioeconomics to the port completing the work. Moreover, since there are no significant public health and safety concerns associated with the action, there would be no disproportionate burden on any environmental justice community. Therefore, no significant impacts are expected in relation to this alternative

4.2. Natural and Biological Environment

4.2.1 Coastal Resources

4.2.1.1 No Action Alternative

Under the No Action Alternative, the vessel would be returned and moored at the JRRF until decommissioning at a later date. If left in place, while residual radioactive contamination would continue to decay, the vessel would also continue to deteriorate and could pose an increasing environmental risk over time. Adverse impacts to coastal resources would be possible due to leakage if allowed to deteriorate over time at the JRRF. However, all known oils were removed from the vessel during the 1994 drydocking activities. Therefore, there is no likelihood of an oil spill from the NSS. Additionally, routine maintenance is conducted on the NSS to prevent deterioration. Consequently, no significant impacts to coastal resources are expected.

4.2.1.2 DECON Alternative

Waste Removal

Under the DECON Alternative, the NSS would be towed to an industrial facility for decommissioning activities. Since all of the work will be completed by trained personnel in accordance with EPA, OSHA, and NRC standards, no accidents are expected. Accident analysis, however, has been conducted by MARAD and results will be submitted to NRC in the Updated Final Safety Analysis Report (UFSAR). Additionally, once a port location is selected, MARAD may need to verify that the project is consistent with local coastal resource management plans.

As stated above, long-term indirect adverse impacts to coastal resources could result if a leak

were to occur during towing as a result of collision, grounding, or tank or hull rupture. However, these events are unlikely and MARAD vessels to be towed are subject to detailed inspections to ensure that they are safe for towage. Contingency plans have been developed for the towing operations in U.S. waters and would be implemented if an accident were to occur. It is not anticipated that any adverse impacts would occur during the waste removal phase of the decommissioning process due to compliance requirements and inspection procedures. No significant impacts to coastal resources are expected at any location as a result of the DECON Alternative.

Waste Transport

Once decommissioning activities are completed, the waste will be transported from the industrial facility to a licensed waste site capable of receiving waste from the NSS. The waste will be hauled via truck, rail, or barge and disposed of at an approved facility that handles Class A waste.

NRC requirements provide that a site be isolated from water sources, areas of geological activity, and natural resources (NEI 2004). Moreover, transporting the waste away from the coast to a licensed waste site is beneficial to coastal resources. Therefore, no adverse impacts to coastal resources are expected as a result of the DECON Alternative.

Waste Disposal

Under the DECON Alternative, the low-level material would be disposed of according to federal regulations and at an approved facility such as in Barnwell, SC or Clive, UT. NRC requirements provide that a site be isolated from water sources, areas of geological activity, and natural resources (NEI 2004). The proposed facilities are both located inland away from navigable waters and do not pose a threat to coastal resources. Therefore, no significant impacts to coastal resources are expected as a result of implementing the DECON Alternative.

4.2.1.3 SAFSTOR Alternative

All of the work under SAFSTOR will be completed by trained personnel in accordance with EPA, OSHA, and NRC standards, and will occur with appropriate isolation from coastal resources. Towing the vessel to the place of decommissioning may be required, but since there are several inspections and procedures to ensure safe towage, no significant adverse impacts from towing are expected.

Since the maintenance and any associated waste removal, transport, and disposal activities will be completed according to federal regulations with appropriate isolation from coastal areas, the only potential exposure would be through accidental release. Accident analysis is outside the scope of this NEPA analysis; however, MARAD has conducted a study and results have been submitted to NRC in the Updated Final Safety Analysis Report (UFSAR).

Under SAFSTOR, regular maintenance and monitoring would be occurring to prevent and correct any potential issues and preserve the structural integrity of the vessel. Any maintenance would be performed in developed and industrialized areas within a port; therefore, no direct significant impacts to coastal resources are expected. Moreover, maintenance and monitoring programs would ensure that the NSS is safeguarded and is not posing a threat to coastal resources. Since the upkeep will be performed to NRC guidelines and in compliance with applicable regulations, no major adverse impacts are expected. However, once a port location is selected, MARAD may need to verify that the project is consistent with local coastal resource management plans.

4.2.2 Wildlife and Vegetation

4.2.2.1 No Action Alternative

Under the No Action Alternative, the NSS would be towed back to the JRRF and would continue to be stored there. The vessel could continue to deteriorate and pose an increasing environmental risk over time. Adverse impacts to avian and aquatic species could occur if hazardous materials were to leak due to the vessel being compromised. However, these impacts are not expected since the NSS is subject to regular inspections and receives periodic maintenance.

4.2.2.2 DECON Alternative

Waste Removal

If necessary, the vessel will be towed to the decommissioning location. No significant adverse impacts to avian or aquatic species occurring in areas along the proposed tow route are expected as a result of implementing the DECON Alternative. Potential impacts to threatened and endangered species as a result of vessel collisions are expected to be negligible because the DECON Alternative would use established navigation channels and dead-ship tow procedures. Additional precautionary measures may be necessary in areas of manatee habitat. Nonetheless, once a port is selected, the appropriate level NEPA review should be conducted to ensure the protection of threatened or endangered species, if any, at the site.

The prospective port likely experiences frequent ship and vessel traffic, and the route that tow operations will utilize standard shipping routes used by commercial vessels. In addition, the tow speeds will be relatively slow and species should be able to avoid any potential collisions. Long-term indirect adverse impacts to avian or aquatic species could result if an as a result of collision, grounding, or tank or hull rupture and leakage; however, MARAD vessels to be towed are be subject to detailed inspections to ensure that they are safe for towage. These measures are reviewed and approved by the USCG prior to any of the proposed tows taking place.

The decommissioning activities will take place in industrialized areas. During the decommissioning activities, some waterfowl or other avian species could be disturbed or displaced; however, these impacts would be short term and minor. Since the decommissioning activities within the industrial facility will be completed within engineered systems designed to physically isolate the vessel and control potential emissions, major adverse impacts to wildlife and vegetation are not expected. Since protective measures will be taken, and because the work will be completed according to specified procedures, an accidental release of radioactive material or other potential pollutants is unlikely.

Avian species are less sensitive to radiation as compared to other animals, so impacts to birds are unlikely. Mammals react with similar sensitivities to radiation (Clemson 2006); given that the occupational dose for this action is expected to be less than the annual background exposure to humans, other animals are likely to have a similar less than significant dosage and impacts. Plants are not easily affected by radiation; even high levels of radiation would have little or no effect on seeds or crops (Clemson 2006). According to NRC's GEIS, decommissioning a typical PWR would emit, at most, radiation less than background levels. Therefore, no significant impacts to wildlife or vegetation are expected.

Waste Transport

The waste transport phase includes transferring the waste from the port of decommissioning to its final disposal site. The DOT compliant placarded waste would be transported in appropriate containers and moved by trucks, trains, or barges typically used to carry such material over

typical routes. In the case of an accident, spills may be possible. An accident analysis has been conducted by MARAD and results will be submitted to NRC in the Updated Final Safety Analysis Report (UFSAR). This report will identify any needed mitigation measures or contingency plans as deemed necessary.

Some incidental radiation exposure to occupational workers may occur during the transport. According to NRC's GEIS, the exposure for decommissioning a typical PWR would be very low. The public would be subject to an even lower dose. Based on this, it can be assumed that impacts to wildlife and vegetation would be minimal to negligible.

Waste Disposal

This phase of the DECON Alternative entails the safe and permanent disposal of the remaining low-level radioactive waste. The waste would be disposed at a licensed site capable of receiving Class A radioactive waste. In order to receive such wastes, these facilities are heavily studied and their environmental conditions are well monitored. Due to NRC regulations, these facilities are also isolated from water sources, areas of geological activity, and other pristine natural resources. Since there are many restrictions and precautions taken during the siting of such facilities, it is assumed that impacts to wildlife and vegetation would be minimal through the disposal of the NSS's waste.

4.2.2.3 SAFSTOR Alternative

Preparatory activities that are required for the NSS to comply with SAFSTOR criteria may include towing the vessel to an industrial facility that can complete the maintenance and decommissioning work. Since proposed tows are subject to safety procedures, established tow routes will be used, and tows will be completed using relatively slow speeds, any adverse impacts to wildlife and vegetation are expected to be negligible to minor. Additional precautionary measures may be necessary in areas of manatee habitat. Therefore, once a port is selected, the appropriate level NEPA review should be conducted to ensure the protection of threatened or endangered species, if any, at the site.

The decommissioning activities will take place in industrialized areas. As described in the DECON alternative, some avian species could be disturbed or displaced during decommissioning activities; however, these impacts would be short term and minor. Since the decommissioning activities within the industrial facility will be completed within engineered systems designed to physically isolate the vessel and control potential emissions, major adverse impacts to wildlife and vegetation are not expected. Since protective measures will be taken, and because the work will be completed according to specified procedures, an accidental release of radioactive material or other potential pollutants is unlikely. As stated previously, decommissioning a typical PWR would emit, at most, radiation less than background levels (NRC 1988). Therefore, no significant impacts to wildlife or vegetation are expected.

In the longer term activities under SAFSTOR, regular maintenance and monitoring would occur to prevent or correct any potential issues and preserve the structural integrity of the vessel. Any maintenance would be performed in developed and industrialized areas within a port; therefore, no direct significant impacts to wildlife and vegetation would be expected. Moreover, maintenance and monitoring programs would ensure that the NSS is safeguarded and is not posing a threat to the environment. Since the upkeep will be performed to NRC guidelines and in compliance with applicable regulations, no major adverse impacts are expected.

5.0 CUMULATIVE IMPACTS

5.1. Introduction

The Council on Environmental Quality defines cumulative effects as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions” (40 CFR 1508.7).

Cumulative impacts analysis takes a broader look then the previous chapter and extends the spatial and temporal boundaries. Cumulative analysis must also take into account activities that occurred before the initiation of Proposed Action, as well as after the Proposed Action is completed, and if those activities affect (or could affect) one or more of the same resources affected by the Proposed Action. Additionally, the cumulative analysis must consider all activities that affect those environmental components, even outside the area affected by the proposal.

The affected environment as generally described in Chapter 3.0 applies as the baseline for analysis. The cumulative analysis will measure effects relative to this baseline.

5.2. Current Activities and Environmental Issues

Since the affected environment covered a general view of east coast cities and transportation networks, it is important to establish the baseline for that environment. The study areas that must be considered again are the potential sites for waste removal (east coast ports), waste transportation (typical highway, rail, and marine networks), and waste disposal (licensed waste sites). This section will discuss that baseline including current environmental issues confronting these areas in light of the resources analyzed.

East Coast Ports

Ports are sources of major economic activity in the U.S. With that activity comes the physical movement of ships, trucks, trains, and other cargo-carrying equipment, which frequently are run on diesel engines. Diesel emissions are a significant source of air pollution in the areas in which a port is located. Air pollution can cause heath effects such as asthma, respiratory disease, cardiovascular disease, lung cancer, and premature death. Workers and residents of these communities are frequently subject to increased air pollution near port cities (NRDC 2004).

The coastal and marine water quality of ports is threatened by multiple sources of pollution, including point, nonpoint, and atmospheric sources; vessels; nonindigenous species; and waste being washed onto coastal areas and into the ocean (USCOP 2004). Over the last few decades, important steps have been made in reducing water pollution from point sources; however, point sources of pollution like wastewater treatment plants, sewer system overflows, industrial facilities, and animal feeding operations continue to contribute to coastal and marine water quality problems across the U.S. In addition, nonpoint sources like agricultural runoff have not been successfully addressed. It is estimated that nonpoint sources are a factor in 90 percent of all incidents nationwide where water quality is determined to be below the standard set for specific activities, such as recreation, water supply, aquatic life, or agriculture (USCOP 2004).

Overall the nation’s estuaries are in fair condition, but the Southeast and Northeast coastal estuaries range from fair to poor (USEPA 2004). This rating is based on five indicators of ecological condition: water quality index (including dissolved oxygen, chlorophyll a, nitrogen, phosphorus, and water clarity), sediment quality index (including sediment toxicity, sediment contaminants, and sediment total organic carbon (TOC), benthic index, coastal habitat index, and

fish tissue contaminants index. Twenty-one percent of resources are unimpaired (good condition); 35 percent, impaired (poor condition); and 44 percent, threatened (fair condition) for aquatic life use or human use. The indicators that show the poorest conditions throughout the U.S. are coastal habitat condition, sediment quality, and benthic condition. The indicators that generally show the best condition are the individual components of water quality—dissolved oxygen and dissolved inorganic nitrogen (EPA 2004d).

The structure and function of marine and coastal ecosystems—and their overall health—are adversely affected by increased stress from human activities, which have altered these systems for a long period of time. However, the scale, intensity and rate of human activities and associated impacts has significantly increased in the past century, as a consequence of, among other things, growing populations, higher levels of consumption, and technological advances. For example, human population concentration in coastal areas is expected to continue to increase with time, increasing the potential for human impacts. Human impacts on marine and coastal resources have resulted in declines in natural systems and populations as a result of habitat destruction and resource exploitation, increases in harmful events such as disease epidemics and algal blooms, and issues associated with coastal and marine pollution. Human impacts on marine and coastal resources are significant and are expected to continue to increase along with the scale of human activity. Examples of human influences on marine and coastal resources include the release of toxic effluents, habitat degradation, eutrophication of coastal ecosystems as a result of excessive nutrient loading in coastal ecosystems (particularly along the Atlantic and Gulf coasts), harmful algal blooms, emergent diseases, fallout from aerosol contaminants, coral reef bleaching, nonindigenous aquatic species, and losses of living marine resources from pollution effects and overexploitation (USGS 1999). The cumulative effect of these impacts has resulted in changes in marine and coastal biodiversity and resource sustainability. Examples of documented impacts include the fluctuations in fisheries yields across the U.S.; the crash of the Northeast groundfish fisheries (Montgomery 2003); declines in some marine mammal populations; excessive nutrient loadings from river basin drainages within the Northeast shelf ecosystem that may be the cause reduced oxygen levels and the growing frequency and extent of harmful algal blooms and the emergence of marine mammal and human pathogens; and changes in the gene pool of wild stocks from inadvertent releases of cultured stocks (USGS 1999).

Estuaries are bodies of water that provide transition zones between the fresh water of rivers and the saline environment of the ocean. This interaction produces a unique environment that supports wildlife and fisheries and contributes substantially to the economy of the U.S. Humans place a high value on estuarine areas for living, working, and recreation. Estuaries provide cooling waters for industry and energy production and sites for aquaculture, accommodate the needs of large ships and tanker traffic, buffer coastal areas against storm and wave damage, provide wetlands and bottom habitat, supply space for coastal development, and accumulate pollutants from the rivers and streams entering coastal waters. Estuarine areas are among the most densely populated and heavily used areas in the U.S. and are home to an estimated 45 percent of the country's human population (USGS 1999). As human populations grow, demands for increased use of estuarine resources are expected to continue.

Habitat degradation and loss affect coastal and estuarine ecosystems. The primary threats are wetland destruction, alteration of freshwater flows, toxic chemicals, and nutrient overenrichment. Alterations to the freshwater input through damming and diversions of major rivers have affected coastal ecosystems adapted to seasonal discharges of freshwater. Loss of aquatic plant-based habitats (wetlands, eelgrass, and kelp beds) resulting from development, such as for marinas and docking facilities, adversely affects a variety of food webs that are important to adults and juveniles of several marine and anadromous species. Dredging and dredge disposal in estuaries and bays also cause significant habitat destruction. Marine ecosystems are damaged by habitat loss or alterations in rivers, such as effects due to forestry, industrial, and agricultural practices (e.g., excess sedimentation, hydroelectric dams). Estuaries and coastal systems near urban areas are degraded by runoff from farmlands and by urban development. Much of the

contaminant input to waters consists of organic substances having nutritional value for phytoplankton, which form the base of the food chain. Nitrogenous substances—a range of carbohydrates and fats, phosphates, and other nutrients from atmospheric contamination or discharges to rivers in the coastal zone—result in nutrient enrichment and then phytoplankton blooms. For example, some of the greatest stocks of phytoplankton and highest rates of primary production occur in coastal waters off the New York Bight, enriched by ocean dumping and nonpoint sources (USGS 1999).

Habitat alterations have taken place in rivers and estuaries, as well as in coastal zones, as a result of urbanization. Urbanization results in alteration of freshwater flows, erosion, introduction of toxic chemicals and other contaminants into the waters, introduction of nonindigenous species, and degradation of the marine habitats essential to the survival of living marine resources. Approximately 50 percent of the U.S. population lives close to major freshwater systems or coastal waters. There are numerous demographic trends that suggest these conditions and threats are not likely to change in the immediate future. Thus, as the nation grows, further growth in coastal zones is expected. Coastal development often alters coastal and marine ecosystems and affects living marine resources (EPA 2004d).

Overfishing is recognized as a potential threat to living marine resources. Examples of many overfished stocks can be found throughout the country. Many are disproportionately affected by fishing because of their low numbers in relation to more abundant target species. Despite more stringent federal and state regulations to control overfishing and protect fishing resources throughout the U.S., fishing resources continue to decline—some naturally, some through habitat change, and some through excessive fishing efforts. Destructive fisheries methods damage habitat in coastal and marine areas. In the past, extremely damaging practices of fishing with explosives or poisons were prevalent in the Pacific Islands. Less extreme habitat-destructive harvest methods such as trawling are also of concern. In contrast, habitat alterations—for example, artificial reefs—can be purposefully beneficial to living marine resources.

Highway, Rail, and Marine Networks

Highway, rail, and marine networks that would carry the low-level radioactive waste are within established U.S. transportation systems. Significant environmental issues currently surround transportation corridors, specifically those that are heavily traveled. Congestion has lead to increased air pollution particularly in heavily urbanized areas, including increases in criteria pollutants as well as particulate matter primarily released from diesel combustion, which together have been linked to an array of health effects. Other issues associated with transportation networks include noise and habitat fragmentation through development and sprawl. Transportation safety is also a prominent issue and is regulated by various government entities.

Licensed Low-Level Radioactive Waste Sites

In considering waste disposal, the major issues confronting the industry include meeting demands for space for the waste as well as securing the waste. In 1998, the volume of low-level radioactive waste disposed of was 1.4 million cubic feet (NRC 1998). According to the 2004 GAO report on low level waste, annual low-level radioactive waste disposal volumes have increased 200 percent between 1999 and 2003. For Class B and C wastes, the report concluded that disposal availability at the current demand would only be adequate until mid-2008. However, there are no expected shortfalls in disposal availability for Class A waste. According to the GAO, the Barnwell site is reaching capacity, with about 2.7 million cubic feet left for disposal. The Clive, Utah site on the other hand, has the capacity for more than 20 years of disposal under its current license (58.9 million cubic feet in 2004) (GAO 2004).

Securing the waste is another significant issue at licensed waste sites. Proper adherence to regulations is necessary to ensure that waste is disposed of properly. In addition, the risk of

human intrusion, whether accidental or intentional, is a major concern for disposal sites. This has become particularly salient as concern over terrorism has risen since 2001. Both of the sites being considered in this document are licensed by NRC; and, therefore, they are subject to strict siting, maintenance, and monitoring criteria.

5.3. Cumulative Impacts and Commitment of Resources

5.3.1 DECON Alternative

Waste Removal

The decommissioning of the NSS may involve towing action to transport the vessel to the location of decommissioning. The towing will be accomplished with the receipt of appropriate permits and licenses. The towing will also be accomplished via established navigation routes. Because the NSS will be transferred via established towing procedures, no accidents are expected.

It is assumed that the NSS will be transferred from drydock to an appropriate facility capable of decommissioning the vessel in accordance with regulations and best management practices. Personnel will be trained to appropriately handle the removal of the waste, and measures will be taken to isolate the decommissioning action. Based on these assumptions, other industrial activities may be occurring at the decommissioning location. Additionally, it is likely that there is other hazardous material activity occurring at the site; further, many of the vessels in the vicinity may contain hazardous materials of some kind. Since the action will occur at an industrial type port, short-term wildlife displacement may already be occurring, due to various activities such as maintenance and transportation.

Given the disturbed affected environment of industrial facilities and marine transit corridors, as well as the current issues described above, the activities associated with the DECON Alternative should neither have a significant impact independently or in consideration of other actions simultaneously occurring at the port. Adverse impacts associated with the removal, transport, and disposal of the NSS's waste should be minor; the DECON Alternative is not likely to significantly affect the activities at that site. Additionally, given the age and historic nature of the NSS, there could be beneficial impacts to the NSS itself through decontamination.

Waste Transport

As mentioned in Chapter 4, the radioactive waste would be transported in regulated containers from the industrial facility to the final disposal site, and would be identified with placards allowing handlers and emergency personnel treat the contents with necessary care to avoid any possible environmental impacts. The transport would occur following the procedures detailed in 10 CFR Part 61 and over routes approved for transporting similar waste. It is not expected that the transport of waste from the NSS would significantly alter the burden of hazardous materials at any particular site as a result of this action.

Given that DECON will occur in an industrial port and will transport waste over highways, railways, or established marine routes to a licensed waste site, it is unlikely that similar actions occurring at these sites would have any significant adverse effect on resources at large. The transport and disposal of the waste will effectively remove the waste from threatening local water quality. Because of the minimal adverse impact expected from this action, the DECON Alternative is not likely to influence other simultaneous or reasonably foreseeable actions.

Waste Disposal

Lastly, the disposal of the waste will be done at a licensed site. Title 10 CFR 61 stipulates that permits from NRC are necessary before disposing of low-level radioactive waste. The waste would be disposed with the permits at pre-approved facilities. The selected site would receive

similar wastes regularly and its capacity should be closely monitored. Since the waste disposal will occur at a licensed waste site that is permitted to accept such waste, and because the amount of waste is not expected to displace other wastes at either potential waste site, no significant cumulative effects are expected.

5.3.2 SAFSTOR Alternative

Selecting SAFSTOR for the NSS would require the vessel to be moved to a layberth after drydocking and moored. Any tows would occur via established navigation routes and according to established towing procedures. The incremental impact associated with towing the NSS to the layberth would be negligible.

During SAFSTOR, the vessel would undergo various preparatory tasks, maintenance, surveillance, and monitoring programs. These programs would take place either at the place of mooring or at another appropriate facility capable of performing the maintenance as directed by NRC. If towing to another facility were required, the cumulative impact to the affected environment would be negligible, as the tow would occur over an established route that typically handles vessel traffic. Additionally, any tows would be completed according to appropriate procedures.

Facilities where maintenance work and preparatory activities, including the removal of low-level radioactive material, would be completed would be located in industrialized areas where similar activities may be taking place simultaneously. Given the nature of industrialized port facilities, it is likely that there may be other hazardous materials in the vicinity. Nonetheless, facility personnel will be trained to appropriately perform any necessary maintenance on the vessel.

The remaining coolant still needing appropriate disposal, along with any other removed low-level radioactive material, would be transported in regulated containers from the industrial facility to the final disposal site, and would be identified with placards allowing handlers to treat the contents with necessary care to avoid any possible environmental impacts. The transport would occur following the procedures detailed in 10 CFR Part 61 and over routes approved for transporting similar waste. It is not expected that the transport of waste from the NSS would significantly alter the burden of hazardous materials at any particular site as a result of this action.

As with DECON, any wastes would be disposed at licensed sites permitted to handle such wastes. Appropriate permits, as required by Title 10 CFR 61 would be obtained from NRC before disposing of low-level radioactive waste. Since the waste disposal will occur at a licensed waste site that is permitted to accept such waste, and because the amount of waste is not expected to displace other wastes at either potential waste site, no significant cumulative effects are expected.

Given the disturbed affected environment of industrial facilities and marine transit corridors at which this action may take place, the activities associated with the SAFSTOR alternative should neither have a significant impact independently or in consideration of other actions simultaneously occurring at the port. Moreover, activities associated with this alternative are not likely to significantly affect the activities at that site.

5.3.3 Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable resource commitments are related to the use of nonrenewable resources and the effects that the uses of these resources have on future generations. Irreversible effects primarily result from the use or destruction of a specific resource (e.g., energy and minerals) that cannot be replaced within a reasonable time frame.

Implementation of either the DECON or SAFSTOR alternative involves a commitment of a range of natural, physical, human, and fiscal resources. Fuel and labor will be expended throughout

either decommissioning process. However, these are not in short supply and their use will not have an adverse effect upon continued availability of these resources. The action will also require substantial one-time expenditure of Federal funds in the case of DECON; if SAFSTOR is selected, ongoing funding will be necessary for proper upkeep of the vessel. Additionally, funds will be needed for eventual pursuit of DECON after the waiting period under SAFSTOR has expired.

The commitment of these resources is based on the fulfillment of Federal guidance for the decommissioning of Federal facilities. If DECON is selected, the removal of the low-level radioactive waste from its current environment would benefit the local area and result in unrestricted use of the vessel.

5.4. Summary

Marine and coastal resources are under continuously increasing demand from human activities, including coastal development, fishing, industrial processes, agriculture, and resource exploitation. Additionally, transportation networks receive similar pressure of human development, noise, safety, and air pollution. Waste disposal sites are currently challenged to ensure the safety, security, and availability of space. The cumulative effects of these activities on the differing environments have had varying impacts, resulting in loss of biodiversity, adverse health effects, and reduction in sustainability. Any impacts to natural resources should be negligible and short-term, and the resources are likely to recover. Therefore, the alternatives should not result in any irreversible or irretrievable commitments of resources.

6.0 SECTIONS 106 AND 110 ANALYSIS

6.1. Introduction

The National Historic Preservation Act of 1966 as amended (NHPA), 16 U.S.C. §470 *et seq.,* requires that Federal agencies or applicants for Federal funding and authorizations take into account the effects of their undertakings on historic properties included in or eligible for listing in the National Register of Historic Places (National Register) and seek ways to avoid, minimize, or mitigate any adverse effects on historic properties. The procedures for compliance with the NHPA are contained in 36 C.F.R. §800, *Protection of Historic Properties; Final Rule* (commonly referred to as "the Section 106 process"), and in 36 C.F.R. §68, *The Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards).*

Since 1966, nearly 79,000 properties have been listed in the National Register. Together these files hold information on more than 1.2 million individual resources--buildings, sites, districts, structures, and objects--and therefore provide a link to the country's heritage at the national, state, and local levels (NPS 2006). As the project area centers on industrial facilities and transportation routes, it is not likely to contain any listed historic or cultural properties.

6.2. Current Status and Activities

As the centerpiece of President Eisenhower's *Atoms for Peace* program and the world's first nuclear-powered merchant ship, the Nuclear Ship *Savannah* possesses exceptional national significance (NPS 1991). In 1981 the ship was listed on the National Register of Historic Places while it was on display at the Patriot's Point Naval and Maritime Museum near Charleston, SC. In 1991, the NSS was elevated to National Historic Landmark status by the National Park Service. The NSS was constructed and operated by the Maritime Administration when the agency was located in the Department of Commerce. In 1981 the agency was transferred to the Department of Transportation. Today, the NSS is the only National Register / National Historic Landmark property owned, maintained and administered by the U.S. Department of Transportation.

Section 800.10 (36 CFR Part 800) delineates special requirements for protecting National Historic Landmarks. MARAD has initiated consultation with the National Park Service, the Virginia State Historic Preservation Officer (the state in which the ship currently resides), the Advisory Council on Historic Preservation, the National Trust for Historic Preservation, and the DOT and NRC Federal Preservation Officers with regard to decommissioning and conventional ship maintenance activities. MARAD plans to continue consultation as described in §800.10, which includes the resolution of any adverse effects with the Advisory Council on Historic Preservation and the Secretary.

In planning for decommissioning and license termination, MARAD established a goal that all industrial activities associated with the removal of regulated materials, components and systems would minimize impacts to the ship. Because the ship was expected to operate for as many as 25 years in service, it is equipped with features required for major maintenance activities such as refueling, component and systems replacement, and other industrial efforts. Permanent access openings provided for these activities can equally be employed for the component removal and industrial actions necessary to support decommissioning, with minimal harm to the surrounding ship structure. Under the DECON and license termination strategy, it is expected that the decommissioning activities will result in a clean and free-released reactor compartment, suitable for interpretation through mock-ups and displays if the ship is preserved in the future. No adverse impacts are expected in public spaces throughout the ship, or in the engine room and control room. This approach is fully consistent with the DOT's approach to historic preservation, and in particular the recent (2003) Preserve America initiatives.

In defining the end goal for the NSS decommissioning project as future preservation of the ship, MARAD is proactively considering the ship's landmark and remarkable status as the world's first nuclear-powered merchant ship. In planning for decommissioning and in conducting pre-decommissioning ship maintenance, MARAD is committed to considering and incorporating future preservation requirements in each affected activity. In 2008 MARAD entered into an agreement with the National Park Service to conduct a documentation and recording project of the NSS nuclear facilities under the aegis of the Historic American Engineering Record (HAER). The HAER field surveys are planned to be completed in 2008. Also, in compliance with §800.10, MARAD plans to complete a report detailing all consultations regarding this action and the NSS.

6.2.1 No Action Alternative

Under the No Action Alternative, the NSS would be returned to the fleet. Although there are historic resources in the vicinity of Newport News, there are no known resources in the immediate vicinity. The NSS would continue to sit at its mooring, which would not have any effect on other historic or cultural resources. Public access to the vessel would not be permitted. Under this alternative, the NSS would continue to be maintained under its NRC license.

6.2.2 DECON Alternative

The DECON Alternative involves only the removal, transportation, and disposal of regulated materials. No measurable impacts are expected to historic and cultural resources via transportation for several reasons: 1) transportation corridors are previously disturbed areas, 2) there is no planned construction along these routes, and 3) transport will proceed according to regulations.

The DECON Alternative includes towing the NSS to the decommissioning site, as well as taking the appropriate methods to isolate the remaining low-level nuclear materials and removing them from the vessel. Once a port is selected, a review of sites in the study area will be conducted. The example ports of Hampton Roads, Baltimore, and Charleston are all located adjacent to older historic cities. Within those cities there are a number of historic sites. The characteristics of these sites are usually related to the historic character of that city, and include sites such as old breweries, schools, churches, businesses, and historic houses. Depending on the port eventually selected, further appropriate environmental review would determine whether or not any significant resources could be affected within the study area. However, given the contained nature of the project area, it is unlikely that impacts to other resources would occur. Additionally, although cultural and historic resources may be located in the area of the selected port, there are not likely to be many in the navigable waters or decommissioning area. Towing the vessel through navigable waters where vessels frequently travel would likely not cause any impacts to historic and cultural resources.

DECON of the NSS should not pose any significant threat to historic or cultural resources in the vicinity of the port; however, the decontamination would have an impact on the vessel itself. During this phase, the remaining sources of radioactivity will be removed, including the RPV and ancillary components. However, both the South Carolina Department of Archives and History and the Department of Historic Resources in Virginia believe the removal of the components and materials, which are part of the historical character of the vessel, to be an adverse effect. As such, MARAD plans to continue consultation with the SHPOs, the ACHP, and the Secretary to determine whether or not MARAD's proposed action constitutes and adverse effect. If the action is determined to have an adverse effect, all parties will be consulted on how best to mitigate any of the adverse effects identified.

Given that the vessel has already undergone mothballing, many of the engineering components have already been removed or are no longer functioning. Although the engineering aspect of the vessel is an important part of its history, it is not the sole character-defining feature. Additionally, as stated above, the prior decontamination work that removed the high-level radioactive material has altered the integrity of the initial engineering (i.e., the vessel cannot operate on its own).

Therefore, although there may be an impact by removing the historical waste remaining, it should not be significant. In addition, MARAD's affirmative action to complete a HAER documentation and recording survey will mitigate impacts from removing the waste, as the technical merits of the system will be documented. As stated above, consultation is ongoing among MARAD, the NPS, the ACHP, and the SHPOs, and further mitigation measures may be identified, such as including training replicas to be fashioned in place of where the RPV and components once were.

The low-level nuclear material would be transported in secured containers in trucks, railways, or barges registered to transport such material. Transport would occur over established routes; there are more than 800,000 daily shipments of hazardous materials via truck in the U.S. The action would not involve any construction or disturbance of areas where cultural resources may exist. The incidence of historic properties along these transportation routes is likely to be low. Therefore, no adverse impacts are expected.

The low-level nuclear material will be disposed of at a licensed waste site in either Barnwell, SC or Clive, UT. Both facilities were heavily studied and are environmentally well-monitored, which is a prerequisite before receiving NRC approval to accept the material. After the material is received at the site, protection of cultural and historic resources will be the responsibility of the waste site. Since there are many restrictions and precautions taken in the siting of such facilities, it is assumed that any adverse impacts of the disposal of the NSS's low-level nuclear material to historic resources would be negligible.

Given the age and historic nature of the NSS, decontamination could prove to have a beneficial effect on the NSS. Even with the removal of the ship's nuclear systems and components, the DECON is more likely to provide beneficial effects to the NSS than the No Action and SAFSTOR Alternatives. With the NSS fully decontaminated, NRC would terminate the license and allow unrestricted use of the vessel. This would allow MARAD to explore various avenues for commemoration and/or preservation, such as, such as making it available as a museum.

6.2.3 SAFSTOR Alternative

Under the SAFSTOR Alternative, the vessel will be moved to a retention site and will be subject to various preparatory activities, maintenance, surveillance, and monitoring programs that would ensure the safe upkeep of the vessel. These activities would include the previously described actions necessary for compliance with SAFSTOR standards. At the industrial areas in which the NSS is likely to reside, no cultural or historic resources would be expected to be present in the immediate vicinity. Moreover, maintenance and decommissioning activities (including waste removal and transport) would be completed according to appropriate environmental regulations and would likely be isolated from any cultural and historic resources. Therefore, no significant impacts to cultural and historic resources are be expected.

There may be some minor disturbance to the vessel itself, but any adverse effects would be counterbalanced by the beneficial effects of decommissioning. Removing some of the residual low-level radioactive, yet historic, material may be considered an impact to the vessel's historical integrity, but it should not be significant. Again, MARAD's commitment to the HAER survey to document the technical merits of the system should mitigate impacts from removal of any of the low-level radioactive material. Consultation is ongoing between MARAD, the NPS, the ACHP, and the SHPO, and further mitigation measures may be identified.

Under this alternative the NRC license will need to be maintained due to any remaining low-level radioactive material decayed under SAFSTOR. As a result, public access may be restricted. This could prevent the vessel from being used as a museum or other public education venue.

6.3. Summary

In summary, the total impacts from the alternatives are not expected to be significantly adverse.

This will be ensured through further consultation and the application of appropriate mitigation techniques as described above.

7.0 SECTION 4(f) ANALYSIS

7.1. Introduction

The intent of the Section 4(f) statute of the Department of Transportation Act (49 U.S.C. Sec. 303(c)) is to avoid the use of significant public parks, recreation areas, wildlife and waterfowl refuges, historic sites as part of a project, unless there is no feasible and prudent alternative to the use of such land. The alternatives presented are not transportation-oriented projects, but rather a proposed activity for the protection, preservation, and enhancement of the vessel and long-term public safety. Therefore, the provisions of Section 4(f) may not necessarily apply. Nonetheless, the potential impacts are offered below.

The vessel is a National Historic Landmark, due to its historic character as the world's first nuclear-powered merchant ship. During its operation, the NSS visited 32 domestic and 45 foreign ports. It was considered to be a trail-blazing vessel by demonstrating the U.S.'s interests in the peaceful application of nuclear power (ASME 1983). As noted in Section 6.0, MARAD has been in consultation with several entities in order to determine appropriate ways of preserving the vessel's history.

7.2. Analysis of Alternatives

7.2.1 No Action Alternative

The No Action Alternative would maintain the NSS at its present JRRF mooring or similar anchorage until decommissioning. This alternative was rejected because it does not meet the purpose and need of the project. Moreover, the vessel does not currently comply with contemporary regulatory standards and practices for long-term retention, and taking no action would not change its current monitoring, surveillance, security, and radiological testing activities.

7.2.2 DECON Alternative

The DECON Alternative for this project is to decommission the NSS by removing low-level radioactive nuclear power plant components and material. While a specific decommissioning location has not yet been chosen, the decommissioning work will occur in a disturbed environment at an industrial facility. Moreover, mitigation measures will ensure that the work is appropriately contained within the work facility. The DECON Alternative also involves transporting the removed low-level radioactive waste and permanently disposing of it at a licensed location. Given the proposed action and locations involved, the only notable 4(f) resource to consider in this analysis is the vessel itself.

The DECON Alternative involves using and altering the vessel for the removal of the remaining low-level radioactive material on board. Although this action is required under the NRC's regulations, and will ultimately benefit the vessel, it will permanently alter the vessel. The DECON Alternative entails removing the low-level radioactive power plant components and material. Therefore, only the parts of the ship with remaining low-level radioactivity will be disturbed. The overall integrity of the vessel should not be compromised through the removal of the material. Additionally, to mitigate the removal alterations, MARAD is planning to complete a documentation project to record the vessel's nuclear components, and will also complete a Historic American Engineering Record for the National Park Service as further documentation (MARAD 2006b), which will be undertaken regardless of which alternative is ultimately selected. MARAD may also consider further mitigation such as replacing the removed components with replicas. Therefore, the adverse impacts of the DECON Alternative should be minor. The permanent removal of the low-level radioactive power plant components and material should benefit the long-term use of the vessel; the NRC license would be terminated, allowing for unrestricted use of the vessel. This action would allow MARAD explore methods to further

preserve and/or commemorate the vessel, such as making it available as a museum.

7.2.3 SAFSTOR Alternative

The SAFSTOR Alternative proposes to officially defer the DECON decommissioning activities, and to maintain the NSS in continued long-term retention; however, in a state that is compliant with contemporary SAFSTOR regulations and practices. The alternative involves completing a number of activities necessary to achieve SAFSTOR compliance, including the removal of a small amount of low-level radioactive material. These activities would be completed at an industrial facility capable of performing the work according to NRC regulations, and any waste would be disposed of in approved facilities. After these activities are completed, the NSS would be safely moored and occasionally moved for regular upkeep. Monitoring, surveillance, and security activities would continue, ensuring that the NSS is not posing a risk to the environment or public health and safety. Maintenance would occur at appropriate facilities capable of performing the work according to relevant environmental regulations. In light of these actions, the vessel itself would be the only 4(f) resource of import.

The activities associated with the SAFSTOR alternative are intended to preserve and maintain the vessel. Minor disturbances to the vessel may occur in accordance with various maintenance activities, such as layberthing and drydocking. The NSS was permanently altered when it was rendered inoperable during the initial decommissioning which removed the majority of the radioactive components. This alternative is expected to have no adverse effect on the vessel as a 4(f) resource. Nonetheless, because the vessel would still contain some low-level radioactive material, the NRC license would continue to be required and access to the resource would be restricted from the public.

7.3. Summary

As stated previously, the DECON and SAFSTOR Alternatives are proposed for the protection, preservation, and enhancement of the vessel and long-term public safety. Additionally, these alternatives meet MARAD's purpose and requirement. There is no other feasible or prudent alternative that would enable MARAD to fully decontaminate the ship and discontinue the NRC license. The alternatives discussed previously illustrate that, with the exception of the removal of the irradiated material, there is no physical taking associated with this action, nor should there be substantial impairment to the resource. Additionally, there should be no constructive use impact. The measures outlined previously will mitigate any significant adverse effects; and, decommissioning will likely protect public health and safety. Moreover, DECON will ultimately allow the public access to the historic vessel. In conclusion, these factors together produce a finding of no adverse effect.

8.0 MITIGATIVE MEASURES

As discussed in Chapters 4 and 5, no significant adverse impacts are expected as a result of the alternatives. Since no significant adverse impacts are foreseeable, specific mitigation measures have not been required. Should the DECON or SAFSTOR Alternative be selected to implement by MARAD after the NEPA process is completed, best management procedures will be followed to minimize all adverse impacts during decommissioning. Additionally, MARAD may consider the use of supplementary measures for increased worker and environmental protection, such as remote manipulators, temporary shielding devices, airlocks, temporary cells, and mobile ventilation and filtration systems.

The potential for some adverse impacts to Section 106/110 and Section 4(f) resources has been identified in relation to the decommissioning work. MARAD is committed to considering and incorporating future preservation requirements for the NSS. Toward that end, MARAD has an agreement with the National Park Service to conduct a documentation recording project of the NSS nuclear facilities under the aegis of the HAER. The HAER surveys are planned to be completed in 2008, regardless of the action eventually taken. Through continued consultation with the appropriate agencies, MARAD may identify other mitigation measures to pursue, such as the replacement of removed components with training replicas.

At this point in the planning process, a port selection for the decommissioning work has not yet been made. At the time of port selection, the appropriate level of environmental analysis will be considered and further mitigation measures may be explored at that time, and as deemed necessary.

9.0 AGENCIES AND PERSONS CONSULTED

United States Environmental Protection Agency

John Lishman
Ocean and Coastal Protection Division,
Marine Pollution Control Branch

United States Fish and Wildlife Service

Deb Carter
Division of Endangered Species

Pat Carter, NEPA Coordinator
Division of Endangered Species

Mary Ratnaswamy, Field Supervisor
Chesapeake Bay Field Office

Eric Davis, Endangered Species Biologist
Virginia Field Office

Pete Benjamin, Field Supervisor
Raleigh Field Office

Mark Caldwell, Ecological Services
Charleston Field Office

National Marine Fisheries Service

Jayson Cahn
Office of Protected Resources

David Burnhard
Southeast Regional Office

Pat Scida
Northeast Regional Office

Historic Preservation

Dr. Rodger Stroup, SHPO
Department of Archives and History
South Carolina

Dr. Jeffrey Crow, SHPO
Division of Archives and History
North Carolina

Kathleen Kilpatrick, SHPO
Department of Historic Resources
Virginia

J. Rodney Little, SHPO
Maryland Historical Trust
Maryland

10.0 REFERENCES

Alliance for the Chesapeake Bay. 2006. Elizabeth River Fact Sheet. Available online: http://www.acb-online.org/pubs.cfm

American Society of Mechanical Engineers (ASME) 1983. First Nuclear-Powered Merchant Vessel. Patriots Point Naval and Maritime Museum. Mt. Pleasant, South Carolina. October 15, 1983.

Areva 2007. N.S. SAVANNAH SAFSTOR Plan and Engineering Evaluation. Report Number STS-104, Revision 0 October 26, 2007.

Centers for Disease Control and Prevention (CDC). July 19, 1996. Public Health Assessment: Fort Eustis (U.S. Army), Newport News, Newport News County, Virginia. CERCLIS No. VA6210020321. Agency for Toxic Substances and Disease Registry, Division of Health Assessment and Consultation. http://www.atsdr.cdc.gov/HAC/PHA/fteustis/fte_p1.html.

Clemson University Cooperative Extension Service (Clemson) 2006. Radiation as it Relates to Agriculture. Clemson University Extension Service Emergency Preparedness. Available online: http://www.clemson.edu/ep/radiation2.htm. Accessed January 12, 2006.

Commonwealth of Virginia 2006. Correspondence regarding the Draft Environmental Assessment: Decommissioning of the Nuclear Ship Savannah, entitled "DOT DMS Docket Number MARAD-2006-25549, DEA, Nuclear Ship Savannah Decommissioning" from Ellie Irons, Office of Environmental Impact Review to MARAD.

Department of Conservation and Recreation – Division of Natural Heritage (DCR-DNH). October 1997. A Natural Heritage Zoological Inventory of Fort Eustis, Virginia. Natural Heritage Technical Report 97-14.

Energy*Solutions*, undated. Safety. Available online: http://www.energysolutions.com/index.php

Environmental Protection Agency (EPA) 2004a. Particle Pollution Report: Current Understanding of Air Quality and Emissions Through 2003. Available online: http://www.epa.gov/airtrends/aqtrnd04/pm.html, December 2004.

EPA 2004b. Air Emission Trends – Continued Progress Through 2003. Available online: http://www.epa.gov/air/airtrends/aqtrnd04/econ-emissions.html

EPA 2004c. National Recommended Water Quality Criteria. Office of Water, Office of Science and Technology.

EPA 2004d. Biological Indicators of Watershed Health. EPA, Washington, D.C. Available online: http://www.epa.gov/bioindicators/html/invertebrate.html.

EPA 2005. What are Water Quality Standards? Available online: http://www.epa.gov/waterscience/standards/about/pol.htm. Environmental Protection Agency. February 8, 2005.

EPA 2006a. Waste Treatment/Control. Available online: http://www.epa.gov/osw/treatment.htm. March 2, 2006.

EPA 2006b. What are Wetlands? Available online: http://www.epa.gov/owow/wetlands/vital/what.html. February 22, 2006.

Federal Motor Carrier Safety Administration (FMCSA) 2004. Office of Information Management. Publication #: FMCSA-RI-04-024. May 2004 , Ralph Craft PhD.

U.S. General Accounting Office (GAO). 2004. Low-level Radioactive Waste. GAO-04-604. June 2004.

Godoy, Franco. 2003. GEIS Screening-level Bounding Analysis. Memo to Jon Stouky, Sr. Vice President of WPI, and John Bowen. October 16, 2003.

Hampton Roads Maritime Association (HRMA). 2003. Port of Hampton Roads Annual Report.

Maritime Administration (MARAD) 1976. Status Report on the Transfer of the NS Savannah to the James River Reserve Fleet. Memo from Arys Huizinga, Recorder, to the Director of the Office of Domestic Shipping. US Department of Commerce. Maritime Administration. March 19, 1976.

MARAD 1994a. N.S. SAVANNAH Technical Specifications. Docket No. 50-238. Appendix A to Facility License No. NS-1. Amendment No. 12. US Department of Transportation. May 26, 1994.

MARAD 1994b. Environmental Analysis of the Maritime Administration Ship-Disposal Program. Prepared by Halliburton NUS Corporation. U.S. Department of Transportation Maritime Administration.

MARAD 1994. Environmental Assessment: N.S. SAVANNAH. U.S. Department of Transportation, Maritime Administration.

MARAD 1997 Environmental Assessment of the Sale of National Defense Reserve Fleet Vessels for Scrapping. Report Number: MA-ENV-820-96003. U.S. Department of Transportation, Maritime Administration.

MARAD 2003. Nuclear Ship (NS) SAVANNAH Decommissioning Plans. Docket No. 50-238. NRC Meeting. September 24, 2003.

MARAD 2004. Transfer of National Defense Reserve Fleet Vessels from the James River Reserve Fleet for Disposal at Able UK Facilities, Teesside, U.K. Draft Environmental Assessment. U.S.DOT Maritime Administration, Washington, D.C. February 20, 2004.

MARAD 2006a. Personal communication from Bill Halloran, Volpe Center to Nicole Grewell, Volpe Center. January 9, 2006.

MARAD 2006b. Personal communication from Erhard Koehler, MARAD to Nicole Grewell, Volpe Center. August 4, 2006.

Maryland Department of Environment. 2005. Water Quality Analyses with EPA's Concurrence on MDE's Findings. Maryland Department of Environment. January 18, 2005. Available online: http://www.mde.state.md.us/Programs/WaterPrograms/TMDL/ApprovedFinalTMDL/WQA_final_harbor_Zn_Pb.asp

Montgomery, D. 2003. King of Fish: The Thousand-Year Run of Salmon. Westview Press Books. 2003.

Mossman, Kenneth, Ph.D. 2004. Radiation Primer. Appendix A of Monticello Spent Fuel Storage Certificate of Need Application. Project Instruction No. MN04-P501833. Radiation Services Associates. Scottsdale, AZ. October 4, 2004.

Norfolk Naval Shipyard Port Operations. 2003. Personal communication. December 8, 2003.

National Oceanographic and Atmospheric Administration (NOAA) 2006. Correspondence regarding the Draft Environmental Assessment: Decommissioning of the Nuclear Ship Savannah, from Mary Colligan, Northeast Regional Office to Nicole Grewell, Volpe Center. August 16, 2006.

National Oceanographic and Atmospheric Administration (NOAA) 2005a. Coasts. Available online: http://www.noaa.gov/coasts.html. National Oceanographic and Atmospheric Administration, U.S. Department of Commerce. August 9, 2005.

NOAA 2005b. About Your National Marine Sanctuaries: Frequently Asked Questions. National Oceanographic and Atmospheric Administration. December 27, 2005. http://www.sanctuaries.nos.noaa.gov/about/faqs/welcome.html

National Park Service (NPS) 1991. National Historic Landmark nomination file for Nuclear Ship *Savannah*.

NPS 2006. National Register Research. Available online: http://www.cr.nps.gov/nr/research/index.htm). Accessed February 13, 2006.

National Resources Defense Council (NRDC) 2004. Harboring Pollution: Strategies to Clean Up U.S. Ports. National Resources Defense Council: New York. August 2004.

Nuclear Energy Institute (NEI) 2004. Disposal of Low-Level Radioactive Waste. Available online: http://www.nei.org/doc.asp?docid=537

NEI 2006. The Safe Transportation of Used Nuclear Fuel. Available online: http://www.nei.org/index.asp?catnum=2&catid=80

Nuclear Regulatory Commission (NRC) 1988. Final Generic Environmental Impact Statement: on decommissioning of nuclear facilities. NUREG-0586. Office of Nuclear Research. August 1988.

NRC 2002. Generic Environmental Impact Statement on Decommissioning of Nuclear Facilities: Supplement 1. Final Report. US Nuclear Regulatory Commission. Office of Nuclear Reactor Regulation. Washington, D.C. 2002.

NRC 2005. Teacher's Lesson Plans – Unit 4: Radioactive Waste. Available online: http://www.nrc.gov/reading-rm/basic-ref/teachers/unit4.html. October 26, 2005.

Ohio State University. No date. http://www.ag.ohio-state.edu/~rer/rerhtml/rer_10.html

Pipeline and Hazardous Materials Safety Administration (PHMSA). 2002. Hazardous Materials; Advisory Guidance on Packaging and Shipper Responsibilities. Advisory Guidance, 49 Fed. Reg. 31974-31978. Office of Hazardous Materials Safety. May 13, 2002. (to be codified at 49 C.F.R. chapter I). http://hazmat.dot.gov/regs/notices/misc/not2002_05.htm

Puget Sound Action Team (PSAT) 2002. Puget Sound's Health 2002. Available online: http://www.psat.wa.gov/Publications/pshealth2002/habitat_eelgrass.htm

Rand 2000. Disposal Options for Ships. U.S. Navy and Rand Publications. Online: http://www.rand.org/pubs/monograph_reports/MR1377/

Research and Special Programs Administration (RSPA). 1998. Radioactive Material Regulations Review. U.S. Department of Transportation http://hazmat.dot.gov/training/ramreview.pdf (accessed May 30, 2006).

RSPA 2003. The Role of Hazardous Material Placards in Transportation Safety and Security. U.S. Department of Transportation. http://hazmat.dot.gov/riskmgmt/hmt/0803RedactedPlacardingReportSSI.pdf (accessed May 30, 2006).

South Carolina Department of Health and Environmental Control. 1999. Watershed Water Quality Assessment. 2nd edition. Bureau of Water Quality. Available online: http://www.scdhec.gov/eqc/admin/html/eqcpubs.html#Water

Smithsonian Environmental Research Center and the Sierra Club (SERC). May 30, 2001. Shoreline Erosion. Watershed Radio. http://www.watershedradio.org/may2001/053001shore.htm

Terwilliger, K.A. 1999. Endangered Species Management Plan for the Bald Eagle (*Haliaeetus leucocephalus*). Prepared for US Army Transportation Center. Fort Eustis, VA.

Tetra Tech, Inc. 1999. Integrated Natural Resources Management Plan, Fort Eustis, Virginia. Prepared for the U.S. Army Transportation Center Fort Eustis, Directorate of Public Works (ATZF-PWE) and U.S. Army Corps of Engineers, Norfolk District by Tetra Tech, Inc. Fairfax, VA.

United States Census Bureau 2006. State and County QuickFacts. Data derived from Population Estimates, 2000 Census of Population and Housing, 1990 Census of Population and Housing, Small Area Income and Poverty Estimates, County Business Patterns, 1997 Economic Census, Minority- and Women-Owned Business, Building Permits, Consolidated Federal Funds Report, 1997 Census of Governments. Last Revised: Thursday, 12-Jan-2006 13:30:48 EST. Available online: http://quickfacts.census.gov/qfd/states/00000.html.

USCOP 2004. *An Ocean Blueprint for the 21st Century*. Final Report. U.S. Commission on Ocean Policy. Washington, DC. 2004. ISBN#0–9759462–0–X. Web site: http://www.oceancommission.gov/documents/full_color_rpt/000_ocean_full_report.pdf

U.S. Geological Survey (USGS). 1999. Status and Trends of the Nation's Biological Resources. U.S. Geological Survey. Web site: http://biology.usgs.gov/s+t/SNT/index.htm

United States Coast Guard (USCG) 2000. Commanding Officer's Environmental Guide. Report Number: COMDTPUB P5090.1.A.

USCG 2006. About Us: Marine Safety Office, Charleston, S.C. Available online: http://www.uscg.mil/d7/units/mso-chasn/about_us.html. Accessed February 8, 2006.

United States Geological Service (USGS) 2004. New Reports on our Nation's Water Quality (based on Hamilton, P.A., Miller, T. L., and Myers, D.N., 2004, Water quality in the Nation's streams and aquifers—Overview of selected findings, 1991-2001: U.S. Geological Survey Circular 1265, 20 p.). Available online: http://pubs.usgs.gov/fs/2004/3045/

United States Fish and Wildlife Service (USFWS) 2006. Correspondence regarding the Draft Environmental Assessment: Decommissioning of the Nuclear Ship Savannah, entitled "Decommissioning of Nuclear Powered Merchant Ship Savannah," from Timothy Hall, Charleston Field Office, to Nicole Grewell, Volpe Center. August 29, 2006.

USFWS 2005a. U.S. Fish and Wildlife Service. *Digest of Federal Resource Laws of Interest to the U.S. Fish and Wildlife Service. Coastal Barrier Resources Act.* http://www.fws.gov/laws/lawsdigest/coasbar.html

USFWS 2006b. U.S. Fish and Wildlife Service. John H. Chafee Coastal Barrier Resource System. Date accessed February 8, 2006. http://www.fws.gov/habitatconservation/cbra2.htm#Location

WPI 2005. NS SAVANNAH Reactor Pressure Vessel Drilling, Sampling, and Radiochemical Analysis Project Report. Draft NSS Sample Data Report, Revision E. November 1, 2005.

11.0 PREPARERS AND CONTRIBUTORS

Name	Affiliation	Contribution
Nicole R. Grewell	Volpe National Transportation Systems Center	Project Manager, Lead Technical Writer
Carolyn Junemann	Maritime Administration	Technical Reviewer
Adam Klauber	Volpe National Transportation Systems Center	Water Quality and Hazardous Materials Sections
Erhard Koehler	Maritime Administration	Technical Reviewer
Deirdre Morrissey	Volpe National Transportation Systems Center	Navigation and Coastal Resources Sections
John Osborne	Maritime Administration	Technical Reviewer
Arthur Paynter	Maritime Administration	Technical Reviewer
Paul Valihura, Ph.D.	Volpe National Transportation Systems Center	Technical Reviewer
Dan Yuska	Maritime Administration	Technical Reviewer

12.0 APPENDICES

Appendix A. Sample letter sent to Section 7 consulting agencies.

August 9, 2006

Mary Ratnaswamy, Field Supervisor
United States Fish and Wildlife Service
177 Admiral Cochrane Drive
Annapolis, MD 21401

Dear Field Supervisor,

I am writing you on behalf of the Maritime Administration (MARAD), who is currently using the NEPA process to evaluate the impacts of a proposed project. MARAD owns and maintains the Nuclear Ship SAVANNAH (NSS), the world's first nuclear powered merchant ship. Although rendered permanently inoperable in 1972, the NSS continues to be licensed by the US Nuclear Regulatory Commission (Nuclear Regulatory Commission) under 10 CFR Part 50 as a power generation reactor. The NSS was powered by a pressurized water reactor (PWR) that was originally operated from 1962 to 1970, after which it was deactivated, defueled and partially decontaminated in accordance with the best practices of the day. All high level radioactive materials were removed at that time. Additionally, any areas of remaining radioactivity were sealed and contained. After a period of public display (1981 -1994), the ship was relocated to the James River National Defense Reserve Fleet (JRRF) site for long-term retention. At the JRRF, the vessel is locked, alarmed, and patrolled by a security force. According to a recent radiochemical analysis performed on the NSS in 2005, the NSS's reactor pressure vessel (RPV) and internals package meet the radiological requirements of the Nuclear Regulatory Commission and the State of South Carolina for a Class A waste package, the lowest class of low-level radioactive waste.

In 2002, MARAD decided to consider final disposition of the vessel. Therefore, a planning process was initiated to consider the decontamination and disposal of the remaining low-level irradiated material. MARAD has proposed to prepare the NSS for decommissioning, i.e. final nuclear decontamination, and is using the NEPA process both to evaluate potential impacts of the Proposed Action as well as the No-Action Alternative, i.e. returning the vessel to the reserve fleet without any decommissioning

actions. MARAD has come to the conclusion through preliminary scoping of the Proposed Action that there may potentially be both beneficial and adverse effects to the environment. However, it is not believed that the potential negative impacts would be significant. At this stage of the planning process, MARAD will be conducting an analysis of the proposed decommissioning of the NSS. Therefore, MARAD, with the help of the Volpe National Transportation Systems Center, has decided to prepare an Environmental Assessment (EA). Under the Proposed Action, the vessel would be towed via an established maritime route to a facility for subsequent decommissioning. The decommissioning would occur at an industrial facility that has the capability, or subcontractor support, to complete the decommissioning work as required by the Nuclear Regulatory Commission in accordance with all federal regulations. While no selection has been made at this time, the prospective industrial facility will be located at a port along the U.S. Atlantic coast. Among the potential ports are the following: Baltimore, MD; Hampton Roads, VA; and Charleston, SC. These three example ports are examined in the EA. After removal, the low-level radioactive waste material would be transported to a disposal location via secure methods and routes typically used to ship low-level radioactive material. Finally, the packaged low-level radioactive waste removed from the NSS will be disposed of according to Federal regulations and applicable state regulations and at an approved facility that accepts Class A waste. After the decommissioning decision is made, specific decisions concerning the final disposition of the vessel will be made (e.g. port decommissioning facility selection), along with the appropriate level of environmental review.

The purpose of this letter is to notify you that concurrent with the NEPA process, MARAD intends to meet its obligations under the Endangered Species Act (ESA) of 1973. Through our preliminary research, we have found that several endangered species were listed in the regions of the three example ports, including:

- Peregrine falcon
- Bald eagle
- Least tern
- Piping plover
- Delmarva fox squirrel
- Loggerhead seaturtle

In accordance with Section 7c(1) of the ESA, the Migratory Bird Treaty Act, and any other pertinent legislation, regulations, or treaties regarding the protection of endangered species, I am writing to officially request information on whether any species, or their critical habitats, which are listed, proposed to be listed, candidates to be listed, or otherwise protection may be present within the potential study areas. MARAD will use this information to determine potential effects of the proposed action on those identified species and habitats.

We will be sending you a copy of the Draft EA shortly. Please advise us of any environmental concerns that you feel should be addressed. Should you have any questions, please feel free to contact me.

Sincerely,

Nicole R. Grewell
Environmental Protection Specialist
USDOT Volpe Center

Appendix B. Sample letter sent to Section 106 consulting agencies.

August 9, 2006

Dr. Rodger E. Stroup, SHPO
Department of Archives & History
8301 Parklane Road
Columbia, SC 29223-4905

Dear State Historic Preservation Officer,

I am writing you on behalf of the Maritime Administration (MARAD), who is currently going through the NEPA process to evaluate the impacts of a proposed project. MARAD owns and maintains the Nuclear Ship SAVANNAH (NSS), the world's first nuclear powered merchant ship. Although rendered permanently inoperable in 1972, the NSS continues to be licensed by the US Nuclear Regulatory Commission (Nuclear Regulatory Commission) under 10 CFR Part 50 as a power generation reactor. The NSS was powered by a pressurized water reactor (PWR) that was originally operated from 1962 to 1970, after which it was deactivated, defueled and partially decommissioned in accordance with the best practices of the day. All high level radioactive materials were removed at that time. Additionally, any areas of remaining radioactivity were sealed and contained. After a period of public display (1981 -1994), the ship was relocated to the James River National Defense Reserve Fleet (JRRF) site for long-term retention. At the JRRF, the vessel is locked, alarmed, and patrolled by a security force. According to a recent radiochemical analysis performed on the NSS in 2005, the NSS's reactor pressure vessel (RPV) and internals package meet the radiological requirements of the Nuclear Regulatory Commission and the States of South Carolina and Utah for a Class A waste package, the lowest class of low-level radioactive waste (WPI 2005).

In 2002, MARAD decided to consider final disposition of the vessel. Therefore, a planning process was initiated to consider the decontamination and disposal of the remaining low-level irradiated material. MARAD has proposed to prepare the NSS for decommissioning, i.e. final nuclear decontamination, and is using the NEPA process both to evaluate potential impacts of the Proposed Action as well as the No-Action Alternative, i.e. returning the vessel to the reserve fleet without any decommissioning

actions. MARAD has come to the conclusion through preliminary scoping of the Proposed Action that there may potentially be both beneficial and adverse effects to the environment. However, it is not believed that the potential negative impacts would be significant. At this stage of the planning process, MARAD will be conducting an analysis of the proposed decommissioning of the NSS. Therefore, MARAD, with the help of the Volpe National Transportation Systems Center, has decided to prepare an Environmental Assessment (EA).

Under the Proposed Action, the vessel would be towed via an established maritime route to a facility for subsequent decommissioning. The decommissioning would occur at an industrial facility that has the capability, or subcontractor support, to complete the decommissioning work as required by the Nuclear Regulatory Commission in accordance with all federal regulations. While no selection has been made at this time, the prospective industrial facility will be located at a port along the U.S. Atlantic coast. Among the potential ports are the following: Baltimore, MD; Hampton Roads, VA; and Charleston, SC. These three example ports are examined in the EA. After removal, the low-level radioactive waste material would be transported to a disposal location via secure methods and routes typically used to ship low-level radioactive material. Finally, the packaged low-level radioactive waste removed from the NSS will be disposed of according to Federal regulations and applicable state regulations and at an approved facility that accepts Class A waste. After the decommissioning decision is made, specific decisions concerning the final disposition of the vessel will be made (e.g. port decommissioning facility selection), along with the appropriate level of environmental review.

Through our preliminary research, we have found that the example ports of Fort Eustis/Hampton Roads, Baltimore, and Charleston are all located adjacent to older historic cities. Therefore, within those cities there are a number of historic sites, such as old breweries, schools, churches, businesses, and historic houses. Although it is currently not thought that this undertaking would adversely affect nearby historic properties, depending on the port eventually selected, further appropriate NEPA environmental review would determine whether or not any significant resources would occur within the study area. The purpose of this letter is to notify you that concurrent with the NEPA process, MARAD intends to meet its obligations under the National Historic Preservation Act (NHPA), and to initiate a consultation process with you. In accordance with Section 106 of NHPA, and any other pertinent legislation, regulations, or treaties regarding the protection of historic property, I am writing to officially request information on properties that are listed, proposed to be listed, or otherwise protection may be present within the potential study areas. Due to the historic nature of the vessel, and its status as a National Historic Landmark, MARAD has already initiated contact with the Virginia SHPO and the National Park Service (NPS) regarding Section 106 assessment of the vessel itself. MARAD is sponsoring an NPS Historic American Engineering Record documentation project for the vessel's nuclear facilities in FY2007. MARAD expects that consultation effort will become more focused once a decommissioning decision is made and a port facility is selected.

We will be sending you a copy of the Draft EA shortly. Please advise us of any environmental concerns that you feel should be addressed. Should you have any questions, please feel free to contact me.

Sincerely,

Nicole R. Grewell
Environmental Protection Specialist
USDOT Volpe Center

Appendix C. Comments received from consultation and public scoping.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
One Blackburn Drive
Gloucester, MA 01930-2298

AUG 16 2006

Nicole R. Grewell
US Department of Transportation Volpe Center
55 Broadway
Cambridge, Massachusetts 02142

Dear Ms. Grewell,

This is in response to your letter dated August 11, 2006 regarding the disposition of the Nuclear Ship Savannah, currently owned and maintained by the Maritime Administration (MARAD) at the James River National Defense Reserve Fleet (JRRF) site. MARAD is currently preparing an Environmental Assessment (EA) on the effects of the proposed decommissioning of the Savannah. Under the proposed action, the vessel would be towed via an established maritime route to a facility for subsequent decommissioning. The decommissioning would occur at an industrial facility that is capable of completing the work as required by the Nuclear Regulatory Commission. A final port has not yet been selected but it is likely to be Baltimore, Hampton Roads or Charleston. Your letter requests information on the presence of species listed as threatened or endangered under the jurisdiction of NOAA's National Marine Fisheries Service (NMFS) at the potential ports. Please note that the ports of Baltimore and Hampton Roads fall within NMFS Northeast Region while the port of Charleston falls within NMFS Southeast Region.

Several threatened and endangered species under the jurisdiction of NMFS can be found along the Atlantic Coast and may be present in the ports of Baltimore, Hampton Roads and Charleston. The federally endangered shortnose sturgeon (*Acipenser brevirostrum*) is known to be present in the Chesapeake Bay and rare transient shortnose sturgeon may occur in Baltimore Harbor, most likely during the summer and fall. A population of shortnose sturgeon also occurs in the Santee-Cooper system in South Carolina and this species may occur in the Charleston area.

Several species of listed sea turtles are present in the Chesapeake Bay from April 1 – November 30 each year. Federally threatened loggerhead (*Caretta caretta)* and leatherback (*Dermochelys coriacea*) and federally endangered Kemp's ridley (*Lepidochelys kempi*) and green (*Chelonia mydas*) sea turtles may be present near the port of Hampton Roads, with loggerhead and Kemp's ridleys being most common. These species area also present year round in the Charleston area. Sea turtles are not likely to be found at the Port of Baltimore. Any of these turtle species may also occur along the route transited by the Savannah.

While no listed whales are likely to occur at the Ports of Baltimore, Hampton Roads or Charleston, these species may occur along the route transited by the Savannah. Federally endangered Northern right whales (*Eubalaena glacialis*) and humpback whales (*Megaptera*

novaeangliae) may be found in nearshore waters while fin (*Balaenoptera physalus*) and sperm (*Physter macrocephalus*) whales are typically found in deeper offshore waters.

Consultation pursuant to Section 7 of the Endangered Species Act (ESA) of 1973, as amended, is required when a federal agency funds, conducts or authorizes an action that may affect a listed species. Without more information on the proposed route for towing the Savannah and information on the speed that the vessel will be towed at, it is difficult to determine if this project is likely to affect listed species. NMFS recommends that MARAD submit additional project details to NMFS along with a determination of effects and a request for concurrence. If the port of Baltimore or Hampton Roads is chosen, this information should be submitted to the attention of the Endangered Species Coordinator, NMFS Northeast Regional Office, Protected Resources Division, One Blackburn Drive, Gloucester, MA 01930. If the port of Charleston is chosen, this information should be submitted to the attention of Eric Hawk, Section 7 Coordinator, NMFS Southeast Regional Office, 263 13th Ave South, St. Petersburg, FL 33701. After reviewing this information, NMFS would then be able to conduct a consultation under section 7 of the ESA. Should you have any questions about these comments or about the section 7 consultation process in general, please contact Julie Crocker at (978)281-9300 ext. 6530 or by e-mail (julie.crocker@noaa.gov).

Sincerely,

Mary A. Colligan
Assistant Regional Administrator
for Protected Resources

Cc: Nichols, F/NER4 – Annapolis
Hawk, F/SER3

File Code: MARAD decommissioning of the Savannah

PCTS: T/NER/2006/03962

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE

Southeast Regional Office
263 13th Avenue South
St. Petersburg, FL 33701
(727) 824-5312, FAX 824-5309
http://sero.nmfs.noaa.gov

SEP 6 2006

F/SER3:AM

Ms. Nicole Grewell
Environmental Protection Specialist
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142

Dear Ms. Grewell:

This responds to your August 15, 2006, letter and environmental assessment (Docket # MARAD-2006-25549 and draft Finding of No Significant Impact) to the National Marine Fisheries Service (NMFS). You requested our comments on the EA.

We believe the EA adequately addresses the issues associated with threatened and endangered species under NMFS' purview, in the Southeast U.S. (i.e., south of the Virginia-North Carolina border). We have no additional comments. If you have any questions, please contact Mr. Eric Hawk, fishery biologist, at (727) 824-5312, or by e-mail at Eric.Hawk@noaa.gov.

Sincerely,

David Bernhart
Assistant Regional Administrator
for Protected Resources

File: 1514-22 L DOT
Ref: T/SER/2006/04155

United States Department of the Interior

FISH AND WILDLIFE SERVICE
176 Croghan Spur Road, Suite 200
Charleston, South Carolina 29407

August 29, 2006

Ms. Nicole R. Grewell
Environmental Protection Specialist
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142

Re: Decommissioning of Nuclear Powered Merchant Ship Savannah (NSS)

Dear Ms. Grewell:

The U.S. Fish and Wildlife Service (Service) has received your submittal on the proposed decommissioning of the merchant ship Savannah by the Maritime Administration (MARAD). This phase of decommissioning for the Savannah essentially entails decontamination and disposal of the remaining low level nuclear material onboard the ship. The Savannah will be towed to one of several ports under consideration for this task, including the Port of Charleston. MARAD has prepared an Environmental Assessment (EA) for this proposal and is seeking the Service's comments through obligations under the Endangered Species Act (ESA) of 1973. The Service has reviewed the EA and is pleased to offer the following comments for MARAD's consideration. Service comments will focus on the Charleston, South Carolina area but may be applicable to other ports under consideration.

The EA dutifully addresses a range of topics under the Affected Environment section; water quality, air quality, historic resources, environmental justice, etc. and has noted that the proposal involves no construction activities, only towing via established navigation channels to an appropriate port for decontamination. No direct impacts to upland wildlife habitats are anticipated. Potential consequences were addressed for each of the topics with the conclusion that the proposal may result in negligible impacts to the environment. This conclusion is based in part on vessel preparation and adherence to existing, stringent Federal regulations pertaining to nuclear material disposal.

However, there remains the potential for impacts to aquatic habitat, primarily water quality, as well as resident aquatic species in the event of a spill. The EA recognizes the potential for water quality impacts through spills due to accidents during towing, removal of waste from the Savannah or during the ultimate disposal of the waste. Therefore, the Service recommends a contingency plan be developed in the event of a spill. This plan must detail measures to contain any spill, incorporate communications plan with appropriate local, state and federal agencies and describe methods for cleanup of any spill material.

Six species were listed in the EA as occurring within the regions of the prospective decommissioning port locations. Of these six only three are federally protected in South Carolina; the bald eagle, *Haliaeetus leucocephalus*, piping plover, *Charadrius melodus* and the loggerhead sea turtle, *Caretta caretta*. Habitat and feeding preferences of the bald eagle and piping plover make it unlikely that the proposed decommissioning would have any effect upon these species.

The loggerhead sea turtle is one of several marine species that is protected by both the Service and the National Oceanic and Atmospheric Administration-Fisheries Division (NOAA Fisheries). This shared jurisdiction (50CFR223.102) dictates that NOAA Fisheries is responsible for sea turtles while they are in the water, the Service exercises its jurisdiction only when the turtles are on land, normally during the nesting season. The sea turtle may be impacted depending upon the proposal's time frame within South Carolina waters. Normally a pelagic species loggerhead turtles, as well as other turtle species, may be concentrated within coastal waters during their nesting season of May through October. Higher concentrations of turtles during this time of year increases the potential for a turtle strike by both the Savannah and support vessels. Therefore, the Service must recommend MARAD consult with NOAA Fisheries on the potential impacts to sea turtles.

There are two additional species that were not addressed in the EA and must be considered; the West Indian manatee, *Trichechus manatus* and the short nose sturgeon, *Acipenser brevirostrum*. Classified as an anadromous species, the sturgeon falls under the jurisdiction of NOAA Fisheries. Please contact NOAA Fisheries for further consultation requirements on the sturgeon.

The majority of marine mammal species are under the jurisdiction of NOAA Fisheries. However, through a memorandum of Understanding (74-001) the West Indian manatee falls under the jurisdiction of the Service. A native of Florida, the manatee may migrate to South Carolina inshore waters during the warmer months. Manatees are frequently sited in the Charleston Harbor and its tributary creeks and rivers during this time. The slow moving manatees are subject to vessel collisions resulting in injury or death. The Service recommends the final EA discuss measures to minimize the potential for manatee impacts if the Port of Charleston is selected as the decommissioning location.

The draft EA provides some discussion on the Savannah's final use after the low level hazardous waste is removed. Due to its historic character (first nuclear powered merchant ship), the Savannah has been designated as a National Historic Landmark. The draft EA states that the Savannah may be commemorated as a museum, however this use has not been finalized. The Service requests MARAD consider of utilizing the Savannah as an artificial reef off of the coast of South Carolina. As an artificial reef the Savannah would serve to benefit marine habitat and provide recreational and commercial benefits. We recommend MARAD contact Mr. Robert Martore, Office of Fisheries Management, SC Department of Natural Resource (843) 953-9303 for further information on South Carolina's artificial reef program.

The Service appreciates the opportunity to provide MARAD with comments on the draft EA. If you have any questions, please contact the Service's transportation liaison, Mark Caldwell, he may be contacted at (843) 727-4707 ext 215.

Sincerely,

Timothy N. Hall
Field Supervisor

TNH/MAC

North Carolina Department of Cultural Resources
State Historic Preservation Office
Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

September 1, 2006

Nicole Grewell
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142

Re: Nuclear Ship Savannah Decommissioning, Docket # MARAD-2006-25549, Multi County, ER 06-2243

Dear Ms. Grewell:

Thank you for your letter of August 9, 2006, concerning the above project.

We have conducted a review of the proposed undertaking and are aware of no historic resources that would be affected by the project. Therefore, we have no comment on the undertaking as proposed.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

Thank you for your cooperation and consideration. If you have questions concerning the above comment, contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763, ext. 246. In all future communication concerning this project, please cite the above referenced tracking number.

Sincerely,

Peter B. Sandbeck by MPM

Peter Sandbeck

	Location	Mailing Address	Telephone/Fax
ADMINISTRATION	507 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-4763/733-8653
RESTORATION	515 N. Blount Street, Raleigh NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6547/715-4801
SURVEY & PLANNING	515 N. Blount Street, Raleigh, NC	4617 Mail Service Center, Raleigh NC 27699-4617	(919)733-6545/715-4801

200602737

F
USDOT

Volpe National Transportation Systems Center
U.S. Department of Transportation Research and Innovative Technology Administration

EJ2

RECEIVED
AUG 18 2006
By

August 14, 2006

Mr. J. Rodney Little, SHPO
Maryland Historical Trust
100 Community Place, 3rd Floor
Crownsville, MD 21032

Dear State Historic Preservation Officer,

MD

Enclosed please find the Draft Environmental Assessment: Nuclear Ship Savannah Decommissioning (Docket # MARAD-2006-25549), prepared for Maritime Administration. We are currently undergoing public review of the document, and are sending you this copy as part of our ongoing consultation. We would appreciate your review and any comments you may have. Please advise us of any environmental concerns that you feel should be addressed. Should you have any questions, please feel free to contact me.

Sincerely,

Nicole Grewell

Nicole R. Grewell
Environmental Protection Specialist
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142
617-494-2494
617-494-2789 (fax)

#1A & 8/31/06

The Maryland Historical Trust has determined that there are no historic properties affected by this undertaking - for Maryland

Date 9/1/06

410-514-7631
bcole@mdp.state.md.us

September 11, 2006

Ms. Nicole Grewell
Environmental Protection Specialist
USDOT Volpe Center
55 Broadway
Cambridge, MA 02142

Re: Nuclear Ship SAVANNAH Decommissioning, Draft EA
Charleston Harbor, Charleston County, South Carolina

Dear Ms. Grewell:

Thank you for your letter of August 14, which we received on August 18, along with one copy of the draft Environmental Assessment for the Nuclear Ship SAVANNAH Decommissioning. We understand that the Port of Charleston is one of three ports under consideration for location of the decommissioning of the SAVANNAH.

It appears that the decommissioning occurs in two parts: the transportation of the ship to the selected port facility, and the removal of the radioactive materials on the ship. Our office believes that potential effects to the historic properties in the area of the Charleston Port due to the transportation of the SAVANNAH should be minimal. We recognize that, once the port destination is selected, further consultation will continue on potential effects to historic properties.

The SAVANNAH is a National Historic Landmark recognized for the innovations in technology, transportation, and trade as the first nuclear-powered merchant ship. Our office believes that the proposed radioactive decontamination of the ship has the potential to **adversely affect** this National Historic Landmark. Please provide our office with a more detailed description of the decontamination, including diagrams showing the location of the nuclear materials and a proposal of what equipment will be removed from the ship.

These comments are provided to assist you with responsibilities pursuant to Section 106 of the National Historic Preservation Act, as amended. If you have questions, please contact me at (803) 896-6169 or dobrasko@scdah.state.sc.us.

Sincerely,
Rebekah Dobrasko

Rebekah Dobrasko
Review and Compliance Coordinator
State Historic Preservation Office

S.C. Department of Archives & History • 8301 Parklane Road • Columbia • South Carolina • 29223-4905 • 803-896-6100 • www.state.sc.us/scdah

COMMONWEALTH of VIRGINIA

L. Preston Bryant, Jr.
Secretary of Natural Resources

Department of Historic Resources
2801 Kensington Avenue, Richmond, Virginia 23221

Kathleen S. Kilpatrick
Director

Tel: (804) 367-2323
Fax: (804) 367-2391
TDD: (804) 367-2386
www.dhr.virginia.gov

August 28, 2006

Ms Nicole R. Grewell
USDOT—Volpe Center
55 Broadway
Cambridge, Massachusetts 02142

RE: Draft Environmental Assessment (EA)
Decommissioning of the Nuclear Ship SAVANNAH (NSS)
James River Reserve Fleet, Virginia
DHR File No. 2005-1259

Dear Ms Grewell:

We have received the draft Environmental Assessment (EA) for the above referenced project. It is our understanding that the Maritime Administration (MARAD) proposes to decommission the Nuclear Ship SAVANNAH (NSS), which is currently located in the James River Reserve Fleet (JRRF), Virginia. The decommissioning of NSS involves the removal of the remaining low-level radioactive materials in accordance with Nuclear Regulatory Commission (NRC) Regulatory Guide 1.184, Decommissioning of Nuclear Power Reactors. As stated in the draft EA, "This action would permanently remove the NSS from service and remove the remaining low-level radioactive material to levels that would permit the termination of the NSS's NRC license (NS-1).

The National Park Service (NPS) designated the SAVANNAH a National Historic Landmark, its highest recognition, due to its design and history as the world's first nuclear powered merchant vessel. If the decommissioning activities involve the removal of the nuclear reactor from the ship, such an action could constitute an adverse effect pursuant to Section 106 of the National Historic Preservation Act, as amended, and its implementing regulation 36 CFR 800. The nuclear reactor is a character-defining feature of NSS and its removal would diminish the historic resource to the point of it possibly no longer being eligible for the National Register. Please confirm the scope of the undertaking.

Administrative Services
10 Courthouse Avenue
Petersburg, VA 23803
Tel: (804) 863-1624
Fax: (804) 862-6196

Capital Region Office
2801 Kensington Ave.
Richmond, VA 23221
Tel: (804) 367-2323
Fax: (804) 367-2391

Tidewater Region Office
14415 Old Courthouse Way, 2nd Floor
Newport News, VA 23608
Tel: (757) 886-2807
Fax: (757) 886-2808

Roanoke Region Office
1030 Penmar Ave., SE
Roanoke, VA 24013
Tel: (540) 857-7585
Fax: (540) 857-7588

Winchester Region Office
107 N. Kent Street, Suite 203
Winchester, VA 22601
Tel: (540) 722-3427
Fax: (540) 722-7535

Although NSS is currently located in the Commonwealth of Virginia, when it was listed to the National Register the vessel was on display at Patriots Point in Charleston, South Carolina. As such, we encourage MARAD to consult with the South Carolina State Historic Preservation Office.

If you have any questions about our comments, please contact me at (804) 367-2323, Ext. 114.

Sincerely,

Marc Holma, Architectural Historian
Office of Review and Compliance

Cc: Mr. Andy Chandler, SC Archives & History Center

41 7533

Michael C. Moan
18 Maplecrest Drive
Greenville, RI 02828

Docket Management Facility
US Department of Transportation
400 7th St., SW., Nassif Building,
Room PL-401, Washington, DC 20590-001

Date: October 3, 2006

Subject: USDOT, Maritime Administration
MARAD-2006-25549 Draft EA NS Savannah

3

Dear Sir/Ms.:

Thank you for the opportunity to comment on the Draft EA. I believe the Section 4(f) Analysis may have reached a faulty conclusion. The Proposed Action will result in the use and taking of the key component of the NS Savannah that by in its very nature is the prime contributing element to her historic importance, her nuclear reactor. The Section 4(f) Analysis states, "The Proposed Action involves using and altering the vessel for the removal of the remaining low-level radioactive material on board. Although this action is required under the NRC's regulations, and will ultimately benefit the vessel, it will permanently alter the vessel." The Proposed Action is a Federal DOT/MARAD project conducted to and on a National Historic Monument so there is really no serious doubt as to the applicability of Section 4(f) and Section 106 documentation. Even if one of the long-term goals is preservation, the primary objective is the de-commissioning of the reactor because of NRC regulations. The EA/4(f) analysis goes on to state as much when it says "The permanent removal of the low-level radioactive waste should benefit the long-term use of the vessel; the NRC license would be terminated, allowing for unrestricted use of the vessel. Pursuing this action would allow MARAD explore ways to further commemorate the vessel, such as turning it into a museum."

To mitigate the removal alterations MARAD will be completing a documentation project to make a record of the vessel's nuclear components and will also complete a Historic American Engineering Record for the National Park Service as further documentation (MARAD 2006b). I believe additional mitigation measures should be considered such as replacement of the removed components with training replicas from the NSS project's past.

With regards to alternative actions, did MARAD consider alternatives such as "preserve in place" given the very low levels of radioactivity? Could the NRC License be discharged at this point by petition with the reactor left in place? It may be prudent and feasible to do so with additional decon procedures and still restore the vessel for exhibit.

Furthermore, I submit that there is also an adverse impact under Section 106 of The National Historic Preservation Act of 1966. This is in addition to a "use/taking" as defined in Section (4(f) of The Department of Transportation Act of 1966 as amended. Both of these findings are a direct result of the Proposed Action.

In conclusion I believe that the Secretary of the Interior cannot make a finding of "de minimis"for the Proposed Action as it is currently configured.

Sincerely,

Michael C. Moan

Michael C. Moan

4119929

06 OCT 11 AM 11:35

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 1105, Richmond, Virginia 23218
Fax (804) 698-4500 TDD (804) 698-4021
www.deq.virginia.gov

L. Preston Bryant, Jr.
Secretary of Natural Resources

David K. Paylor
Director

(804) 698-4000
1-800-592-5482

October 5, 2006

Docket Management Facility
U. S. Department of Transportation
400 7th Street, S.W.
Nassif Building, Room PL-401
Washington, D.C. 20590

RE: DOT DMS Docket Number MARAD-2006-25549, Draft Environmental Assessment, Nuclear Ship "Savannah" De-commissioning
DEQ-06-158F

Ladies and Gentlemen:

The Commonwealth of Virginia has completed its review of the above Draft Environmental Assessment (hereinafter "Draft EA"). The Department of Environmental Quality (hereinafter "DEQ") is responsible for coordinating Virginia's review of federal environmental documents prepared pursuant to the National Environmental Policy Act and responding to appropriate federal officials on behalf of the Commonwealth. DEQ is also responsible for coordinating Virginia's review of federal consistency determinations filed pursuant to the Coastal Zone Management Act. The following state agencies, regional planning district commission, and locality joined in this review:

Department of Environmental Quality
Department of Game and Inland Fisheries
Department of Health
Marine Resources Commission
Department of Historic Resources
Hampton Roads Planning District Commission
City of Newport News.

In addition, the City of Norfolk was invited to comment.

Project Description

According to the Draft EA, the Maritime Administration, which owns the nuclear ship "Savannah," intends to de-commission the ship, which means to undertake final nuclear de-contamination of it. The ship, which was the world's first nuclear-powered merchant ship and was used from 1962 through 1970, is currently retained in the James River Reserve Fleet, in the James River offshore of Newport News, according to the Draft EA (page 4, section 1.1). (In fact, reviewers have informed DEQ that the ship is at the Colonna Shipyard in Norfolk (Jones/Ellis, 10/2/06 and Sylvia/Ellis, 10/4/06).) The proposed de-commissioning would take place at an industrial facility situated at a port along the Atlantic coast; while no selection has been made, the Draft EA mentions the Ports of Hampton Roads, Virginia; Baltimore, Maryland; and Charleston, South Carolina as possibilities. De-commissioning would free the vessel for unrestricted use and remove it from national service; it would also allow termination of the ship's license from the Nuclear Regulatory Commission (Draft EA, page 7, sections 2.1 and 2.1.1). The Maritime Administration would send waste materials to one or both of two low-level radioactive waste sites, in South Carolina and/or Utah (Draft EA, page 12, section 3.2). The Draft EA also considers a no-action alternative, which would involve returning the ship to the James River Reserve Fleet with its low-level radioactive materials left in place (Draft EA, page 10, section 2.2).

The Maritime Administration intends to prepare additional environmental documentation on this undertaking (Draft EA, page 4, section 1.1; page 6, section 1.2; and page 12, section 3.2) which is likely to include a Final Environmental Assessment (Junemann/Ellis, 9/11/06). The additional documentation should also include a federal consistency determination if the site chosen is in Virginia; see "Regulatory and Coordination Needs," item 1, below.

Environmental Impacts and Mitigation

The recommendations and information presented below may vary depending on the site chosen by the Maritime Administration. In that event, the distinctions will be clearly identified.

1. Wildlife Resources. The Department of Game and Inland Fisheries, as the Commonwealth's wildlife and freshwater fish management agency, exercises enforcement and regulatory jurisdiction over wildlife and freshwater fish, including state or federally listed endangered or threatened species, but excluding listed insects. The Department ("DGIF") is a consulting agency under the U.S. Fish and Wildlife Coordination Act (16 U.S.C. sections 661 et seq.), and provides environmental analysis of projects or permit applications coordinated through the

Department of Environmental Quality and several other state and federal agencies. DGIF determines likely impacts upon fish and wildlife resources and habitat, and recommends appropriate measures to avoid, reduce, or compensate for those impacts.

(a) Findings. DGIF does not anticipate a significant adverse impact upon threatened or endangered wildlife under its jurisdiction to result from this project.

(b) Additional Wildlife Information. DGIF maintains a data base of wildlife locations, including threatened and endangered species, trout streams, and anadromous fish waters. Access to this data base may be obtained through the DGIF web site:

http://www.dgif.virginia.gov/wildlife/info_map/index.html

Questions on this web site may be addressed to the Department of Game and Inland Fisheries (Shirl Dresser, telephone (804) 367-6913).

2. *Solid and Hazardous Waste Management.* According to DEQ's Waste Division, hazardous waste issues were addressed adequately in the Draft EA, but the document did not include a search of waste-related data bases. DEQ's Waste Division performed a cursory review of its data files and found information on nearby sites affecting de-commissioning in Norfolk (see item 2(a)(ii), next) and in Newport News (see item 2(a)(ii), below).

(a) Findings.

(i) Norfolk. Nearby CERCLIS sites are:

- the Norfolk Naval Base (Sewells Point Naval Complex) (identification number VA6170061463), which is on the final National Priorities List (NPS) pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA). This facility is also a large-quantity generator of hazardous waste (LQG) (VA6170061463) and a Treatment, Storage, and Disposal (TSD) facility; and

- the U.S. Navy Defense Fuel Support Point, Craney Island (identification number VA7170022472). This facility is also a large-quantity generator of hazardous waste (VA0170090005 LQG).

(ii) Newport News. There are no nearby CERCLIS sites. However, the Newport News Shipbuilding facility has several locations that are either large-quantity generators of hazardous waste (identification numbers VAD988186110 LQG and VAD001307495 LQG), or TSD (treatment, storage, and disposal) facilities (identification number VAD001307495).

(iii) Web Site. The following web site may be helpful in locating additional information for the identification numbers listed above:

- http://www.epa.gov/echo/search_by_permit.html

(b) Contamination. Any wastes that are generated must be tested and disposed of in accordance with applicable federal, state, and local laws and regulations. See item 2(d), below, and also "Regulatory and Coordination Needs," item 2(a), below.

(c) Demolition or Renovation of Structures. To the extent the ship de-commissioning involves demolition or disassembly, the parts of the ship so affected should be inspected for asbestos-containing materials and lead-based paint prior to demolition. If asbestos-containing materials are found, the Maritime Administration should follow the Virginia Solid Waste Management Regulations, specifically 9 VAC 20-80-640. Similarly, if lead-based paint is discovered, the Maritime Administration should follow the Virginia Hazardous Waste Management Regulations, specifically 9 VAC 20-60-261.

The list of potential PCB sources in the Draft EA (pages 15-16, section 3.3.4) does not include paint. Maintenance work on naval vessels similar in age to the "Savannah" has previously identified a waste stream consisting of heavy metal-contaminated paint chips that also contain PCBs and exhibit low-level radioactivity, according to DEQ's Tidewater Regional Office.

(d) Guidance on Low-Level Mixed Waste. DEQ's Tidewater Regional Office provides the following guidance on low-level mixed waste.

(i) General Requirements. Low-level mixed waste ("LLMW" or low-level radioactive and hazardous waste) is addressed in Title 40, Code of Federal Regulations (CFR), Part 266, Subpart N, which are regulations implementing the waste management requirements of the Resource Conservation and Recovery Act (RCRA). These provisions establish a conditional exemption for LLMW storage and disposal for wastes generated and managed under a Nuclear Regulatory Commission (NRC) license or agreement. While the Draft EA indicates that the "Savannah" is licensed by the NRC (license number NS-1) (see

Draft EA, page 7, section 2.1), it is not clear whether the license incorporates the de-commissioning activities of a third party such as the industrial facilities proposed. Without Subpart N eligibility, LLMW might be subject to hazardous waste generator and/or storage requirements, including acceptable disposal facilities.

(ii) Resource Conservation and Recovery Act Compliance and Effects. Compliance with Subpart N (above), if applicable to the de-commissioning effort, might produce a greater impact for the proposed alternative than implied in the Draft EA. While Subpart N establishes a number of reduced requirements under RCRA, LLMW must be in compliance with land disposal restriction treatment standards (see 40 CFR Part 266, § 266.315(a)), which might in turn affect the options available for disposal facilities. In addition, the proposed disposal facility for LLMW must meet the requirements of 40 CFR Part 266, § 266.335. There are notification and record-keeping requirements that deserve greater analysis than was provided in the Draft EA. The Draft EA should have identified the RCRA issues in greater detail, rather than assuming that the conditional exemption for LLMW will be met.

DEQ's Tidewater Regional Office recommends, in this regard, that the Final EA reflect a review of Subpart N, and include more detailed discussion of management of LLMW and non-radioactive hazardous waste. This discussion should focus on the activities covered by RCRA that are <u>not</u> exempted under Subpart N, including removal and handling, transport, and disposal. If the activities qualify for the conditional exemption under Subpart N, the Final EA should describe how the Maritime Administration will comply with the requirements of the exemption (Silvia/Ellis, 10/4/06).

(iii) Hazardous versus Radioactive Waste. According to DEQ's Tidewater Regional Office, the Draft EA is uncertain on the distinction between hazardous and "industrial" wastes. Specifically, the Draft EA states:

> In general, wastes generated during shipyard activities are considered industrial or regulated wastes versus hazardous wastes.

(Draft EA, page 27, § 4.1.4.2, second paragraph.) It is true that waste management activities on board the ship are not regulated under RCRA, but RCRA applies once waste is moved ashore. However, many of the waste streams identified in the paragraph are potentially hazardous wastes, including lead paint and mercury, and subject to RCRA.

(iv) Low-Level Mixed Waste and PCBs. LLMW that also contains PCBs is not mentioned in the paragraph cited above. This type of waste has

been encountered in similar work on naval vessels subject to oversight under the Naval Nuclear Propulsion Program. These wastes may be subject to management under RCRA and the Toxic Substances Control Act (TSCA) (for PCBs). Depending on what the de-commissioning involves, some LLMW, or LLMW containing PCBs, might be generated. This might consist of the removal of metal-laden paint to remove low-level radioactive sources.

(e) Pollution Prevention. DEQ encourages the Maritime Administration to follow pollution prevention principles in all construction projects. These principles include reduction of waste materials at the source, re-use of materials, and recycling of waste materials to the greatest extent practicable.

(f) Questions to be Addressed in the Final EA. In connection with the management of low-level mixed waste under RCRA, DEQ's Tidewater Regional Office recommends that the Final EA address a number of questions:

- Given that the de-commissioning activities may be undertaken by a third party, would LLMW generated and removed from the "Savannah," and/or stored, by the industrial facility prior to transport to the disposal facility, still be eligible for Subpart N exemptions?

- What is meant by the sentence quoted in item (d)(iii) above?

- Would the industrial facility maintain its own NRC license or agreement for the mixed waste generated by the "Savannah"?

3. Air Quality. DEQ's Air Division indicates that both Newport News and Norfolk are in an ozone non-attainment area, and recommends that the Maritime Administration consider an ozone attainment area for the de-commissioning work.

(a) Fugitive Dust Control. During de-commissioning activities, fugitive dust must be kept to a minimum by using control methods outlined in 9 VAC 5-50-60 et seq. of the Virginia Regulations for the Control and Abatement of Air Pollution. These precautions include, but are not limited to, the following:

- Use, where possible, of water or chemicals for dust control;
- Installation and use of hoods, fans, and fabric filters to enclose and vent the handling of dusty materials;
- Covering of open equipment for conveying materials; and
- Prompt removal of spilled or tracked dirt or other materials from paved streets and removal of dried sediments resulting from soil erosion.

(b) Fuel-burning Equipment. Fuel-burning equipment used in de-commissioning activities may require an air pollution control permit, depending on the capacity of the equipment and its potential to emit air pollutants. See "Regulatory and Coordination Needs," item 3, below.

4. Water Quality. According to DEQ's Tidewater Regional Office, the only generation of wastewater would result from using water as a cleaning medium. Radiological wastes are managed under license from the Nuclear Regulatory Commission, and cannot be discharged pursuant to a National Pollutant Discharge Elimination System (NPDES) permit (federal) or a Virginia Pollutant Discharge Elimination System (VPDES) permit (state).

5. Historic Resources. As the Draft EA indicates, the "Savannah" is itself a National Historic Landmark. The Maritime Administration has undertaken federal and state coordination in regard to the de-commissioning (page 17, section 3.3.5). See "Regulatory and Coordination Needs," item 4, below.

6. Subaqueous Lands Encroachments. It does not appear that the de-commissioning project involves any state-owned submerged lands. For this reason, the project is not subject to the jurisdiction of the Marine Resources Commission. However, if a Virginia facility is selected, permits from the Commission may be needed if the project includes construction of new piers or other structures. See "Regulatory and Coordination Needs," item 5, below.

7. Local and Regional Comments. The City of Newport News agrees that the nuclear ship "Savannah" should be de-commissioned and the last of its low-level radioactive waste removed. The City indicates that if Northrop Grumman Newport News Shipyard is selected as the de-commissioning site, the City and its transportation corridors could be affected. However as the City indicates, radioactive fuel is routinely transported to and from that shipyard during construction and upgrade of Navy vessels. The City is pleased that additional environmental documentation will be prepared following a site selection.

The Hampton Roads Planning District Commission, after consultation with the Cities of Norfolk and Newport News, indicates that the proposed project is generally consistent with local and regional plans and policies.

Regulatory and Coordination Needs

1. Federal Consistency under the Coastal Zone Management Act. Pursuant to the Coastal Zone Management Act of 1972, as amended, the Maritime Administration is required to determine the consistency of its activities

affecting Virginia's coastal resources or coastal uses with the Virginia Coastal Resources Management Program (VCP) (see section 307(c)(1) of the Act and the Federal Consistency Regulations at 15 CFR Part 930, sub-part C, section 930.34). If the ship "Savannah" is to be de-commissioned at a port facility in Virginia, the Maritime Administration must analyze the proposed action in light of the Enforceable Policies of the VCP (first enclosure) and submit a consistency determination reflecting that analysis and committing the Maritime Administration to comply with the Enforceable Policies. The Regulations provide a 60-day review period for the State's review of the federal consistency determination (section 930.41(a)). In addition, we invite your attention to the Advisory Policies of the VCP (second enclosure). The federal consistency determination may be provided as part of the documentation concluding the NEPA process (a site-specific Final Environmental Assessment or Environmental Impact Statement) or independently, depending on the Maritime Administration's preference. Section 930.39 gives content requirements for the consistency determination. Clarification of these comments is available from DEQ's Office of Environmental Impact Review (this Office) (Charles Ellis, telephone (804) 698-4488).

2. *Solid and Hazardous Waste Regulation.*

(a) Contamination. Testing, characterization, and disposal of contamination should be conducted in accordance with applicable state and federal rules. These include, but are not limited to, the following:

- Virginia Waste Management Act (*Virginia Code* sections 10.1-1400 et seq.)
- Virginia Hazardous Waste Management Regulations (9 VAC 20-60)
- Virginia Solid Waste Management Regulations (9 VAC 20-80)
- Virginia Regulations for the Transportation of Hazardous Materials (9 VAC 20-110)
- U.S. Department of Transportation Rules for Transportation of Hazardous Materials, 49 CFR Part 107.

(See enclosed DEQ memo, Kohler to Ellis, dated September 29, 2006 for additional citations.)

(b) Renovation: Asbestos and Lead-based Paint. As indicated above ("Environmental Impacts and Mitigation," item 2(c)), in the event asbestos is discovered in the ship, the Maritime Administration should remedy the asbestos according to the provisions of 9 VAC 20-80-640 in the Virginia Solid Waste Management Regulations. Similarly, if lead-based paint is discovered, the

Maritime Administration should follow the requirements of 9 VAC 20-60-261 in the Virginia Hazardous Waste Management Regulations.

3. Air Quality Regulation. The use of fuel-burning equipment in construction activities may require permit action from DEQ pursuant to the Virginia Regulations for the Control and Abatement of Air Pollution (9 VAC 5, Chapter 80 (see 9 VAC 5-80-800 et seq. for state operating permits and 9 VAC 5-80-1100 et seq. for new and modified sources). The Maritime Administration should contact DEQ's Tidewater Regional Office (Jane Workman, Air Permits Manager, telephone (757) 518-2112) for guidance on permit applicability and requirements.

4. Historic Resources. The Draft EA states that the Maritime Administration has begun coordination with the Virginia State Historic Preservation Office (SHPO), among others, pursuant to section 106 of the National Historic Preservation Act (page 17, section 3.3.5). The Department of Historic Resources, Virginia's SHPO, recommends that this coordination continue; contact should be maintained with the Department (Marc Holma, telephone (804) 367-2323, extension 114).

5. Subaqueous Lands Encroachment. As indicated above (see "Environmental Impacts and Mitigation," item 6), if de-commissioning will occur at a site in Virginia, the project may require permits if piers or other structures are constructed as part of the project. The Marine Resources Commission has permitting jurisdiction for encroachments in, on, or over state-owned submerged lands. If any such encroachments are contemplated, the Commission (Traycie West, telephone (757) 247-2200) should be contacted for guidance on meeting regulatory requirements.

Thank you for the opportunity to comment. We look forward to reviewing the site-specific EA and the federal consistency determination, if a Virginia site is chosen for the proposed de-commissioning of the ship.

Sincerely,

Ellie Irons

Ellie L. Irons
Program Manager
Office of Environmental Impact Review

Enclosures
cc: (next page)

cc: Andrew K. Zadnik, DGIF
Leslie P. Foldesi, VDH-BRH
Paul W. Kohler, DEQ-Waste
Kotur S. Narasimhan, DEQ-Air
Michelle R. Hollis, DEQ-TRO
Marc E. Holma, DHR
Arthur L. Collins, Hampton Roads PDC
Lee Rosenberg, City of Norfolk
Kathy James-Webb, City of Newport News
Carolyn E. Junemann, USDOT-MA

Ellis,Charles

From: Andrew Zadnik [Andrew.Zadnik@dgif.virginia.gov]
Sent: Thursday, September 21, 2006 1:34 PM
To: Ellis,Charles
Cc: nhreview@dcr.virginia.gov; ProjectReview.Richmond_PO.DGIF@dgif.virginia.gov
Subject: 06-158F_ESSLOG 22933_Savannah decommissioning

This project involves the decommissioning of the nuclear ship Savannah. The ship was defueled in 1971. To fully decommission the ship, the remaining low-level radioactive materials would be removed. Once the ship is fully decontaminated, it would be towed, if necessary, to its final disposition destination.

We do not anticipate a significant adverse impact upon threatened and endangered wildlife resources under our jurisdiction to occur due to this project.

Thank you,

Andrew K. Zadnik
Environmental Services Section Biologist
Department of Game and Inland Fisheries
4010 West Broad Street
Richmond, VA 23230

(804) 367-2733
(804) 367-2427 (fax)

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

RECEIVED

SEP 29 2006

DEQ-Office of Environmental Impact Review

MEMORANDUM

TO: Charles H. Ellis, III, Environmental Program Planner

FROM: Paul Kohler, Waste Division Environmental Review Coordinator

DATE: September 29, 2006

COPIES: Sanjay Thirunagari, Waste Division Environmental Review Manager; file

SUBJECT: Environmental Impact Report: Nuclear Ship Savannah Decommissioning

The Waste Division has completed its review of the Environmental Impact report for the Nuclear Ship Savannah Decommissioning which could potentially take place either in Norfolk, Virginia, Newport News, Virginia or at some other base outside of Virginia at a location to be named. We have the following comments concerning the waste issues associated with this project:

Hazardous waste issues were addressed adequately in the report. However, the report did not include a search of waste-related data bases. The Waste Division staff performed a cursory review of its data files and determined that should the decommissioning occur in Newport News, the following issues would apply.

There are no nearby Cerclis sites, however, the Newport News Shipbuilding facility has several locations that are either large quantity generators (LQG), (VAD988186110 LQG, VAD001307495 LQG, VAD988186110 LQG), and/or treatement, storage or disposal (TSD) facilities (VAD001307495 TSD). The following website may prove helpful in locating additional information for the identification numbers: http://www.epa.gov/echo/search_by_permit.html. In the event there are any nearby Formerly Used Defense Sites (FUDS) of concern, Eric Salopeck will respond in a separate memo.

If the decommissioning were to occur in Norfolk, Virginia, the following issues would apply.

Nearby Cerclis sites are the Norfolk Naval Base (Sewells Point Naval Complex) (VA6170061463) which is on the final NPL, and the U.S. Navy Defense Fuel Support Point Craney Island (VA7170022472). The following website may prove helpful in locating additional information for the identification numbers: http://www.epa.gov/echo/search_by_permit.html. The U.S. Navy Defense Fuel Support Point Craney Island is a LQG (VA0170090005 LQG) and the US Navy Norfolk Naval Base (VA6170061463) is also a LQG & a Treatment Storage and Disposal (TSD) facility.

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR PROGRAM COORDINATION

ENVIRONMENTAL REVIEW COMMENTS APPLICABLE TO AIR QUALITY

TO: Charles H. Ellis III **DEQ - OEIA PROJECT NUMBER: 06 – 158F**

PROJECT TYPE: ☐ STATE EA / EIR / FONSI **X FEDERAL EA / EIS** ☐ SCC

☐ CONSISTENCY DETERMINATION/CERTIFICATION

RECEIVED
SEP 15 2006
DEQ-Office of Environmental Impact Review

PROJECT TITLE: NUCLEAR SHIP SAVANNAH DECOMMISSIONING

PROJECT SPONSOR: U. S. DOT MARITIME ADMINISTRATION

PROJECT LOCATION: ☐ OZONE NON ATTAINMENT AREA

REGULATORY REQUIREMENTSMAY BE APPLICABLE TO: X **DECOMMISSIONING**
☐ OPERATION

STATE AIR POLLUTION CONTROL BOARD REGULATIONS THAT MAY APPLY:

1. ☐ 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 E – STAGE I
2. ☐ 9 VAC 5-40-5200 C & 9 VAC 5-40-5220 F – STAGE II Vapor Recovery
3. ☐ 9 VAC 5-40-5490 et seq. – Asphalt Paving operations
4. **X 9 VAC 5-40-5600 et seq. – Open Burning**
5. **X 9 VAC 5-50-60 et seq. Fugitive Dust Emissions**
6. ☐ 9 VAC 5-50-130 et seq. - Odorous Emissions; Applicable to_____
7. ☐ 9 VAC 5-50-160 et seq. – Standards of Performance for Toxic Pollutants
8. ☐ 9 VAC 5-50-400 Subpart_____, Standards of Performance for New Stationary Sources, designates standards of performance for the_____
9. ☐ 9 VAC 5-80-10 et seq. of the regulations – Permits for Stationary Sources
10. ☐ 9 VAC 5-80-1700 et seq. Of the regulations – Major or Modified Sources located in PSD areas. This rule may be applicable to the _____
11. ☐ 9 VAC 5-80-2000 et seq. of the regulations – New and modified sources located in non-attainment areas
12. ☐ 9 VAC 5-80-800 et seq. Of the regulations – Operating Permits and exemptions. This rule may be applicable to _____

COMMENTS SPECIFIC TO THE PROJECT:
Choice of industrial facility in an ozone attainment area may be kept in view for the proposed decommissioning activity.

K. S. Narasimhan

(Kotur S. Narasimhan)
Office of Air Data Analysis

DATE: September 15, 2006

DEPARTMENT OF ENVIRONMENTAL QUALITY
TIDEWATER REGIONAL OFFICE
ENVIRONMENTAL IMPACT REVIEW COMMENTS

September 28, 2006

PROJECT NUMBER: 06-158F

PROJECT TITLE: Nuclear Ship SAVANNAH Decommissioning

1) General: Throughout the document there are vague references to the waste management requirements of RCRA and a very brief statement on pages 16/17. Low-level mixed waste ("LLMW" or low-level radioactive and hazardous waste) is specifically addressed in 40 CFR Part 266, Subpart N. This subpart establishes a conditional exemption for low-level mixed waste storage and disposal for wastes generated and managed under a US Nuclear Regulatory Commission ("NRC") license or agreement. While it is stated that the Nuclear Ship SAVANNAH ("NSS") is licensed by the NRC (license number NS-1), it is uncertain by this reviewer whether that license incorporates the decommissioning activities of a third party such as the industrial facilities proposed. As such, would LLMW generated and removed from the vessel, and/or stored, by the industrial facility prior to transport to the disposal facility still be eligible for the Subpart N exemptions? Would the industrial facility maintain its own NRC license or agreement for the NSS-generated mixed waste? Without the Subpart N eligibility, LLMW would potentially be subject to the hazardous waste generator and/or storage requirements, including acceptable disposal facilities. (While not applicable on-board a vessel, RCRA would become applicable as soon as hazardous waste or LLMW was managed ashore. It is noted that on page 16, the assessment states "However, MARAD internal policies prohibit the storage of hazardous wastes aboard NDRF vessels.")
2) General: Compliance with RCRA Subpart N, if applicable to the decommissioning effort, might pose a greater impact for the proposed alternative than is implied in this assessment. Although Subpart N establishes a number of reduced requirements under RCRA, LLMW must comply with land disposal restriction treatment standards [see 40 CFR 266.315(a)], which might impact disposal facility options. In addition, the proposed disposal facility for LLMW must meet the requirements of 40 CFR 266.335. There are notification and recordkeeping requirements that deserve greater impact review than was provided in this assessment. While overall the impact may be minor, the assessment should have identified the RCRA issues in greater detail. The assessment seems to assume the conditional exemption for LLMW will be met. It is suggested that the assessment review this subpart (Part 266 Subpart N), as well as and if necessary, include more detailed discussion of management of LLMW and non-radioactive hazardous waste in accordance with the applicable sections of RCRA NOT exempted under Part 266 Subpart N, including removal and handling, transport, and disposal.
3) Pages 15/16 (PCBs): The list of potential PCB sources does not include paint. Maintenance work on naval vessels of a similar age has previously identified a waste stream that consists of heavy-metal-contaminated paint chips that also contain PCBs and exhibit low-level radioactivity (see next comment).

If you cannot meet the deadline, please notify CHARLIE ELLIS at 804/698-4488 prior to the date given. Arrangements will be made to extend the date for your review if possible. An agency will not be considered to have reviewed a document if no comments are received (or contact is made) within the period specified.

REVIEW INSTRUCTIONS:

A. Please review the document carefully. If the proposal has been reviewed earlier (i.e. if the document is a federal Final EIS or a state supplement), please consider whether your earlier comments have been adequately addressed.

B. Prepare your agency's comments in a form which would be acceptable for responding directly to a project proponent agency.

C. Use your agency stationery or the space below for your comments. **IF YOU USE THE SPACE BELOW, THE FORM MUST BE SIGNED AND DATED.**

Please return your comments to:

MR.CHARLES H. ELLIS III
DEPARTMENT OF ENVIRONMENTAL QUALITY
OFFICE OF ENVIRONMENTAL IMPACT REVIEW
629 EAST MAIN STREET, SIXTH FLOOR
RICHMOND, VA 23219
FAX #804/698-4319

RECEIVED
SEP 27 2006
DEQ-Office of Environmental Impact Review

Charles H. Ellis III / vk
CHARLES H. ELLIS III
ENVIRONMENTAL PROGRAM PLANNER

COMMENTS

The Marine Resources Commission, pursuant to Chapter 12 of Title 28.2 of the Code of Virginia, is responsible for issuing permits for encroachments in, on, or over State-owned submerged lands throughout the Commonwealth. It does not appear that this project involves any lands subject to the jurisdiction of this agency. If a Virginia facility is selected, permits from this agency may be necessary if construction of new piers or other structures supporting decommissioning activities are needed. Thank you for the opportunity to comment on this project.

(signed) Tyson West (date) 9/26/06
(title) Envt Eng. Sr
(agency) VMRC

PROJECT # 06-158F **8/98**

City of Newport News

Virginia 23607

2400 Washington Avenue
(757) 926-8411
Fax (757) 926-3503

Office Of The City Manager

September 29, 2006

Mr. Charles H. Ellis III
Department of Environmental Quality
Office of Environmental Impact Review
629 East Main Street, 6th Fl.
Richmond, VA 23219

Dear Mr. Ellis:

The Manager of Environmental Planning has reviewed the draft Environmental Assessment for Decommissioning Nuclear Ship SAVANNAH (NSS).
Because the NSS currently resides in the James-River Reserve Fleet, off the shoreline of our City, we are in agreement with U.S. DOT Maritime Administration that the NSS should be decommissioned and the last of the low-level radioactive waste be removed. If Northrop Grumman Newport News Shipyard is selected as the decommissioning site, the City and its transportation corridors could be impacted. However, radioactive fuel is routinely transported to and from the shipyard during construction and upgrade of Navy vessels. We are pleased that further environmental documents will be prepared once a decommissioning site has been selected.

Thank you for this opportunity to comment on the draft Environmental Assessment for Decommissioning Nuclear Ship SAVANNAH .

Sincerely,

Randy W. Hildebrandt
City Manager

RWH:kjw
P:\Plan06-07\Env.Impact Review Comments\EA Nuclear Ship Savanah Decommissioning.doc

Copy To: Assistant City Manager, NAM
Director of Planning