FINAL

ENVIRONMENTAL ASSESSMENT OF THE INSTALLATION OF A WATER TOWER AT LANGLEY AIR FORCE BASE, VIRGINIA

March 2001

Department of the Air Force
Langley Air Force Base, Virginia

LIST OF ACRONYMS AND ABBREVIATIONS

ACC	Air Combat Command
AFB	Air Force Base
AFI	Air Force Instruction
AFOSH	Air Force Occupational and Environmental Safety, Fire Protection, and Health
AFPD	Air Force Policy Directive
AICUZ	Air Installation Compatible Use Zone
AWWA	American Water Works Association
BASH	Bird Aircraft Strike Hazard
BMPs	Best Management Practices
CAA	Clean Air Act
CDC	Child Development Center
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dB	decibel
°F	degrees Fahrenheit
DOD	Department of Defense
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ERP	Environmental Restoration Program
FAR	Federal Aviation Regulation
FONSI	Finding of No Significant Impact
FONPA	Finding of No Practicable Alternative
ft	foot or feet
ft^2	square feet
FW	Fighter Wing
HQ	Headquarters
HTA	Heavier-Than-Air
HUD	U.S. Department of Housing and Urban Development
IICEP	Interagency and Intergovernmental Coordination for Environmental Planning
in.	inch or inches
INRMP	Integrated Natural Resources Management Plan
L_{dn}	Day-Night Average A-Weighted Sound Level
LTA	Lighter-Than-Air
mph	miles per hour
MSL	Mean Sea Level
MSA	Metropolitan Statistical Area
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_X	nitrogen oxides
NOAA	National Oceanic and Atmospheric Administration
NPS	National Park Service
NRHP	National Register of Historic Places
O_3	ozone
Pb	lead
PM_{10}	particulate matter
psi	pounds per square inch
RCRA	Resource Conservation and Recovery Act
SHPO	State Historic Preservation Office
SIP	State Implementation Plan
SO_2	sulfur dioxide
TAC	Tactical Air Command
TAW	Tactical Airlift Wing
TFW	Tactical Fighter Wing
TSCA	Toxic Substances Control Act
USACE	United States Army Corps of Engineers
USAF	United States Air Force
U.S.C.	United States Code
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VDCR	Virginia Department of Conservation and Recreation
VDEQ	Virginia Department of Environmental Quality
VDHR	Virginia Department of Historic Resources
VCRMP	Virginia Coastal Resources Management Program
VMRC	Virginia Marine Resources Commission
VOC	volatile organic compounds
VPDES	Virginia Pollution Discharge Elimination System
WTP	water treatment plant

FINDING OF NO SIGNIFICANT IMPACT/
FINDING OF NO PRACTICABLE ALTERNATIVE

Installation of a Water Tower, Langley AFB, Virginia

PROPOSED ACTION: Langley Air Force Base (AFB) proposes to upgrade its existing water distribution system by installing a new water tower and draining, demolishing and disposing of existing Water Tower 620, a 250,000-gallon water tank on Thornell Street. The proposed location for the new 200-foot tall water tower is near Nealy Avenue and Burrell Street, adjacent to the Southwest Branch of the Back River shoreline and the Child Development Center (CDC). The proposed project is not located in a wetland. This action would provide for effective fire fighting capabilities, and a safe and adequate supply of potable drinking water for base residents.

ALTERNATIVES TO THE PROPOSED ACTION: Alternatives to the proposed action include: (1) the action alternative, under which a new tower would be constructed on an island, in wetlands, near the B-52 Memorial; and (2) the no-action alternative, under which a new water tower would not be constructed nor would the existing water Tower 620 be removed.

SUMMARY OF ENVIRONMENTAL IMPACTS: The Environmental Assessment (EA) provides an analysis of the potential environmental impacts resulting from implementing the proposed action and action alternative. Eleven resource categories were evaluated to identify potential environmental consequences: safety, geological resources, air quality, noise, water resources, biological resources, socioeconomic conditions, land use, cultural resources, aesthetic resources, and hazardous materials and waste management.

Safety: No long-term direct significant, adverse effects would be expected by implementing the proposed action or action alternative. There would be a short-term increase in the risks associated with the removal of Tower 620 and the construction of the new proposed and action alternative water towers. Safety risks would be minimized using safety equipment to protect people from falling objects, scheduling dismantling and constructing activities outside normal work hours, and implementing Best Management Practices (BMPs) when working with open flames. The proposed action would improve the safety aspects of the water system environment by increasing normal operating pressures in the potable water distribution system, thereby providing for effective fire fighting capabilities and a safe potable water supply. The short-term risks from implementing these proposals are greatly outweighed by the long-term benefit of increased fire protection capability.

Geological Resources: There would be no long-term significant effects on geological resources as a result of implementation of the proposed action or action alternative. The effects on soil erosion and sedimentation from construction of the new tower are considered minor for the proposed action because sediment and erosion control measures as required by the Virginia Erosion and Sediment Control Act will be implemented. Soil erosion and sedimentation control would be more difficult at the action alternative site as

it is in a productive wetland marsh and special precautions would have to be taken to ensure minimal impact on the surrounding wetlands. Approximately 24,500 square feet of new wetland would be destroyed to implement the action alternative, and to mitigate this impact, approximately 73,500 square feet of *Spartina spp.* wetland would be created adjacent to an existing marsh near the 74th Mobile Radar site in the HTA area of the base. The proposed site is not in the wetlands, thus there would be no impacts to the wetlands as a result of the implementation of the proposed action.

Air Quality: There would be no long-term significant effects on air quality as a result of the implementation of the proposed action or action alternative. Emission sources would include construction activities and fugitive dust from tank demolition and construction operations. Dust emissions produced during tank demolition and construction operations would be minimized using BMPs.

Noise: Implementation of the proposed action and action alternative would have minor short-term, localized effects on noise levels during the construction phase. Noise levels from pile-driving operations could disrupt some CDC occupants and some Bldg. 621 work activities. Pile-driving operations are expected to take about one and one-half weeks. Construction activities would be coordinated with the CDC director and Bldg. 621 Facility Manager in order to minimize the effect. Noise impacts from the action alternative would be minimized because of its isolated location.

Water Resources: There would be no long-term significant impacts on water resources as a result of implementation of the proposed action or the action alternative. Construction activities under the proposed action would not be expected to adversely affect the Chesapeake Bay watershed or coastal zone areas, and those activities would be conducted in accordance with local Chesapeake Bay watershed laws and ordinances and the Coastal Zone Management Act of 1972. There are approximately 600 acres of marsh wetlands surrounding Langley AFB, and the construction of the action alternative will destroy ½ acre of wetlands, but this would be mitigated by the creation of 1½ acres of new wetlands along the Back River. The *Spartina spp.* marsh would be created adjacent to a large existing *Spartina spp.* marsh near the 74th Mobile Radar site in the HTA area of the base. Thus, the action alternative would have a minimal impact on the wetland environment of Langley AFB. Erosion control and best management practices would minimize sedimentation into the Back River. The proposed action is not in a wetland, nor would it affect wetlands. Most of the base is located within a floodplain, and any construction on the base would potentially impact the floodplain. There is no practicable alternative to the proposed action and action alternative that would not involve construction in a floodplain.

Biological Resources: No long-term significant impacts on biological resources are expected as a result of implementation of the proposed action or action alternative. Runoff and localized sedimentation from new water tower construction activities could cause indirect and short-term adverse water quality effects, thus impacting aquatic resources along the shoreline of the Southwest Branch of the Back River. However, appropriate erosion control measures will be employed. All construction activities would

Chesapeake Bay Preservation Act regulations and state and local laws and ordinances to protect aquatic life. Construction of the new water tower under the proposed action would result in the removal of several upland trees. Langley AFB will establish tree protection areas and plant additional native trees as a replacement for trees removed during construction. The proposed action site is not an optimal feeding and breeding area for mammals or reptiles. The action alternative site contains an area of *Spartina spp.* marshland that is a nursery and growing area for a number of commercially valuable aquatic organisms, and this area will be replaced 3:1 by a like marsh in another area of the base that supports a large expanse of productive wetland habitat. No rare, threatened, or endangered plant and animal species would be affected by implementation of the proposed or action alternative. Jurisdictional wetlands are located at the Action Alternative site and permits to construct would be required from a number of regulatory agencies. The proposed action is not in a wetland nor would it affect wetlands.

Socioeconomic Conditions and Environmental Justice: Implementation of the proposed or action alternative would not result in effects on socioeconomic resources on or off the base. There would be no Executive Order 12898, Environmental Justice concerns since the proposed action or action alternative would not result in any disproportional high and adverse human health and environmental effects on minority and/or low-income populations. There are EO 13045 protection of Children concerns since the Proposed Action would construct a water tower near a Child Development Center. This may result in an environmental health and safety risk to children and their caretakers. Implementation of Best Management Practices during design and construction will keep that potential low. As a result, no long-term significant socioeconomic effects are expected from the implementation of the Proposed Action or Action Alternative.

Land Use: The Proposed Action is consistent with current land use. However, the Action Alternative site is not consistent with current land use and proper siting and environmental permits must be secured before construction can take place.

Cultural Resources: Water Tower 620 is a contributing resource to the Langley Field Historic District, and its demolition results in an insignificant but adverse effect on the district. Langley AFB has consulted with the Advisory Council on Historic Preservation and has entered into a MOA with the SHPO concerning dismantling activities on Tower 620. There are no known archaeological or architectural resources within the proposed or alternative water tower construction areas. Construction of the new water tower would result in subsurface disturbance. Langley AFB would follow AFI 32-7065, Cultural Resources Management, for unanticipated archeological discoveries during construction and subsurface disturbance.

Aesthetic Resources: The removal and demolition of Tower 620 will have a minimal effect on aesthetic values from inside or outside of the immediate area; visual attention will be drawn to the remaining Tower 616. Although the visual character at the both the Proposed and Action Alternative sites would change, there would be no significant adverse impacts on aesthetic resources due to the existing minimal aesthetic value of the areas.

Hazardous Materials and Waste Management: Neither the proposed action site nor the action alternative site are at or adjacent to an ERP site, and neither would cause any significant increase in hazardous materials use or hazardous waste generation.

FINDINGS: On the basis of the findings of the EA conducted in accordance with the requirement of the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations, and Air Force Instruction (AFI) 32-7061 (39 CFR Part 989), and after careful review of the potential impacts of the proposed action, action alternative and the no action alternative, I find that there would be no significant impact on the quality of the human or natural environment from the implementation of the proposed action, action alternative or no action alternative described in this EA. Therefore, I find there is no requirement to develop an Environmental Impact Statement. Pursuant to Executive Order 11988, *Floodplain Management*, the authority delegated in Secretary of the Air Force Order (SAFO) 791.1, and the written redelegations accomplished pursuant to SAFO 791.1, and in taking the above information into account, I find there is no practicable alternative to implementing either the proposed action or action alternative in minimizing potential harm to or within the floodplain. In accordance with Executive Order 11990, *Protection of Wetlands*, the authority delegated in SAFO 791.1, and the written redelegations accomplished pursuant to SAFO 791.1, I find that the proposed action, since it is not located in a wetland, is a practicable alternative to the action alternative, which is located in a wetland.

EARNEST O. ROBBINS II
Major General, USAF
The Civil Engineer
DCS/Installations & Logistics

12 March 01
DATE

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EXECUTIVE SUMMARY

The purpose of the Proposed Action is to drain, demolish and dispose of an old and deteriorating water tower and construct a new water tower at Langley Air Force Base (AFB) Virginia.

This Proposed Action is the result of findings, conclusions, and recommendations presented in the *Repair Water Tower Design Analysis Report* (Overman Associates 2000a), *Repair Water Tower Specifications Report* (Overman Associates 2000b), *Structural Condition Assessment Main Base Water Tanks 616, 620, 1000, and 1374* (Stroud, Pence & Associates, Ltd., 1996), and *the Final Hydraulic Modeling Analysis Report* (Roy F. Weston, 1998). This action would assess the locations and installation of a new water tower at Langley AFB.

This Environmental Assessment (EA) has been developed by Langley AFB in accordance with the *National Environmental Policy Act (NEPA) of 1969, as amended;* the *President's Council on Environmental Quality (CEQ) Regulations for Implementing NEPA (40 CFR Parts 1500-1508);* and *Department of the Air Force Instruction (AFI) 32-7061, Environmental Impact Analysis Process (32 CFR Part 989),* which implements NEPA and CEQ regulations.

This EA analyzes the potential environmental effects of the Proposed Action, Action Alternative, and the No-Action Alternative. Resource areas analyzed include safety, geology and soils, air quality, noise, water resources, biological resources including wetlands, socioeconomic conditions, land use, cultural resources, aesthetic resources, and hazardous materials and waste management.

Based on the analyses contained in this EA, known and potential effects of the Proposed Action on the physical, natural, and cultural environment would be minor and not adverse, and would not result in any significant adverse or cumulative effects. Implementation of the Proposed Action may have a slight short-term, localized impact to air quality, water quality, and noise during the construction phases only. In addition, short-term impacts to local traffic patterns in the vicinity of the proposed projects would be expected during the construction periods. Mitigation of these potential minor adverse effects would rely principally on the use of best management practices.

There are no Executive Order (EO) 11990 Protection of Wetlands concerns since the Proposed Action would not result in any construction in or disturbance of the wetlands at Langley AFB. In addition, there are minimal EO 11988 Floodplain Management concerns because of the construction of the new proposed water tower within the floodplain at Langley AFB. The Proposed Action, however, does not result in any significant impact on human health and the environment. Native productive wetlands will be impacted by the construction of the water tower at the Action Alternative location; but that would be mitigated by the construction of 1½ acres of new wetlands to replace the ½ acre of wetlands destroyed to construct the water tower. As with any disturbed wetland site and newly created mitigation sites, there exists a great possibility of introducing the invasive phragmites species into the marsh system.

The preferred alternative is the Proposed Action. Based on the foregoing findings and conclusions, issuance of a Finding of No Significant Impact/Finding of No Practicable Alternative is appropriate. Preparation of an environmental impact statement is not required prior to implementation of the proposed action.

1. INTRODUCTION

This section describes Langley Air Force Base (AFB), the purpose and need for the Proposed Action, the location of the Proposed Action, and summarizes the environmental regulatory requirements.

1.1 PURPOSE OF AND NEED FOR THE ACTION

The purpose of this Proposed Action is to enable Langley AFB to install a new water tower and drain, demolish, and dispose of an existing water tower (Water Tower 620).

Water Tower 620 is a riveted tank that was constructed in the 1920s, prior to American Water Works Association (AWWA) standards for elevated water storage tanks. It is antiquated, structurally dangerous and deteriorating. Structural assessment indicated severe signs of deterioration to support structures as well as the tank. The exterior paint has failed and the interior metal has significant deterioration. The roof system of Water Tower 620 has failed and there is a noticeable sway of the tower in winds of 25 miles per hour (mph) and greater. The original 250,000-gallon capacity has been reduced by half to 125,000 gallons due to structural load requirements (USAF, 1999a) (Stroud, Pence & Assoc., 1996).

The Langley AFB water distribution system is old and antiquated and currently does not provide sufficient water pressure and fire flow capabilities for the entire base. This action is just one part of a Base-wide drinking water system upgrade that includes complete replacement of the existing drinking water system as well as the demolition and replacement of Water Tower 616. These upgrades are necessary to eliminate the pressure and flow problems and to ensure Langley is in compliance with Virginia water quality regulations.

1.2 LOCATION

Langley AFB is located in Hampton, Virginia, and is part of the Hampton Roads metropolitan area in the southern end of the lower Virginia peninsula (Figure 1-1). The installation consists of 2,883 acres of mostly reclaimed marsh and farmland on a peninsula surrounded by the northwest and southwest branches of the Back River, a tidal estuary of the lower Chesapeake Bay. The National Aeronautics and Space Administration (NASA) comprises 788 acres along the western portion of the base.

Existing Water Tower 620 and the proposed location of the new water tower are situated in the southeast portion of the property (Figure 1-2). The proposed new water tower would be located adjacent to the Southwest Branch of the Back River shoreline and adjacent to Buildings 70, the Child Development Center (CDC) and Building 74, Aerospace Medicine. The proposed location of this new water tower is based on conclusions in a hydraulic analysis (Roy F. Weston, 1998) that indicate a new water tower behind the CDC and a new water tower to replace existing Water Tower 616 (in the same location) would be the optimum water tower locations to provide adequate water pressure and fire flow capabilities for the entire base. These water tower replacements, along with recommended water main replacements (Roy F. Weston, 1998) would achieve the goal of providing adequate system pressure, flow, and improved water quality.

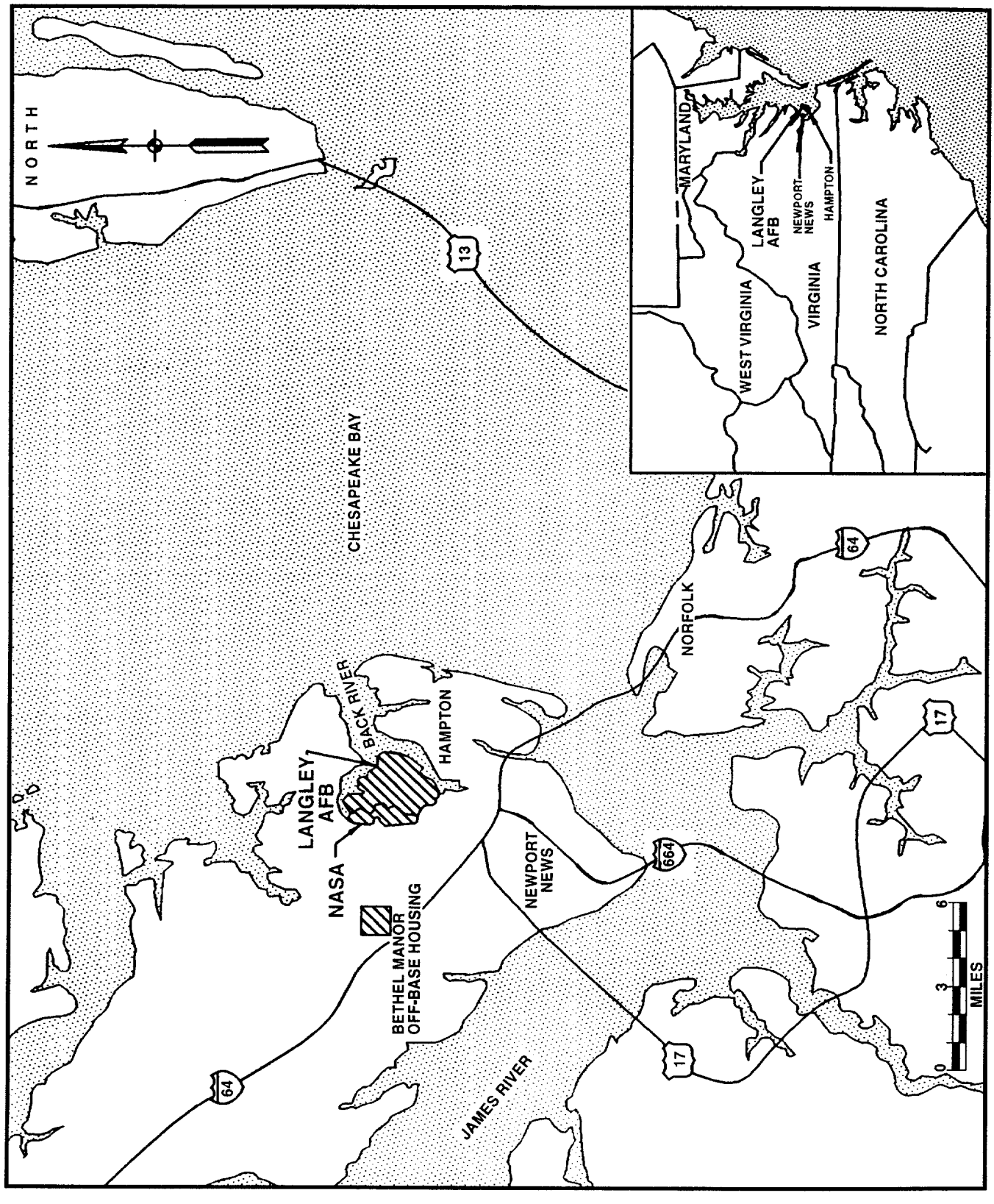

Figure 1-1
Location of Langley Air Force Base, Virginia

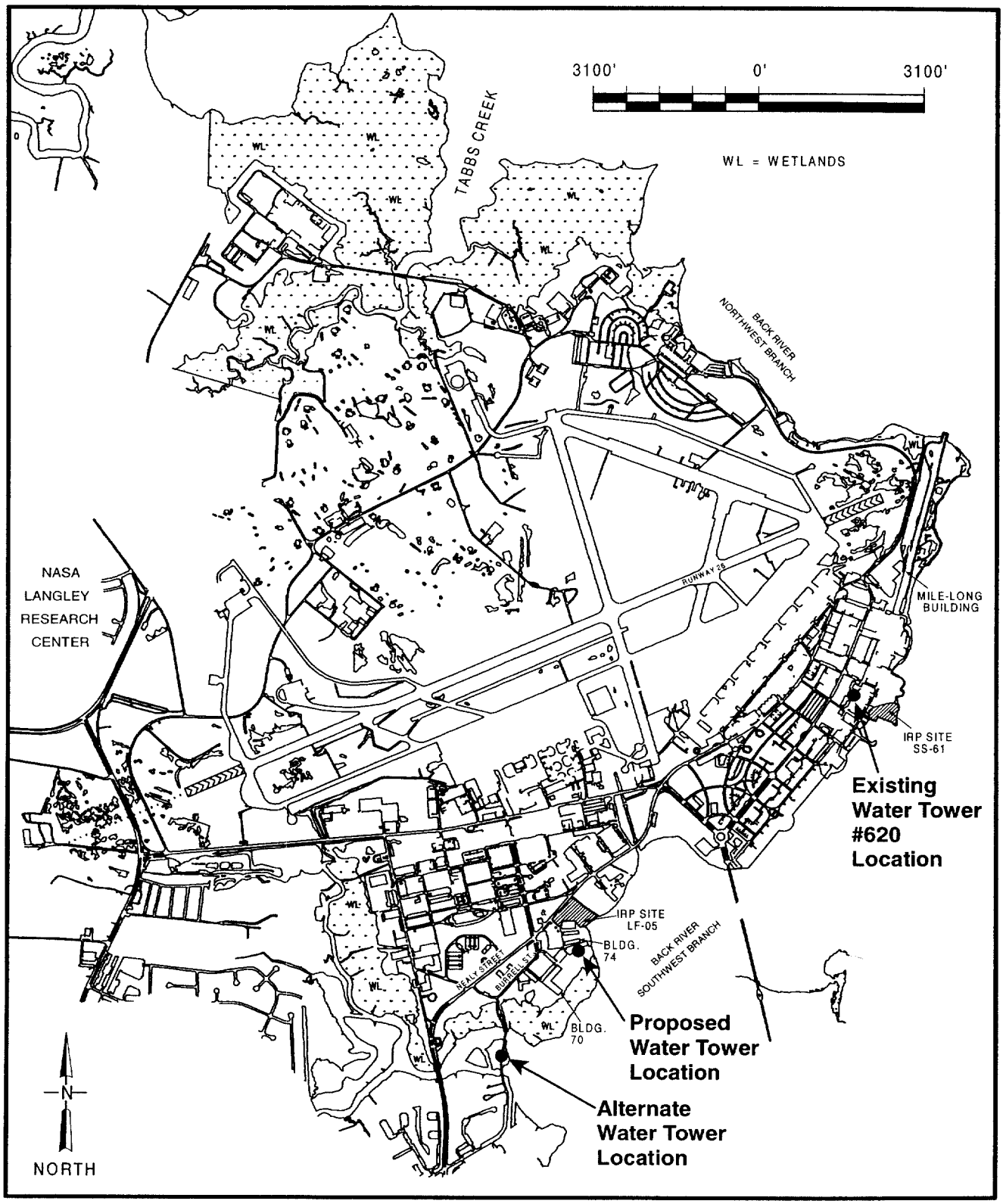

Figure 1-2
Langley Air Force Base Installation Map

Several natural resource conservation areas exist in the vicinity of Langley AFB: Plum Tree Island National Wildlife Refuge, Back Bay National Wildlife Refuge, and the Chesapeake Bay shoreline. About 10 percent of Langley AFB property is forested woodland, and approximately 600 acres of land area are considered jurisdictional wetlands. No Federally listed plant or animal species have been found to occur on the Langley AFB installation, although several Federal and commonwealth listed plant and animal species may occur within the vicinity of Langley AFB.

1.3 ENVIRONMENTAL COMPLIANCE REQUIREMENTS

The following section provides a brief summary of laws, regulations, and other requirements that are considered in the analysis of the Proposed and alternative actions presented in this document.

1.3.1 Environmental Policy

NEPA is a Federal statute requiring the identification and analysis of potential environmental impacts of proposed Federal actions before those actions are implemented. NEPA legislated a structured approach to environmental impact analysis that requires Federal agencies to use an interdisciplinary and systematic approach in their decision-making process. This process evaluates potential environmental consequences associated with the Proposed Action and considers alternative courses of action. The intent of NEPA is to protect, restore, or enhance the environment through well-informed Federal decisions.

The process for implementing NEPA is codified in 40 Code of Federal Regulations (CFR) 1500-1508, Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act. The Council on Environmental Quality (CEQ) was established under NEPA to implement and oversee Federal policy in this process. The CEQ regulations specify that an EA be prepared to:

- Briefly provide evidence and analysis for determining whether to prepare an EIS or a FONSI
- Aid in an agency's compliance with NEPA when an EIS is unnecessary, and
- Facilitate preparation of an EIS when one is necessary.

Air Force Policy Directive (AFPD) 32-70, Environmental Quality, states that the Air Force will comply with applicable Federal, state, and local environmental laws and regulations including NEPA. The Air Force implementing regulation for NEPA is Air Force Instruction (AFI) 32-7061, *Environmental Impact Analysis Process.*

Air Force Instruction 32-7061, *Environmental Impact Analysis Process*, provides procedures for conducting Air Force environmental impact analysis.

1.3.2 Integration of Other Environmental Statutes and Regulations

To comply with NEPA, the planning and decision-making process for actions proposed by Federal agencies involves a study of other relevant environmental statutes and regulations. The NEPA process, however, does not replace procedural or substantive requirements of other environmental statutes and regulations. It addresses them collectively in the form of an EA or EIS, which enables the decision-maker to have a comprehensive view of major environmental issues and requirements associated with the Proposed Action. According to CEQ regulations, the requirements of NEPA must be integrated "with other planning and environmental review procedures required by law or by agency so that all such procedures run concurrently rather than consecutively."

This EA will examine potential effects of the Proposed Action and alternatives on 11 resource areas, including: safety, geological resources, air quality, noise, water resources, biological resources, socioeconomic conditions, land use, cultural resources, aesthetic resources, and hazardous materials and waste management. The following subsections present examples of relevant laws, regulations, and other requirements that were considered as part of this analysis.

Air Quality

The *Clean Air Act* (CAA) establishes Federal policy to protect and enhance the quality of the Nation's air resources to protect human health and the environment. The CAA requires that adequate steps be implemented to control the release of air pollutants and prevent significant deterioration in air quality. The 1990 amendments to the CAA require Federal agencies to determine the conformity of proposed actions with respect to State Implementation Plans (SIPs) for attainment of air quality goals.

Noise

Land use guidelines established by the U.S. Department of Housing and Urban Development (HUD) and based on findings of the Federal Interagency Committee on Noise recommend acceptable levels of noise exposure for land use.

Water Resources

The Clean Water Act (CWA) of 1977 (33 United States Code [U.S.C.] 1344) and the Water Quality Act of 1987 (33 U.S.C. 1251, et seq., as amended) establish Federal policy to restore and maintain the chemical, physical, and biological integrity of the Nation's waters and, where attainable, to achieve a level of water quality that provides for the protection and propagation of fish, shellfish, and wildlife, and recreation in and on the water.

EO 11988, Floodplain Management, requires Federal agencies to take action to reduce the risk of flood damage; minimize the impacts of floods on human safety, health, and welfare; and restore and preserve the natural and beneficial values served by floodplains. Federal agencies are directed to consider the proximity of their actions to or within floodplains. Where information is unavailable, agencies are encouraged to delineate the extent of floodplains at their site.

EO 11990, Protection of Wetlands, requires that Federal agencies provide leadership and take actions to minimize or avoid the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial values of wetlands.

Socioeconomics

EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, directs Federal agencies to assess the effects of their actions on minority and low-income populations within their region of influence. Agencies are encouraged to include demographic information related to race and income in their analysis of the environmental and economic effects associated with their actions. *EO 13045, Protection of Children from Environmental Health Risks and Safety Risks*, directs Federal agencies to (1) identify and assess environmental health risks and safety risks that may disproportionately affect children and (2) ensure that policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks.

Cultural Resources

The *National Historic Preservation Act (NHPA) of 1966* provides the principal authority used to protect historic properties, establishes the National Register of Historic Places (NRHP), and defines, in Section 106, the requirements for Federal agencies to consider the effects of an action on properties on or eligible for the NRHP. *Protection of Historic and Cultural Properties* (36 CFR 800 [1986]) provides an explicit set of procedures for Federal agencies to meet their obligations under the NHPA, including inventorying of resources and consultation with State Historic Preservation Officers (SHPOs). The *Archeological Resources Protection Act of 1979* ensures that Federal agencies protect and preserve archeological resources on Federal or Native American lands and establishes a permitting system to allow legitimate scientific study of such resources.

Hazardous Materials and Waste Management

Hazardous materials and waste management are subject to Federal regulation under the Solid Waste Disposal Act (as amended by the Resource Conservation and Recovery Act (RCRA)); the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); the Toxic Substances Control Act (TSCA); the Clean Water Act (CWA) (Federal Water Pollution Control Act); and the Clean Air Act (CAA).

1.3.3 Interagency and Intergovernmental Coordination for Environmental Planning

The Intergovernmental Coordination Act and EO 12372, *Intergovernmental Review of Federal Programs*, require Federal agencies to cooperate with and consider state and local views in implementing a Federal proposal. AFI 32-7060 requires the U.S. Air Force (USAF) to implement a process known as Interagency and Intergovernmental Coordination for Environmental Planning (IICEP), which is used for the purpose of agency coordination and implements scoping requirements.

Through the IICEP process, the USAF notifies relevant Federal, state, and local agencies of the Proposed Action and allows them sufficient time to make known their environmental concerns specific to the action. This process also provides USAF the opportunity to cooperate with and consider state and local views in implementing a Federal proposal. During the IICEP process, the USAF coordinated with agencies such as the USFWS, Virginia Department of Conservation and Recreation (VDCR), Virginia Department of Game and Inland Fisheries, Virginia Department of Agriculture and Consumer Services, Virginia Department of Environmental Quality, and other local, state, and Federal agencies. Section 6.0 presents a list of agencies and individuals contacted during the development and preparation of this EA. Appendix A includes a copy of the IICEP letter mailed to the agencies for this action and agency responses.

State and local environmental permits that may be required for this or similar projects are listed in Table 1-1. Virginia Department of Health and Federal Aviation Administration permits are required and have been obtained for this project. The State Historic Preservation Office has been contacted.

Table 1-1
State and Local Environmental Compliance Requirements

Permit/Approval	Administered/Oversight by	Issues
Virginia Water Protection Permit (Section 401 Water Quality Certification)	Virginia Department of Environmental Quality; Virginia Marine Resources Commission	Water quality certification. Discharge to water. Section 404 permit should be listed
Clean Air Act Air Pollution Control Act	U.S. Environmental Protection Agency; Virginia Department of Environmental Quality	Construction equipment activities
State Endangered Species Acts	Virginia Department of Conservation and Recreation/ Heritage Division; Virginia Marine Resources Commission	Rare, threatened, and endangered plant and animal species
Habitat Permits (Subtitle II of title 28.2 of the Code of Virginia)	Virginia Department of Environmental Quality; Virginia Marine Resources Commission; U.S. Army Corps of Engineers	Physical encroachment in sub-aqueous or bottomland, tidal wetland, or coastal primary sand dunes
Chesapeake Bay Preservation Act	Chesapeake Bay Local Assistance Department	Economic development and water quality protection in Chesapeake Bay Preservation Areas
Virginia Erosion and Sediment Control Law	Virginia Department of Conservation and Recreation/ Heritage Division; Chesapeake Bay Local Assistance Department	Sediment control
Virginia Stormwater Management Act and Regulations	Virginia Department of Conservation and Recreation/ Heritage Division; Chesapeake Bay Local Assistance Department	Stormwater, Best Management Practices
Section 106 Approval Historical/Archaeological	Virginia Department of Historic Resources Virginia State Historic Preservation Office	Archaeology, historical sites, cultural resources
Virginia Coastal Resource Management Program; Coastal Zone Management Act of 1972	Virginia Department of Environmental Quality	Coastal Zone Management Federal Consistency Review

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2. DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

Langley AFB proposes to upgrade its existing water distribution system by installing a new water tower and draining, demolishing, and disposing of existing Water Tower 620, a 250,000-gallon water tank. This Proposed Action is the result of findings, conclusions, and recommendations presented in the *Structural Condition Assessment, Main Base Water Tanks 616, 620, 1000, and 1374* (Stroud, Pence & Assoc. 1996), and the *Final Hydraulic Modeling Report* (Roy F. Weston 1998).

Two Alternative Actions brought forward in this assessment include the following activities:

The Proposed Action includes:

- Installing a new water tower near the Child Development Center; and
- Draining, demolishing, and disposing of existing water Tower 620.

The Action Alternative includes:

- Constructing a new water tower on an island near the B-52 Memorial; and
- Draining, demolishing, and disposing of existing water Tower 620.

Figure 2-1 depicts the location of existing Water Tower 620, Figure 2-2 depicts the Proposed site plan for the new water tower, and Figure 1-2 depicts the location of the Alternative site.

The Proposed Action and Action Alternative, as described in Section 2.1 would replace a structurally weak water tank with a new water tank. A No-Action Alternative has also been considered and is discussed in Section 2.3. The overall objective was to identify environmental and socioeconomic concerns while meeting the underlying purpose and need for the proposed construction and demolition.

2.1 PROPOSED ACTION

2.1.1 Installing the New Water Tower

The Proposed Action consists of installing a 300,000-gallon, 200-ft tall water storage tank near the CDC and Bldg. 74. The new 5-legged tower would have a base diameter of 52 ft and be equipped with:

- A 48-inch (in.) diameter center wet riser;
- A 6- in. diameter steel overflow pipe with flap valve discharging onto a splash pad;
- Tower and roof ladders;
- An 8- in. diameter inlet-outlet pipe with a water tight seal;
- A 6- in. diameter tank drain with a water tight seal,
- Cathodic protection;
- Exterior water level indicator;
- Aircraft warning lights, and
- A rotating beacon.

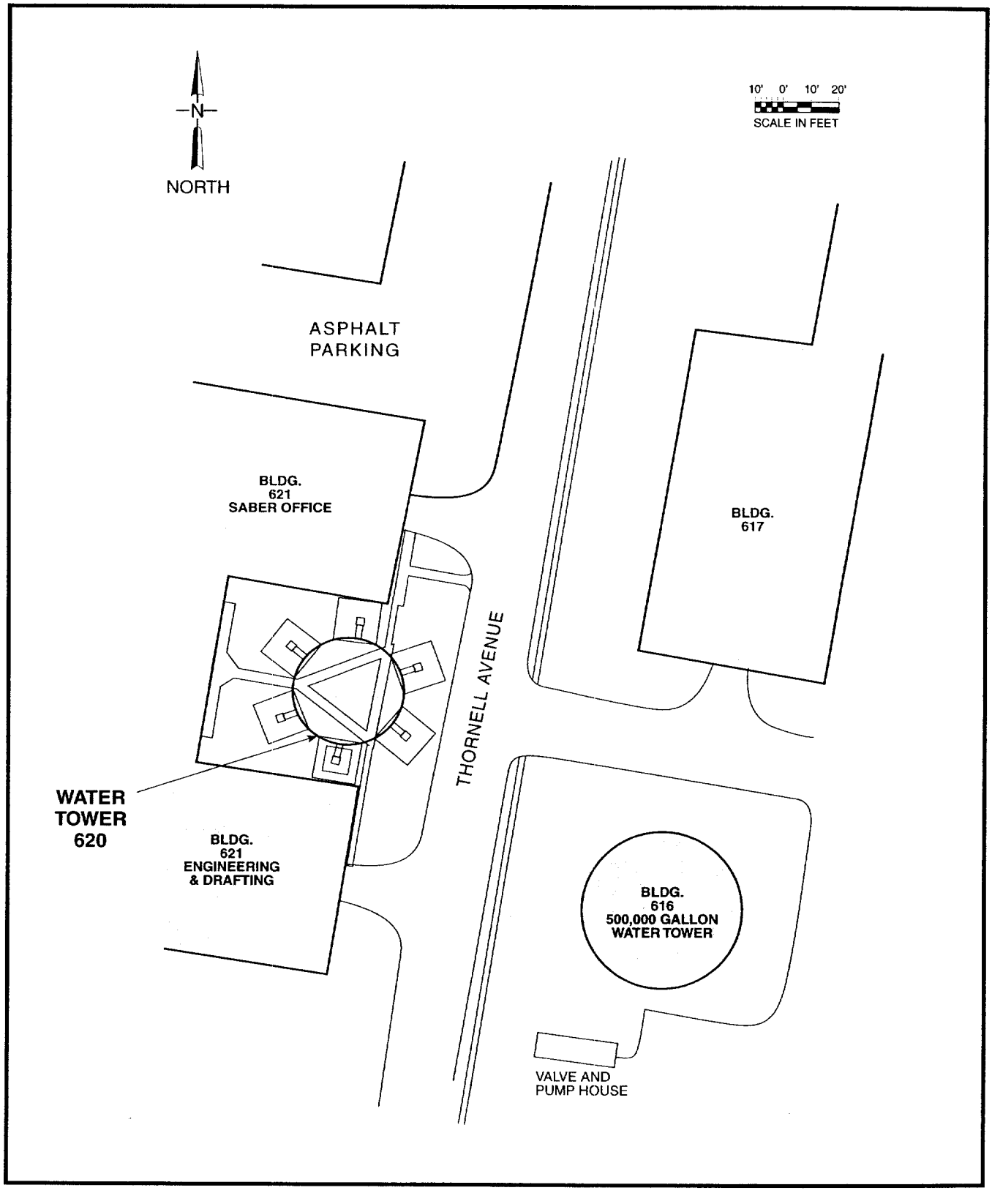

Figure 2-1
Location of Existing Water Tower 620 on Langley Air Force Base

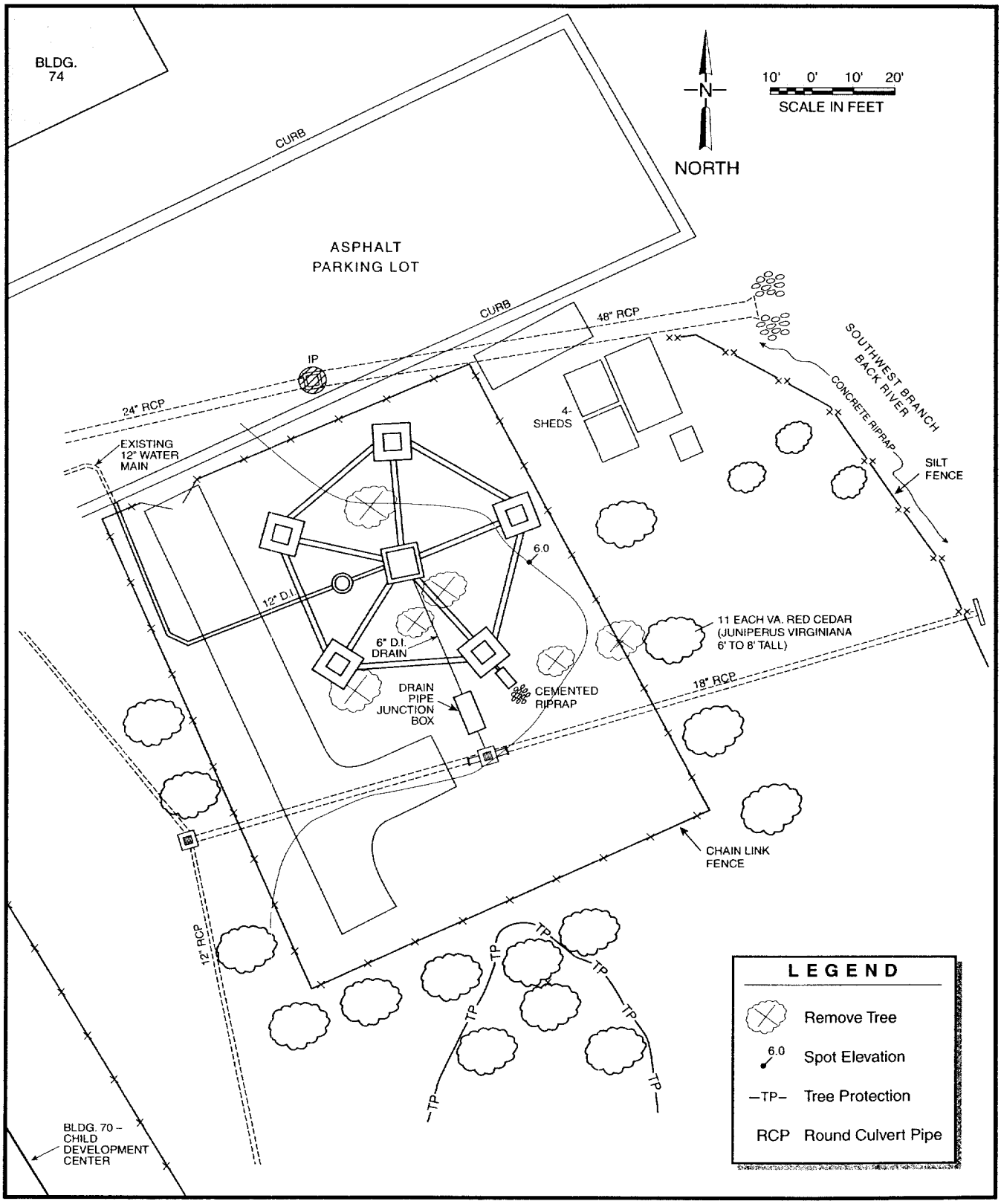

Figure 2-2
Proposed Site Plan for New Water Tower on Langley Air Force Base

The welded steel water storage tank will be supported by five 9-ft square by 5-ft thick concrete foundations along with one 9-ft by 9-ft concrete foundation for the riser piping. Each tower leg foundation will rest on top of eight concrete piles that will be driven approximately 75 ft into the ground for the CDC location. Dewatering of the foundations would be passed through rock filters prior to discharge into the Southwest Branch of the Back River (Overman Associates 2000a).

Installation activities for the Proposed Action also include extending approximately 300 linear feet of 12-in. diameter water main, plus valves, fire hydrants, and appurtenances to connect the new water tower to a new water distribution system currently under construction. An 8-in. water main that currently exists in the access road to Buildings 74 and 75 will be replaced by a new 10" main under a water main replacement contract currently being executed.

The new tank will operate on line at a pressure of 85 psi and will be constructed, tested, disinfected, painted with non-lead based paint, and placed in service before Tower 620 would be removed (Overman Associates 2000a). Water released during disinfection and flushing would be de-chlorinated before being discharged to the environment. Langley AFB will coordinate with the VDEQ prior to commencement of these activities.

If necessary for maintenance or in an emergency situation, the Proposed Action new water tower would slowly drain via a 6-in. diameter pipe and would disperse the water over existing vegetated uplands and concrete surfaces and sheet flow into the Southwest Branch of the Back River.

Proposed activities associated with installing the new water tower would include:

- Installing an 8-ft tall metal chain link fence around the proposed water tower site;
- Installing temporary aircraft obstruction lighting on erection equipment or tower;
- Removing the existing beacon light from Tower 620 and installing on the new tower;
- Providing approved barricades, traffic control signs, and construction safety signs in the project area;
- Constructing a temporary gravel haul road into the project sites;
- Establishing designated tree protection areas for the CDC site and planting additional specimen trees as a replacement for trees removed during construction;
- Controlling sediment and erosion by the use of prescribed best management practices, including the installation of a silt fence, storm drain inlet protection, and diversion dikes within project limits prior to commencement of any onsite work; and
- Controlling fugitive dust from tank demolition operation by the use of prescribed best management practices.

All construction operations would comply with the requirements of the Virginia Erosion and Sediment Control Act. All areas disturbed by construction activities would be graded, seeded, fertilized, and mulched upon completion of proposed construction activities.

2.1.2 Draining, Demolishing, and Disposing of Tower 620

The existing 250,000-gallon capacity Water Tower 620 is located in an existing industrial and administrative area on Thornell Avenue between Plum and Douglas Streets (Figure 2-1) and is surrounded on three sides by Building 621. Langley AFB would drain, dismantle, and dispose of Tower 620 after the proposed new tower described in Section 2.2.1 is constructed, connected to the water distribution system, tested, disinfected, and placed in service. This scenario would ensure there would be an adequate water supply and fire flow for the base during the approximately one-year construction period (Overman Associates 2000a).

Tower 620 would be removed to the top of its foundation footings. The proper, legal, and safe dismantling and disposal of the water tower bowl and the top two leg sections would be accomplished outside of normal work hours or during a weekend period, and only when the adjacent Building 621 is unoccupied. The contractor would have high intensity lighting available should it be necessary to work after dark (Overman Associates 2000b).

Cuts to the water tower bowl would be made such that pieces of hauling size could be loaded on trucks for removal from Langley AFB. The weight of these tower pieces would not exceed that permitted on Federal or state roads used to deliver the scrap steel to its final disposal destination. The remaining parts of the tower not removed once tank removal has begun would be sufficiently braced to not endanger the adjacent Building 621 personnel during their normal duties (Overman Associates 2000b).

Other activities associated with draining, dismantling, and disposing of Tower 620 would include:

- Removing the concrete footings to 24 in. below grade;
- Providing temporary obstruction lighting on the tank or remaining structural members once the existing obstruction warning lights are removed from the tank;
- Removing existing utilities uncovered by work and terminating according to nationally recognized code covering the specific utility; and
- Removing concrete and asphalt paving and slabs as indicated in construction plan specifications.

Langley AFB is aware that the tank and tank legs contain lead-based paint. All cuts to the tank would be carefully performed and the cut surfaces vacuumed so that paint chips are collected and disposed of in accordance with the base Hazardous Waste Management Plan.

2.2 ACTION ALTERNATIVE

The Action Alternative consists of installing the same sized water tank on an island near the B-52 Memorial. The new 5-legged tower would have a base diameter of 52 ft and be equipped with:

- A 48-inch (in.) diameter center wet riser;
- A 6- in. diameter steel overflow pipe with flap valve discharging onto a splash pad;
- Tower and roof ladders;
- An 8- in. diameter inlet-outlet pipe with a water tight seal;
- A 6- in. diameter tank drain with a water tight seal,
- Cathodic protection;
- Exterior water level indicator;
- Aircraft warning lights, and
- A rotating beacon.

The welded steel water storage tank will be supported by five 9-ft square by 5-ft thick concrete foundations along with one 9-ft by 9-ft concrete foundation for the riser piping. Each tower leg foundation will rest on top of eight concrete piles that will be driven approximately 75 ft into the ground for the CDC location. For this site, the depth of the piles most likely will have to be increased due to the surrounding wetlands. The bottom of the leg foundations will be approximately 7 ft below finished grade on top of the piles. Dewatering of the foundations would be passed through rock filters prior to discharge into the Southwest Branch of the Back River (Overman Associates 2000a).

Installation activities on the island will consist of connecting to the existing system by extending approximately 1,200 linear feet of 12-inch diameter water main, plus valves, at least one fire hydrant, and appurtenances through existing wetlands and the waters of the Back River. This water tank would be connected to a new water main at Burrell Street and Nealy Avenue. Construction at this site would entail traversing the waters of the Back River to get construction equipment, materials, and personnel to the site.

The new tank will operate on line at a pressure of 85 psi and will be constructed, tested, disinfected, painted with non-lead based paint, and placed in service before Tower 620 would be removed (Overman Associates 2000a). Water released during disinfection and flushing would be de-chlorinated before being discharged to the environment. Langley AFB will coordinate with the VDEQ prior to commencement of these activities.

If necessary for maintenance or in an emergency situation, the Action Alternative new water tower would slowly drain via a 6-in. diameter pipe and would disperse the water through the *Spartina* wetlands that surround the site and flow into the Southwest Branch of the Back River.

Proposed activities associated with installing the new water tower would include:

- Installing an 8-ft tall metal chain link fence around the proposed water tower site;
- Installing temporary aircraft obstruction lighting on erection equipment or tower;
- Removing the existing beacon light from Tower 620 and installing on the new tower;

- Providing approved barricades, traffic control signs, and construction safety signs in the project area;
- Constructing a temporary gravel haul road into the project sites;
- Establishing a wetland mitigation site (3:1) to compensate for the wetlands that will be destroyed to construct the new tower at the island site.
- Controlling sediment and erosion by the use of prescribed best management practices, including the installation of a silt fence, storm drain inlet protection, and diversion dikes within project limits prior to commencement of any onsite work; and
- Controlling fugitive dust from tank demolition operation by the use of prescribed best management practices.

All construction operations would comply with the requirements of the Virginia Erosion and Sediment Control Act. All areas disturbed by construction activities would be graded, seeded, fertilized, and mulched upon completion of proposed construction activities. Additionally, the island site would be properly protected by construction of a revetment structure for erosion control.

2.3 NO-ACTION ALTERNATIVE

The No-Action Alternative is prescribed by CEQ regulations and serves as a benchmark against which Federal actions can be evaluated. This alternative refers to the continuation of existing conditions (the affected environment) without implementation of the Proposed Action. Langley AFB would not construct a new water tower nor remove the existing water Tower 620. With this alternative, Langley AFB would not meet their objective of ensuring adequate water system pressure and flow for the Base.

As depicted in Figure 2-1, Water Tower 620 is surrounded on three sides by Building 621. A potential exists for a failure and collapse of this water tank onto occupied facilities. Extensive damage to structures is possible, curtailment of base water distribution would be expected, and injury and death are possibilities (USAF 1999a). With the loss of either of these towers, Base water pressures and fire flow capacities would be reduced to such a level that the Fire Department would have no way of adequately combating a fire and, most likely, any facility that caught fire would be completely lost.

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED

Four other alternatives were considered in this EA:

- Repair Water Towers 616 and 620.

- Construct a new water tower at the south end of the Mile-Long Building and drain, demolish, and dispose of existing Water Tower 620.

- Drain, demolish, and dispose of two existing water Towers 616 and 620 and constructing one new water tower near or at Water Tower 616.

- Drain, demolish, and dispose of existing Water Tower 620, and construct a new water tower at the same location.

The repair of Water Towers 616 and 620 are not viable alternatives. As described in Section 1.2, Water Tower 620 is antiquated and structurally dangerous. The tank and support structures show severe signs of deterioration; the roof system has failed; and there is a noticeable sway of the tower in winds of 25 mph and greater. Water Tower 616 is old and deteriorating. Cost to repair support structures and bowls, and remove lead-based paint and repaint structures render repair uneconomical and unfeasible (Stroud, Pence & Assoc., 1996). Therefore, this alternative was eliminated from additional analysis.

Constructing a new water tower at the south end of the Mile-Long Building (Figure 1-2) would include extending a 14-inch dedicated water main along Thornell Avenue. This alternative was eliminated from further analysis in this EA because its location would be too close to the airfield and it would interfere with the aircraft clear zone. The proposed water tower would affect departures from Runway #8 by causing an increase in aircraft climb gradients necessary to ensure clearance from the tower. Additionally, the Minimum Descent Altitude for arriving aircraft to Runway #26 would need to be raised by a minimum of 80 feet (Langley AFB 1998). Therefore, this alternative is not viable and has been eliminated from further analysis in this EA. Draining, demolishing, and disposing of two existing water Towers 616 and 620 and constructing one new water tower near or at the location of Water Tower 616 would be the least cost alternative since it uses existing infrastructure for the new tanks. This alternative was also eliminated from further analysis in this EA because the two existing towers would have to be removed from service during construction of the new tower(s); thus, there would be inadequate water supply and fire flow for the Base during the approximately one-year construction period (Langley AFB 1998). Therefore, this alternative is not viable and has been eliminated from further analysis in this EA.

Draining, demolishing and disposing of Water Tower 620, and replacing it with a new water tower in the same location would also be one of the least costly alternative because it uses existing infrastructure. But this alternative was also not carried forward because there would be inadequate water pressure and fire flow capabilities for the base during the approximately one-year demolition and construction timeframe.

No other potential sites were analyzed for location of the new water towers. The proposed action, the action alternative, and the four eliminated actions, were the only sites that met the design criteria in the water system design reports.

3. AFFECTED ENVIRONMENT

In compliance with NEPA, CEQ guidelines, and AFI 32-7061, the description of the affected environment focuses on those resources and conditions subject to impacts. These resources and conditions include the following areas: safety, geological resources, air quality, noise, water resources, biological resources, land use, cultural resources, and hazardous materials and waste management.

The existing Water Tower 620, and proposed and alternate locations of the new water storage tower are situated in the southeast portion of the Langley AFB property (Figure 1-2). The existing 250,000-gallon capacity Tower 620 is located in an existing industrial and administrative area on Thornell Avenue between Plum and Douglas Streets. It is surrounded on three sides by Building 621. The Proposed Site is in an administrative, non-industrial area of the base. It is adjacent to the CDC, Bldg. 74 and the CDC-Bldg.74 parking lot. The Action Alternative site is located on an island near the B-52 memorial. It is surrounded by *Spartina* wetlands and an old abandoned roadway.

3.1 SAFETY

For the purpose of this EA, safety issues focus on factors affecting construction and demolition safety. All contractors performing construction or demolition on Langley AFB are responsible for following safety regulations and worker compensation programs, and are required to conduct construction or demolition activities in a manner that does not pose a risk to their workers or Langley AFB personnel.

Langley AFB industrial hygiene programs address exposure to hazardous materials, use of personal protective equipment, and the availability of Material Safety Data Sheets. Industrial hygiene is also the responsibility of contractor personnel, as applicable. These responsibilities are to:

- Review all potentially hazardous workplace operations;
- Monitor exposure to workplace chemical (e.g., asbestos, lead, hazardous material), physical (e.g. noise propagation), and biological agents (e.g. infectious waste);
- Recommend and evaluate controls (e.g. ventilation, respirators) to ensure personnel are properly protected or unexposed; and
- Ensure a medical surveillance program is in place to perform occupational health physicals for those workers subject to any accidental chemical exposures.

3.2 GEOLOGICAL RESOURCES

Geological resources of an area consist of the surface and subsurface soil and bedrock materials and their inherent properties, including surface topography. Geological factors that can influence

the ability of an area to support development of man-made structures include soil properties, topography, and potential seismic activity. Soil structure, elasticity, strength, shrink-swell potential, and erodibility all determine the ability of the ground to support man-made structures and facilities. Soils are typically described according to their complex types and physical characteristics. Discussions of geology include regional and site-specific geomorphic conditions and the general geological setting of an area.

Topography is the change in vertical relief (i.e., elevation) over the surface of an area. The topography of an area is generally the product of natural influences (i.e., erosion, seismic activity, climatic conditions, and the underlying geologic materials), but can be influenced by human activity. A discussion of topography typically includes a description of surface elevations, slope, and distinct physiographic features (i.e., mountains, ravines, and depressions) and their influence on human activities.

The topography at Langley AFB is primarily flat with little relief throughout the base. Elevation on the base ranges from 5 to 11 ft above mean sea level (MSL). Elevation at the proposed new water tower site is approximately 8 ft above MSL, and approximately 8 ft above MSL at Tower 620. Water often remains in low-lying areas and natural depressions after storm events. The 100-year flood elevation is 8.5 ft above MSL. At the Action Alternative site, the elevation of the existing island (aside from the existing roadbed) is 1 - 1.5 ft above MSL. This area is clearly in the 100-year floodplain and subject to routine inundation from high tide events. The existing roadbed elevation is at 4.5 ft above MSL.

Langley AFB is located within the Outer Atlantic Coastal Plain physiographic region of southeastern Virginia. Sediments are primarily unconsolidated fluvial, marine, and estuarine deposits dating back to the Cretaceous era. The Cretaceous era sediments are Pleistocene era beach sands, sandy clays, and gravel from the Tabb and Lynnhaven Formations. Extensive filling, grading, and movement of materials has occurred throughout the base, and soil profiles have been altered such that existing site evaluations deviate from documented soil horizons for adjacent counties. The surface immediately surrounding Tower 620 consists of level lawn area, which is then surrounded by buildings, sections of asphalt pavement, concrete sidewalks, and concrete slabs. The surface of the site for the Proposed Action is predominately a previously disturbed area of upland grasses sloping towards the Southwest Branch of the Back River. The surface immediately surrounding the Proposed Action site consists of upland fill material, grasses and small tress. The surface immediately surrounding the Action Alternative site is an old asphalt roadway surrounded by a natural/semi-natural *Spartina spp.* tidal wetland marsh.

3.3 AIR QUALITY

Air quality in a given location is determined by the concentration of various pollutants in the atmosphere. National Ambient Air Quality Standards (NAAQS) are established by the EPA and adopted by the Commonwealth of Virginia for criteria pollutants, including: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter equal to or less than 10 microns in diameter (PM_{10}), and lead (Pb). NAAQS represent maximum levels of background pollution that are considered safe, with an adequate margin of safety, to protect public health and welfare.

The CAA Amendments of 1990 place most of the responsibility to achieve compliance with the NAAQS on the State Implementation Plan (SIP). A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state into compliance with all NAAQS. Changes to the compliance schedule or plan must be incorporated into the SIP. Areas not in compliance with a NAAQS standard can be declared "non-attainment areas" by the EPA or an appropriate state agency. To reach attainment, NAAQS may not be exceeded more than once per year.

The CAA prohibits Federal agencies from performing any projects that do not conform to an EPA-approved SIP or that would prevent a state from achieving the NAAQS as proposed in the SIP. In 1993, the EPA developed final rules for determining air quality conformity. Under these rules, certain actions are exempted from conformity determinations, while others are assumed to be in conformity if the air quality region is in attainment or if total project emissions are below *de minimis* levels established under 40 *CFR* Section 93.153. Total project emissions include both direct and indirect emissions that can be regulated by a Federal agency.

The CAA also requires all states to obtain major stationary source permits. A major stationary source is a facility (i.e., plant or activity) that emits more than 100 tons annually of any one pollutant, 10 tons per year of a hazardous air pollutant, or 25 tons per year of any combination of hazardous air pollutants. The purpose of the permitting rule is to establish regulatory control over large industrial-type activities and to monitor their impact on air quality.

In the Commonwealth of Virginia, VDEQ institutes and regulates air quality standards. Langley AFB is included in the Hampton Roads Intrastate Air Quality Control Region (Air Quality Control Regulation No. 223) (USAF 1997b). This region includes Langley AFB, the airspace surrounding the base, the cities of Hampton and Suffolk, and the counties of Isle of Wright, James City, Southampton, and York. This area includes substantial industry and a large population that generates emissions.

The air quality in this region is classified as unclassifiable, or in attainment for all criteria pollutants measured by the NAAQS. However, the area was recently redesignated for ozone from marginal attainment to attainment [Federal Register 62 (123), June 26, 1997]. Therefore, the area is considered in "transitional attainment" or "maintenance." The Hampton Roads area has submitted to EPA as a SIP revision, a maintenance plan that provides for continued maintenance of the ozone NAAQS for 12 years after redesignation. Any proposed actions must be either presumed to conform (based on emissions below the de minimis levels) or demonstrated to conform to both the NAAQS and SIP provisions, such as emission inventory budgets provided in the maintenance plan.

As identified in the conformity rule for maintenance areas outside an ozone transport region, the de minimis thresholds for Langley AFB as an ozone maintenance area are 100 tons per year of nitrogen oxides (NO_X) and 100 tons per year of volatile organic compounds (VOCs). Langley AFB exceeds the Title V source threshold for NOx but the base has applied and received a Synthetic Minor Operating Permit from the Commonwealth of Virginia. However, both actual and potential emissions for hazardous air pollutants at the base are not subject to major source status for hazardous air pollutants.

Langley AFB is authorized to operate in accordance with a New Source Performance Standard Permit (Registration No. 60059), issued by VDEQ on July 26, 1999. This permit stipulates that emissions from the operation of all permitted stationary sources, combined, shall not exceed certain threshold limits. Threshold limits include 98 tons per year of NO_X and 32.9 tons per year of VOCs.

Estimated baseline stationary emissions for Langley AFB are included in Table 3-1. The most current baseline inventory for stationary sources prepared for Langley AFB was in 1998 (USAF 1998e). Stationary source emissions at the base include jet engine testing, degreasing, storage tanks, fueling operations, power production, solvent usage, and surface coating. Calculated mobile source emissions include aircraft operations, aerospace ground equipment, and motor vehicles.

Table 3-1
Total Baseline Emissions at Langley Air Force Base

Source Category	Pollutants (Tons Per Year)				
	CO	NO_x	PM_{10}	SO_x	VOCs
Hampton Roads Area Total Emissions (1999)[1]	**257,522**	**83,599**	**49,862**	**110,221**	**75,511**
Base Emissions					
Stationary Sources	**14.470**	**4.550**	**33.050**	**1.030**	**29.790**
Mobile Sources					
Aircraft Operations	**207**	**170**	**8.51**	**6.1**	**44.3**
Aerospace Ground Equipment	**593.6**	**24**	**1.7**	**0.25**	**62.0**
Base Total Emissions	**815.1**	**198.6**	**43.3**	**7.4**	**136.1**

Source: Commonwealth of Virginia 1993; USAF 2000.

3.4 NOISE

Noise is generally defined as undesirable sound. Properties of undesirable sound may include its ability to interfere with communications, damage hearing, or create a public annoyance. Human response to noise varies, depending on the type and characteristics of the noise, distance between the noise source and receptor, receptor sensitivity, and time of day.

The day-night average sound level (DNL or L_{dn}) is the energy-averaged sound level measured by the summation and averaging of sound exposure level values during a 24-hour period, with a 10-decibel (dB) penalty assigned to noise events (including aircraft operations) occurring between 10:00 p.m. and 7:00 a.m. (considered nighttime for the purposes of noise modeling). The 10 dB penalty is intended to compensate for generally lower background noise levels and increased annoyance associated with noise events occurring at night. L_{dn} is the preferred noise metric of HUD, Federal Aviation Administration, EPA, and Department of Defense (DOD). The Noise Control Act of 1972 established that Federal agencies should comply with Federal, state, interstate, and local requirements requiring control and abatement of environmental noise to the same extent as private entities.

The Safety and Noise Abatement Act of 1979 requires a single system for measuring noise, determining noise exposure, and identifying noise-compatible land use surrounding airports. In response to this requirement, the Federal Aviation Regulation (FAR) Part 150 was developed. The FAR Part 150 specifies the procedures, standards, and methodology governing the development of noise exposure maps.

Significant noise sources within the surrounding areas of the Proposed Action are the result of aircraft warm-ups, maintenance and testing, taxiings, takeoffs, approaches, and landings on Langley AFB. The proposed and alternate new water tower sites and Tower 620 are located south of the base runways and airfields. The 1st FW, equipped with F-15 aircraft, averages 166 daily operations (USAF 1997a). An operation is defined as either one takeoff or one landing. The two other principal aircraft on the Base are the C-12 and C-21, which average 15 and 5 daily operations, respectively. In addition, numerous transient aircraft from other military installations and aircraft associated with the Base's Aero Club land and take off from Langley. The base averages 26 daily operations from transient aircraft and 17 operations from Aero Club aircraft (USAF 1997c).

Langley AFB operates under a program designed to reduce noise, particularly at night. F-15C night operations, after 10:00 PM and before 7:00 am, are infrequent, accounting for 5 percent of total activity at the airfield. The base also employs a quiet-hours program in which aircraft operations are avoided after 10:00 PM and before 6:00 am. In addition, the base uses the runway direction that directs departures and approaches to occur over water east of the base, when possible.

A revised AICUZ study for Langley AFB was completed in January 1997 (USAF 1997c). The revision of the base's original 1990 AICUZ study was initiated due to the deactivation of the 48th Fighter Interceptor Squadron, replacement of F-15A and B models with modernized C and D models, and advancements in NOISEMAP analysis software. The purpose of the AICUZ program is to evaluate aircraft-related noise and accident potential and to promote compatible land use in areas impacted by noise and/or accident potential. The AICUZ study provides noise contours ranging from L_{dn} 65 dB to L_{dn} 80 dB. Currently, base-wide, only 1 percent of land uses conflict with noise recommendations (USAF 1997c). The one (1) percent is composed primarily of aging military housing units lacking sound attenuation in the L_{dn} 75 to 80 dB zone. The Proposed Action and the Alternative Action project areas currently fall within the L_{dn} 70 and 75 zones.

3.5 WATER RESOURCES

This section describes existing conditions for watersheds, floodplains, and coastal zones in the project area and alternate area. Surface water resources comprise lakes, rivers, and streams, and are important for a variety of reasons, including economic, ecological, recreational, and human health. Other issues relevant to water resources include watershed areas affected by existing and potential runoff, and hazards associated with 100-year floodplains and wetlands.

3.5.1 Watersheds

Langley AFB is located on the peninsula of land directly between the Northwest Branch and Southwest Branch of the Back River, a tributary of Chesapeake Bay. The water is estuarine and primarily saline. Langley AFB is serviced by a stormwater drainage system that discharges to the Back River and its tributaries, Brown's Creek, Tides Mill Creek, Kiln Creek, and Tabbs Creek. Surface water may also drain to these water bodies. The stormwater drainage system consists mostly of reinforced concrete pipe and drainage ditches (USAF 1999c).

The existing stormwater drainage system handles precipitation from rain, snow, and hail. Due to the flat relief in the area, standing water accumulates during heavy storm events, especially in the southern portion of the project area. The area around the proposed new water tower drains to an existing 18-inch diameter stormwater culvert pipe, which conveys water, in an emergency, to an existing outfall and into the Southwest Branch of the Back River. Tower 620 is on the dividing line between the stormwater Outfall 004 and 005 drainage areas. Drainage from Tower 620 flows to the gutter inlets along Thornell Avenue, and then to the Back River via 24-in diameter stormwater culverts to the outfalls.

Stormwater runoff from base parking lots and the airfield runways carries some spilled oil, grease, hydraulic fluid, and jet fuel to outfalls which discharge into the southwest or northwest branches of the Back River. However, the releases are sporadic and assumed to be only in minimal quantities as noted in the Langley AFB Stormwater Management Manual (USAF 1995b). These releases fall within acceptable limits specified in Langley AFB's National Pollutant Discharge Elimination System Permit (40 CFR 122). The proposed new water tower site is located approximately 100 ft from the shoreline of the Southwest Branch (Figure 2-2). The Action Alternative includes installing the same sized water tank on an island near the B-52 Memorial. At the island siting, the tower would be located approximately 100' from Tide Mill Creek. The storm water runoff of this site is by natural sheet flow from the roadbed into the existing marsh. Tower 620 is approximately 400 ft from the shoreline of the Southwest Branch of the Back River. The entire installation is located within the Chesapeake Bay watershed.

3.5.2 Floodplains

Floodplains, protected under EO 11988, are belts of low, level ground present on one or both sides of a stream channel that are subject to either periodic or infrequent inundation by floodwater. Inundation dangers associated with floodplains have prompted Federal, state, and local legislation that limits development in these areas largely to recreation and preservation activities.

As determined by the USACE, most of Langley AFB, with the exception of the aircraft runways, parts of the golf course, and some other smaller areas, lies within the 100-year flood zone (USAF 1981). The proposed project areas lie within the 100-year flood zone. Flooding in the 100-year flood zone is expected to occur once, on average, every 100 years. The 100-year flood elevation is +8.5 ft above MSL. In 1981, a one-time, all-inclusive EA was conducted for future construction projects located in the floodplain at Langley AFB (USAF 1981). This EA demonstrated that proposed construction in the floodplain would not significantly impact natural

or beneficial floodplain values if projects were sited within the floodplain on previously developed or improved portions of the base. Since the Action Alternative is a previously undeveloped property, is within the 100-year floodplain, and is routinely flooded due to the low elevation of the site, the construction of the water tower at this location would significantly impact natural or beneficial floodplain values. With the construction of the tower, the disturbance would compact and alter the natural drainage and sheet flow across the existing *Spartina* marsh. When the natural drainage of a site is changed, there is a direct impact to the vegetative growth and the quality of the runoff across the site. An area that once slowly drained through native marsh vegetation may now pond from the compaction or conversely may flow too quickly over the site allowing for sedimentation.

3.5.3 Coastal Zones

Langley AFB is located in a Coastal Zone area. All development must be conducted in accordance with policies of the Virginia Coastal Resources Management Program (VCRMP). The VCRMP, as approved by NOAA, complies with specifications of the Coastal Zone Management Act (CZMA) of 1972.

3.6 BIOLOGICAL RESOURCES

This section describes the existing aquatic resources, wetlands, vegetation, wildlife, and rare, threatened, and endangered species that occur or could potentially occur on the installation, but would not necessarily occur in the project area due to its disturbed nature. Biological resources include native or naturalized plants and animals, and their habitats, including wetlands, in which they exist. Sensitive and protected biological resources include plant and animal species listed as threatened or endangered by the USFWS, the Virginia Department of Game and Inland Fisheries, and the Virginia Natural Heritage Program.

3.6.1 Aquatic Resources

The entire project area lies within the Chesapeake Bay Preservation Areas, Resource Management Area. Resource Management Areas are composed of lands at or near the shoreline that have intrinsic water quality value due to ecological or biological processes that they sustain. Improper development of these areas may substantially damage water quality of the Chesapeake Bay and its tributaries. Any project within these areas must comply with redevelopment regulations set forth in 9 Virginia Administrative Code 10-20 (*Chesapeake Bay Preservation Area Designation and Management Regulations*).

The proposed new water tower area is adjacent to the Southwest Branch of the Back River. The Tower 620 area is not directly bordered by shoreline and is not directly adjacent to a water body. Due to the inland and urban nature of the existing water tower, fish and other aquatic organisms are not located near this portion of the project area. The alternate site is surrounded by a natural/semi-natural *Spartina spp.* marsh wetland and directly affects fish and other aquatic organisms.

3.6.2 Wetlands

Jurisdictional wetlands are those wetlands subject to regulatory protection under Section 404 of the CWA and EO 11990. Wetlands are defined as those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Wetlands perform a variety of functions, including groundwater recharge and discharge, flood flow alteration, sediment stabilization, sediment and toxicant retention, nutrient removal and transformation, aquatic and terrestrial diversity and abundance, and uniqueness.

Langley AFB falls within the Chesapeake Bay watershed. Salt and freshwater marshes of the northwest and southwest branches of the Back River, New Market Creek, Brick Kiln Creek, Tabbs Creek, and Tides Mill Creek surround the base on three sides. Tidal flow from the Chesapeake Bay is substantial along these margins; however, most inland freshwater wetlands have been filled, drained to ditches, or converted into golf course features. According to Langley AFB's Integrated Natural Resources Management Plan (INRMP) (USAF 1998a), approximately 650 acres (462 acres of which are non-freshwater estuarine wetlands) of the base are classified as jurisdictional wetlands by the USACOE. The base supports a variety of wetland types: palustrine emergent, palustrine forested, estuarine sub-tidal unconsolidated bottom, estuarine intertidal emergent, estuarine intertidal scrub-shrub, and estuarine intertidal unconsolidated shoreline.

The land immediately under the proposed site location for the new water tower is in a disturbed upland environment, and not in a wetland. The project area is bordered, 115 ft to the east, by the shoreline of the Southwest Branch of the Back River. Prior to the 1940s, the project area was a tidal marsh environment that was filled during construction and expansion of the base. The shoreline area displays hydric soil sediments and hydrology characteristics of tidal wetlands. There is a small patchy tidal marsh area comprised primarily of reed (*Phragmites*), false willow (*Baccharis spp.*), and cordgrass (*Spartina spp.*) that is located along the shoreline adjacent to the proposed project area. Figure 2-2 delineates the shoreline area nearest to the proposed alternative water tower site. The action alternative site is on a built-up roadway, and also in a *Spartina spp.* tidal wetland marsh. There are no wetlands at or around the Tower 620 site.

3.6.3 Vegetation

Approximately 80 percent of Langley AFB consists of urbanized or disturbed areas (USAF 1997b). Eight percent of Langley AFB is categorized as woodland. The woodland areas are categorized as either mixed or hardwoods forest or pine forest. The proposed project areas do not fall within or contain any forested areas. A tree survey and inventory was conducted for the entire base (USAF 1998c). Results of the survey are being used to develop base-wide schedules, restocking plans, and preservation parameters.

Most of the area around the proposed new water tower site is disturbed and urbanized. Examples of the vegetation community types in this area include lawn, ditches, culverts, tidal wetlands, parking areas, and street rights-of-way. There is a proliferation of weedy and exotic species with

red cedar trees (*Juniperus virginiana*) interspersed throughout. As described in Section 3.7.2, a small patchy tidal marsh area comprised primarily of reed (*Phragmites*), false willow (*Baccharis spp.*), and cordgrass (*Spartina spp.*) exists along the shoreline adjacent to the proposed project area. Most of the area surrounding the Alternate Site is a natural/semi-natural tidal wetland cordgrass (*Spartina spp.)* marsh. The area surrounding Tower 620 is a highly developed and industrial area with vegetation limited to lawn grasses.

3.6.4 Wildlife

The wildlife of Langley AFB is described in the installation's Integrated Natural Resources Management Plan INRMP (USAF 1998a). The proposed project area is urbanized and does not provide optimal feeding and breeding habitat for mammals and reptiles, and no mammals or reptiles were observed in the project area during the site visit. A diversity of common breeding birds, songbirds, shorebirds and waterfowl exist at the action alternative location since there is little access and human activity at the site. Due to the isolation, most of the wildlife activity on the island centers around the fishing, nesting and loafing of the native bird species such as the Carolina chickadee, tufted titmouse, wood thrush, cardinal, red-eyed vireo, warblers, wrens, summer tanagers, Northern flickers, wood peckers, sparrows, redwing blackbirds, crows, plovers, turnstones, willets, sanderlings, gulls, terns, sandpipers, herons, ducks, scaups, double crested cormorants and American coots. Realizing the proximity to large tidal resources, Langley recognizes that there is always the possibility of incidental occurrence of a threatened or endangered species on the base. In an effort to promote and support the existing biodiversity, endeavors are made to maintain and restore the natural resources. The existing tidal marsh successfully supports the habitat of the native crabs, oysters, clams, and muskrats. There are no BASH issues associated with the project sites.

3.6.5 Rare, Threatened, and Endangered Species

Under the Endangered Species Act (16 *U.S.C.*, 1536), an "endangered species" is defined as any species in danger of extinction throughout all or a significant portion of its range. A "threatened species" is defined as any species likely to become an endangered species in the foreseeable future.

The following Federal and commonwealth agencies were consulted concerning rare, threatened, and endangered plant and animal species:

- USFWS, Virginia Field Office
- Virginia Department of Agriculture and Consumer Services, Division of Consumer Protection, Office of Plant and Pest Services
- Virginia Department of Game and Inland Fisheries, Environmental Services Section
- VDCR, Division of Natural Heritage

Copies of consultation letters and correspondence are provided in Appendix A. Based on correspondence from regulatory agencies, Federal and commonwealth listed plant and animal species that may occur within the vicinity of Langley AFB are listed in Table 3-2.

Table 3-2
Listed Plant and Animal Species Potentially Occurring at Langley Air Force Base

Common Name	Scientific Name	Status	
		Federal	State
Reptiles			
Northern diamond back terrapin	*Malaclemys terrapin terrapin*	SOC	
Canebrake rattlesnake	*Crotalus horridus atricaudatus*		LE
Amphibians			
Mabee's salamander	*Ambystoma mabeei*		LT
Birds			
Piping plover	*Charadrius melodius*	LT	LT
Least tern	*Sterna antillarum*	LE	SC
Bald eagle	*Haliaeetus leucocephalus*	LT	LT
Great egret	*Ardea alba egretta*		SC
Peregrine Falcon	*Falco peregrinus*		LE
Black Skimmer	*Rynchops niger*		G5S2
Mammals			
River otter	*Lontra canadensis lataxina*		SC
Invertebrates			
Northeastern beach tiger beetle	*Cincidela dorsalis dorsalis*	LT	
Plants			
Virginia least trillium	*Trillium pusillum var. virginianum*	G3T2	

LE – Listed Endangered
LT – Listed Threatened
NL – Not Listed
SOC – Species of Concern; those species that have been identified as potentially being imperiled or vulnerable throughout their range or part of their range. These species are not protected under the Endangered Species Act.
SC – Special Concern Species
G3T2 – very rare or local throughout its range or found locally (abundantly at some locations) in a restricted range or vulnerable to extinction because of other factors. Subspecies very rare and imperiled with 6 to 20 occurrences or few remaining individuals, vulnerable to extinction.
G5S2 – Globally very common but may be rare at range borders, very rare in Virginia with only 6-20 occurrences found.

In 1996, a Natural Heritage Inventory of Langley AFB identified the northern harrier (*Circus cyaneus*) and the eastern bloodleaf (*Iresines rhizomatosa*) at Langley AFB (VDCR 1996). The northern harrier is a bird that thrives in coastal marsh areas, and the eastern bloodleaf is a wetlands plant species. Neither species was mentioned by regulatory agencies in consultation letters.

3.7 SOCIOECONOMIC CONDITIONS

This section briefly describes population and employment statistics for the project area and surrounding region. The regional information provided is for the following jurisdictions whose economies are closely associated with activities at Langley AFB: York/Poquoson; James City/Williamsburg; Newport News/Hampton; and Norfolk.

Socioeconomics are defined as the basic attributes and resources associated with the human environment, particularly population and economic activity. Regional birth and death rates, as well as net immigration or emigration affects human population. Economic activity typically comprises employment, personal income, and industrial growth. Impacts on these two fundamental socioeconomic indicators can also influence other components, such as housing availability and the provision of public services.

If an EA indicates that an action may have environmental impacts, an environmental justice analysis would be performed to determine whether or not the potential environmental impacts would disproportionately impact minority, low-income populations, or children.

EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations,* was issued to focus attention on human health and environmental conditions in minority and low-income communities, and to identify and address disproportionately high and adverse human health or environmental effects on these communities.

EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was also issued to identify and assess environmental health and safety risks that may disproportionately affect children.

3.7.1 Population

The population of the region increased by less than 1 percent between 1990-1999, reaching 670,650 persons in 1999. By comparison, the population of the State of Virginia increased by almost 11 percent during the same period, reaching 6,872,912 in 1999 at an average annual growth rate of 1.0 percent. The combined regional population is expected to increase from about 679,000 in 2000 to 712,000 by the year 2010 at an average annual rate of 0.5 percent (USAF 2000).

There are no low-income or minority populations within proximity to the proposed new water tower site, the alternative site, or are there any resident populations of children. However, the Child Development Center is adjacent to the proposed project site, and children may spend up to 10-13 hours of their day, Monday through Friday, at the center.

3.7.2 Employment and Earnings

As of 1999, approximately 11,600 personnel (8,800 military personnel and 2,800 civilian personnel) were employed by Langley AFB (USAF 2000). Total full- and part-time employment in the region decreased from 501,950 jobs in 1990 to 498,938 in 1997, at an average rate of –0.1

percent annually. The largest contributions to employment in 1997 were made by services (27.0 percent); military (16.6 percent); and retail trade (14.4 percent). For the years 1980, 1990, and 1997, the contribution of the military decreased from 21.7 percent to 21.0 percent and 16.6 percent, respectively (USAF 2000).

Non-farm earnings in the region totaled more than $14.1 billion in 1997. The major contributions were made by services (23.0 percent); military (18.4 percent); and manufacturing (14.1 percent). In the state of Virginia, non-farm earnings totaled over $129 billion in 1997, with the major contributions made by services (28.5 percent); manufacturing (12.3 percent); and state and local government (10.9 percent) (USAF 2000).

In addition to economic effects associated with payroll expenditures by base personnel, the installation also purchases significant quantities of goods and services from local and regional firms. In 1999, annual expenditures by the base exceeded $266 million. The USAF estimates that the economic stimulus of Langley AFB created approximately 5,750 secondary jobs in the civilian economy.

3.8 LAND USE

Land use in the vicinity of the proposed new water tower is primarily urban. Building 74 and Building 70, the Child Development Center, are adjacent to the project site. The remaining land use consists of open space and parking areas. Land use at the Action Alternative site is primarily road surface and a natural/semi-natural *Spartina* wetland marsh. Land use in the vicinity of Tower 620 is primarily industrial/administrative. The existing water tower is surrounded on three sides by Building 621, and Building 617 is located across Thornell Avenue.

3.9 CULTURAL RESOURCES

This section describes existing archaeological and architectural resources on Langley AFB. Cultural resources are defined by the National Historic Preservation Act (NHPA) as prehistoric and historic sites, structures, districts, or any other physical evidence of human activity considered important to a culture, a subculture, or a community for scientific, traditional, religious, or any other reason. Depending on the condition and historic use, such resources may provide insight into living conditions in previous civilizations and/or may retain cultural and religious significance to modern groups.

Several Federal laws and regulations govern protection of cultural resources, including the NHPA (1966), the Archaeological and Historic Preservation Act (1974), the American Indian Religious Freedom Act (1978), the Archaeological Resources Protection Act (1979), and the Native American Graves Protection and Repatriation Act (1990).

Typically, cultural resources are subdivided into *archaeological resources* (prehistoric or historic sites where human activity has left physical evidence of that activity but no structures remain standing) or *architectural resources* (buildings or other structures or groups of structures that are of historic or aesthetic significance). Archaeological resources comprise areas where human

activity has measurably altered the earth or deposits of physical remains are found (e.g., arrowheads and bottles).

Architectural resources include standing buildings, bridges, dams and other structures of historic or aesthetic significance. Generally, architectural resources must be more than 50 years old to be considered for the NRHP; however, more recent structures, such as Cold War-era resources, may warrant protection if they have the potential to gain significance in the future. *Traditional cultural resources* can include archaeological resources, structures, neighborhoods, prominent topographic features, habitat, plants, animals, and minerals that Native Americans or other groups consider essential for the preservation of traditional culture.

3.9.1 Archaeological Resources

Fifty-one archaeological sites have been documented within a 1-mile radius of Langley AFB (USAF 1998b). Of these sites, 28 are historic, 12 are prehistoric, and 11 contain both prehistoric and historic components. Langley AFB has 11 archaeological sites within its borders in addition to three sites along the installation boundary that may possibly extend into the installation. Three of the sites on Langley AFB, a Mid-Late Archaic occupation, a Mid-Late Woodland transient hunting station, and an undated transient hunting camp, are prehistoric and occur on the extreme western portion of the installation. The remaining eight sites on the installation are historic and include domestic and agricultural complexes, transportation features, and industrial and educational sites (USAF 1998b).

3.9.2 Architectural Resources

Several planning areas have been delineated on Langley AFB for cultural resource management purposes. A reconnaissance-level architectural survey was conducted by the National Park Service (NPS) in 1991 to evaluate buildings in several areas constructed between 1917 and 1930s to determine their eligibility for the NRHP. This survey included the Heavier-Than-Air (HTA) area, which includes Planning Area 2. Built resources in the Shellbank areas dating from the late-nineteenth century and early-twentieth centuries and World War II period also were evaluated as part of these investigations.

The results of the survey identified the HTA as a potential historic district, due to its association with significant events and trends in military history. The Virginia Department of Historic Resources (VDHR) concurred with the NPS' district boundary delineation and eligibility recommendations (VDHR 1997). The district represents a cohesive collection of built resources due to its intact historic road systems and landscape features, and architectural vocabulary. The nomination was prepared by NPS in June 1995 (USAF 1998b).

Water Tower 620, built in 1921, is located in Planning Area 2 and is a contributing resource to this historic district, as well as the 600 series buildings surrounding the water tower, including:

- Building 606, Truck Shed, 1920;
- Building 607, Radio Building, 1931;
- Building 616, Water Tank, 1942;

- Building 617, Quartermaster Maintenance, 1934; and
- Building 621, Quartermaster Garage, 1932.

The proposed and alternate water tower sites would be located in Planning Area 5. This planning area includes Buildings 90 and 253, that predate the establishment of the installation and were documented as part of the NPS architectural survey. Building 253 lacked sufficient integrity to be eligible for the NRHP. Building 90, built in 1904, was identified as potentially significant for its association with the Hampton Institute. Significant areas of semi-natural and natural tidal marshland and two marshy islands are located directly east of the LaSalle entrance gate. No archeological sites are located in the marsh and shoreline areas.

3.10 AESTHETIC RESOURCES

Aesthetic resources are defined as the natural and manufactured features that comprise the aesthetic qualities of an area. These features form the overall impression that an observer receives of an area or its landscape character. Landforms, water surfaces, vegetation, and manufactured features are considered characteristic of an area if they are inherent to the structure and function of the landscape.

The significance of a change in visual character is influenced by social considerations, including public value placed on the resource, public awareness of the area, and general community concern for visual resources in the area. These social considerations are addressed as visual sensitivity, and are defined as the degree of public interest in a visual resource and concern over adverse changes in the quality of that resource. Aesthetic sensitivity is a value that must be addressed to evaluate the significance of a proposed action.

The existing water Tower 620 is located in an existing industrial and administrative area on Thornell Avenue between Plum and Douglas Streets. Immediately across Thornell Avenue, is a 168-foot water tower (Tower 616). Predominate views from within and outside of this area are of densely built industrial/administrative buildings, infrastructure, roads, and parking lots.

The proposed water tower site is located adjacent to the Back River Southwest Branch shoreline near Nealy Avenue and Burrell Street. The area consists of administration, human services, and office buildings; residential housing; parking lots; shoreline; and recreational uses (baseball fields). The topography and buildings are relatively flat. The views from outside the area (off base) back towards this area are from across the Southwest Branch of the Back River, a distance of approximately one-half mile, are of little visual interest, and thus become part of the background scenic vista where historical detail and features are no longer distinguishable.

The alternative site is an island comprised of an abandoned built-up asphalt roadway surrounded by a wetland *Spartina spp.* marsh. The island sits in the middle of Tide Mill Creek. Once an entrance to the base, there are remnants of the old bridge and roadbed that connected the base with the adjacent private property. To the south of the island there is a large native marsh and apartments. To the north of the island there is more native marsh and park space at the B-52, a TLF picnic ground, and recreational ballfields. The off-base views back toward the island are quite natural native marsh with a gently rising grade to upland native riparian vegetation

consisting mainly of native red cedar, hackberry, and wax myrtle. Very little view of base structure is available other than fragments of the B-52 through breaks in the vegetation.

3.11 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

This section describes existing conditions for hazardous materials and hazardous wastes, and existing ERP Sites at Langley AFB.

3.11.1 Hazardous Materials and Hazardous Waste Management

Hazardous Materials. Hazardous materials are identified and regulated under CERCLA, the Occupational Safety and Health Act, and the Emergency Planning and Community Right-to-Know Act. Hazardous materials have been defined in AFI 32-7086, *Hazardous Material Management*, to include any substance with special characteristics that could harm people, plants, or animals when released.

Langley AFB is responsible for developing and maintaining a hazardous materials *Emergency Planning and Response Plan.* The plan is updated annually and addresses storage locations on base and proper handling procedures for all hazardous materials to minimize the potential for spills and releases. If a spill occurs, the plan also outlines how base personnel should respond, including notification, containment, decontamination, and cleanup of spilled materials to minimize the adverse effects of a spill.

Hazardous materials are managed in accordance with the Langley AFB Hazardous Waste Management Plan. The facility also has a Spill Prevention and Response Plan, which contains an Installation Spill Prevention, Control and Countermeasure Plan, and an Installation Facility Response Plan. The tank and tank legs comprising Tower 620 contain lead-based paints.

Hazardous Waste. Hazardous waste is defined in RCRA as any solid, liquid, contained gaseous or semi-solid waste, or any combination of wastes that could or do pose a substantial hazard to human health or the environment. Waste may be classified as hazardous because of its toxicity, reactivity, ignitibility, or corrosivity. In addition, certain types of waste are "listed" or identified as hazardous in 40 CFR 263.

Waste minimization programs are mandated by law and Air Force policy. The Air Force has implemented a continuous process for minimizing waste, which includes identifying opportunities for substitution of non-hazardous materials.

RCRA is the principal source of regulatory control over the generation, storage, treatment, and disposal of hazardous wastes. Under RCRA, a generator of waste must determine whether a waste is hazardous and, if it is, must implement measures consistent with RCRA requirements.

Langley AFB currently generates hazardous waste at its facilities, including waste metals solutions (selenium, barium, cadmium, chromium); waste paints and solvents; photo solutions; used paint filters; used acids/caustics; evaporator sludge; waste flammable adhesive; used

sodium and potassium chlorate; and paper with lead-based paint. Langley AFB recycles all lubricating fluids, solvents, batteries, oil filters, and shop rags.

3.11.2 Environmental Restoration Program Sites

DOD has developed the Environmental Restoration Program (ERP) to facilitate investigation and cleanup of contaminated sites associated with military installations.

EO 12088, Section 1-1, requires that Langley AFB must comply with state and local ERP management regulations implemented under Federal law, and ACC policy requires that any project on or near an ERP site be coordinated through the ERP Manager. Langley AFB's ERP investigates and remediates old contamination sites.

Besides Site OT-56, which consists of the silver-contaminated storm sewers basewide, Figure 1-2 depicts two ERP sites near the proposed project areas. ERP Site LF-05 is an abandoned landfill covering approximately 7 acres at the intersection of Nealy Avenue and Dogwood Avenue in the Shellbank area. The landfill was in use during the 1930s and 1940s for general disposal, but documentation does not exist regarding the types of refuse materials deposited in the landfill. While the majority of materials were probably municipal-type refuse, materials such as waste oils, solvents, lead-based paints, thinner, batteries, tires, construction debris, sanitary wastewater treatment plant sludge, and fly ash from coal burning may have been deposited at this site (USAF 1998d). Site LF-05 is presently a flat, grass-covered area.

SS-63 and OT-6 Annex sites are near the Action Alternative site. SS-63 is Tide Mill Creek, a tributary to the Southwest Branch of the Back River. Sampling analysis at the mouth of the creek revealed elevated levels of metals in the sediment. Tide Mill Creek drains a portion of Langley that supports flight operations and this area may be a source of the elevated metals. The island is located in this same area at the mouth of Tide Mill Creek

ERP Site SS-61 is the former location of the Civil Engineering Paint Shop, Building 615, in the southeast portion of the base just east of Tower 620. The site is a fenced-in gravel area that was used by paint shop personnel to store paints and solvents, and to mix paints and clean painting equipment. The Civil Engineering Paint Shop was in operation from the 1950s to early 1991. Morale, Welfare, and Recreation now use the facility for the administration of the Langley AFB Yacht Club. There was visible evidence of stained soil at the site and an underground storage tank (UST) at the marina adjacent to Site SS-61 leaked gasoline that was suspected to have spread into the area of SS-61. The UST was removed in 1993 and some of the surrounding soil was excavated. (USAF 1998d).

4. ENVIRONMENTAL CONSEQUENCES

This chapter describes potential environmental impacts associated with the proposed demolition, renovations, construction, and improvements under the Proposed and Alternative Action and the No-Action Alternative.

In accordance with NEPA, significant impacts are those that have the potential to significantly affect the quality of the human environment. "Human environment" is a comprehensive phrase that includes the natural and physical environments and the relationship of people to those environments (40 CFR 1508.14). Whether or not a Proposed Action "significantly" affects the quality of the human environment is determined by considering the context in which it will occur and the intensity of the action. The context of the action is determined by studying the affected region, the affected locality, and the affected interests within both. Significance varies depending on the setting of the Proposed Action (40 CFR 1508.27). The intensity of an action refers to the severity of the impacts, both regionally and locally. The level at which an impact is considered significant varies for each environmental resource area.

For each resource area, consideration is given to whether potential environmental effects are short-term or long-term, minor or significant, and adverse or beneficial. Consideration of potential cumulative effects and any applicable mitigation measures are also presented.

4.1 SAFETY

Implementation of the Proposed Action and Alternative Action would result in a short-term increase in the risk associated with construction contractors performing work at Langley AFB during the normal workday due to the height of the two water towers. However, no long-term significant effects on safety are expected as a result of the implementation of the proposed action or action alternative.

4.1.1 Construction of the New Water Tower

The potential impacts associated with constructing the new water tower are injury to workers and Langley AFB personnel due to falling objects during construction.

Langley AFB will minimize any safety risk by implementing the following:

- All welding and cutting operations will be done in accordance with nationally recognized good management practices;
- Constructing tower in a systematic manner consistent with Best Management Practices (BMPs);
- Installing temporary aircraft obstruction lighting on erection equipment and using safety equipment to protect people from falling objects;

- The contractor will provide necessary methods of fire extinguishment and prevention;

- The use of open-flame heating devices by the contractor will not be allowed except by special permission of Langley AFB; and

- Flammable liquids will be stored and handled in accordance with nationally recognized good management practice.

Proposed Action. This action would not represent a significant threat to occupants or activities at the adjacent Child Development Center from the construction and operation of the proposed new water tower for the following reasons. BMPs will be utilized during construction. According to professional engineers from both the design firm and the tank manufacturer, elevated water towers, especially the five-legged variety, are very conservatively designed with redundant features and an ample factor for safety. The proposed design of the water tower and associated foundation provided by the design firm will be checked and verified by the tank manufacturer and approved by professional engineers from both firms that specialize in the design and construction of hydraulic structures to ensure that nothing was overlooked in the design process. As part of this design and review process, a qualified geotechnical engineer will design the foundation using site-specific soil parameters, another qualified geotechnical engineer will reviewed this design, and the foundation will be designed for fully-saturated soil conditions, assuming cyclic wind loading conditions.

Construction of the tower will be executed under strict standards. Government and Contractor personnel will monitor construction continuously to ensure that all aspects of the construction are completed in accordance with an approved design and associated specifications. In particular, there will be a high-level of scrutiny during the pile driving operations to ensure that the piles are driven until they meet the required resistance to the driving operation. A test pile will be driven and load-tested to two times the design working capacity and maintained for a minimum of 24 hours to verify that the pile design and the pile strength are designed properly before any additional pile will be driven. This will ensure that the foundations will be resting on solid supports.

In the unlikely event that one or two legs failed, it is the opinion of the professional engineers form the design firm and the tank manufacturer that the water vessel would collapse eccentrically over the direction of those legs, while the other legs and structural members would constrain the debris close to the foundation. In the even more unlikely event that all five of the legs failed, the weight of the water vessel would cause the structure to fall straight down. Additionally, the professional engineers further state that they cannot conceive of a naturally occurring mechanism that would result in the structure rotating as a whole over a single leg, without the other legs and structural members furnishing a constraint during the collapse. It is extremely doubtful that the tank would land a distance away from the center equal to the height of the tank. While the fall distance cannot be quantified, it is very unlikely that it would exceed one-half the height of the tank structure. Certainly, if a collapse occurred it would most likely occur in hurricane force winds, and in that instance the CDC would be evacuated and unoccupied. Upon a collapse, it is

possible that the bowl would rupture and spill the majority of its contents over the area and create temporary flooding. Drainage in this area is in the direction of the Back River away from the CDC. Due to their excellent safety history water towers are routinely constructed throughout the world in areas where inhabited facilities are closer than the height of the structure. Construction science has allowed major new structures to be built in cities like New York City and Chicago after demolition of existing structures by implosion. Therefore, it is believed that construction of the water tower at this location represents minimal potential effect to the CDC, its occupants or its activities.

The short-term risk from implementing this proposal is greatly outweighed by the long-term benefit of increased fire protection capability. Low water pressure in the CDC area of the base contributed to the loss of the library in a catastrophic fire in 1996.

Action Alternative. The construction and operation of a new water tower at this location would pose a minimal threat to people as it would be fenced and isolated from all but maintenance personnel. Chances for collapse would be the same as presented in the previous discussion. Due to its more isolated location, safety implications of a tower collapse would be greatly reduced.

Safety impacts from construction of the water tower in this location would be concentrated on the hazards of working in a water/wetland environment.

No-Action Alternative. Taking the No-Action Alternative would result in continuation of low water pressure in the major built-up portion of Langley AFB. No action would also commit to accepting continued deterioration of the tower. Over time the base would have to continue limiting the storage volume in the tank commensurate with the degree of deterioration. It is anticipated that within a short time period (a few years) this tank would be deemed unusable and would have to be removed before it collapses. The base would therefore not meet its objective of upgrading the existing water towers. Taking the No-Action Alternative would result in a continuation of low water pressure in the highly developed portion of the base as well as a continuation of inadequate fire flows. The No-Action Alternative would perpetuate the existing risk of losing Air Force property and/or human life to fire, due to inadequate fire flow. No action would also commit to accepting continued deterioration of the tower. Over time, the base would have to continue limiting the storage volume in the tank commensurate with the degree of deterioration. It is anticipated that within a short time period (a few years) this tank would be deemed unusable and would have to be removed before it collapses. The base would therefore lose the capacity to provide pressures needed to operate facilities and fight fires.

4.1.2 Removal of Existing Tower 620

The potential impacts of dismantling this tower would be the collapse of the tower in an occupied area, falling objects during demolition activities resulting in injury to Langley AFB personnel and pedestrians, exposure of lead-based paint to torch cutting workers, and the temporary relocation of the occupants of Bldg. 621 during critical demolition activities.

Construction activities associated with the proposed demolition pose a potential safety risk to Langley AFB personnel. Langley AFB will minimize any safety risk by implementing the following:

- Breaking down the tower in a systematic manner consistent with BMPs.
- Installing temporary aircraft obstruction lighting on erection equipment and using safety equipment to protect people from falling objects;
- Dismantling Tower 620 outside of normal work hours or during a weekend period, and only when the adjacent Building 621 is unoccupied. High intensity lighting would be available should it be necessary to work after dark;
- Bracing the remaining parts of Tower 620 not removed once tank removal has begun so as not to endanger the adjacent Building 621 personnel during their normal duties;
- The contractor will provide necessary methods of fire extinguishment and prevention;
- All welding and cutting operations will be done in accordance with nationally recognized best management practice;
- The contractor will discontinue all burning, welding, or cutting operations one hour prior to the end of the construction/demolition workday and make a thorough inspection of the work area for possible sources of latent combustion;
- The use of open-flame heating devices by the contractor will not be allowed except by special permission of Langley AFB; and
- Flammable liquids will be stored and handled in accordance with nationally recognized best management practice.
- Providing temporary obstruction lighting on the tank or remaining structural members of Tower 620 once the existing obstruction warning lights are removed from the tank; and
- Using BMPs when working with lead-based paint; i.e. using respirators and other personnel protective measures.
- Temporary relocation of Bldg. 621 occupants to other buildings during critical demolition activities.

4.2 GEOLOGICAL RESOURCES

Short-term minor adverse effects on soils would be expected from either the Proposed Action or the Action Alternative, specifically during construction of the new water tower. The potential for soil erosion and transport of sediment into the Southwest Branch of the Back River exists during movement of soil and construction activities. This potential would be minimized through the use of sediment and erosion control measures as required by the Virginia Erosion and Sediment Control Act.

Proposed Action. Because previous construction-related activities have taken place in the proposed project area, the impacts would be considered minor based on historical uses. Langley AFB will install a silt fence, storm drain inlet protection, and diversion dikes within project limits prior to the commencement of any onsite work associated with constructing the new water tower. Concrete pile foundation piers would be constructed as shallow as possible to minimize sediment erosion. Dewatering of the foundations will be passed through rock filters prior to discharge into the Southwest Branch of the Back River. All project areas disturbed by construction activities will be graded, seeded, fertilized, and mulched upon completion of proposed construction activities (Overman Associates 2000a). There would be no long-term significant impacts on geological resources as a result of implementation of the Proposed Action.

Action Alternative. The impacts on geological resources from the Island site would be considerably greater since it is mostly a natural/semi-natural tidal wetland marsh. A productive wetland marsh would be filled and permanently lost as a valuable nursery ground for aquatic and other organisms. Any wetlands that would be destroyed would be replaced (3:1) in another location of the base suitable to support a wetland habitat. Approximately 1.5 acres of *Spartina spp.* wetland would be created adjacent to an existing marsh near the 74th Mobile Radar site in the HTA area of the base. Langley AFB would install a silt fence, storm drain inlet protection, and diversion dikes within project limits prior to the commencement of any onsite work associated with constructing the new water tower. Concrete pile foundation piers would be constructed as shallow as possible to minimize sediment erosion. Dewatering of the foundations would be passed through rock filters prior to discharge into the Southwest Branch of the Back River. All project areas disturbed by construction activities would be graded, seeded, fertilized, and mulched upon completion of proposed construction activities (Overman Associates 2000a). There would be no long-term significant effects on geological resources as a result of the implementation of the Action Alternative.

No-Action Alternative. No effects would be expected under the No-Action Alternative because soil and geology conditions would remain the same.

4.3 AIR QUALITY

Proposed Action. Emission sources associated with the Proposed Action would include construction activities and fugitive dust from water tank demolition and construction operations. Emissions during construction activities include combustive emissions from construction equipment exhausts; fugitive dust emissions from site clearing, grading, and cut and fill operations; and from vehicular traffic moving over the disturbed sites. Pollutants potentially

generated by construction equipment include small quantities of CO, hydrocarbons, NO_X, and PM_{10}. Emissions related to construction activities would be short-term and temporary, and would occur only during construction activities. In comparison to total emissions in the Hampton Roads area, the less than 0.01 percent increase in emissions from construction and related activities would have a negligible effect on air quality (see Table 4-1).

Table 4-1
Construction Emissions

	Tons/Year	Percent Change
CO	6.6	>0.01
NOx	2.21	>0.01
PM_{10}	1.98	>0.01
SOx	0.41	>0.01
VOC	3.87	>0.01

Source: USAF 2000

Dust emissions of PM_{10} produced during construction will be minimized using BMPs, including the application of water to serve as a dust suppressant. Dust emissions of PM_{10} produced during tank cleaning operations will also be minimized using best management practices. Since emissions are below the threshold for State of Virginia air regulation requirements, an air permit is not required.

In accordance with the National Emission Standards for Hazardous Air Pollutants (40 CFR 60 Part M), the base would obtain any prior Notice of Intent required by the local or state clean air authorities for removal of materials containing lead-based paints during the dismantling and disposal of Tower 620.

There would be no long-term significant effects on air quality as a result of the implementation of the Proposed Action.

Action Alternative. Emission sources associated with the Action Alternative would be comparable with the proposed site and therefore would not have a long-term significant effect on air quality.

No-Action Alternative. No effects would be expected under the No-Action Alternative because air quality conditions would remain the same.

4.4 NOISE

Noise levels would increase in the vicinity of the project areas during pile driving operations, new water tower construction, and water Tower 620 removal activities. These increases would be minor, short-term, and temporary. Pile driving operations typically produce 95 dBs of noise energy 50 ft from the source.

Proposed Action. The noise level at the CDC during pile driving activities would be between 85 to 90 dBs outside the building. This would not be a continuous noise level but would be a repetitive impact noise reoccurring several times during the pile driving activity. It is anticipated to take approximately 10 days for the pile driving process. The level of the event is expected to be similar to that of aircraft take-offs, but would occur on a more frequent basis, and during this short time period some children may have their naptime disrupted. Coordination of this activity with CDC management should help with the disruptions to the maximum extent possible. There would be minimal short-term impacts on the noise environment at Langley AFB as a result of implementation of this Proposed Action.

The construction/dismantling activities associated with the demolition of Tower 620 would have a noise level typically associated with activities such as arc burning and pneumatic tools operations. This noise level would be very localized (to the area of construction) and would not materially change the overall noise level that is predominately generated by aircraft overflights. The dismantling, demolition, and disposal activities associated with water Tower 620 would take place in the evening after normal work hours or on weekends, so there would be minimal noise impact to Langley AFB personnel (Overman Associates 2000b). There would be minimal short-term and long-term impacts on the noise environment at Langley AFB as a result of implementation of this Proposed Action.

Action Alternative. Noise levels would increase in the vicinity of the island project area during pile driving and new construction operations. Pile driving operations typically produce 95 dBs of noise energy 50 ft from the source. The noise levels from pile driving would, therefore, have little effects on the project and surrounding area since it is sparsely populated and there are no people within a couple hundred feet of the project site. Noise levels during pile driving activities would be between 90 to 95 dBs at the site and considerably less a few hundred feet from the site. This would not be a continuous noise level but would be a repetitive impact noise reoccurring several times during the pile driving activity. It is anticipated to take approximately 14 days for the pile driving process. The level of the event is expected to be higher than that of aircraft take-offs, and would occur on a more frequent basis. People in the area, most likely at the B-52 Memorial would be disrupted during working hours for this short time period. Pile driving activity should be coordinated with Change of Command/Retirement activities at the B-52 Memorial. This should help keep the disruptions to a minimum. These increases would be short-term, and temporary. No long-term significant impacts on noise would result with implementing the action alternative.

No-Action Alternative. No adverse effects would be expected under the No-Action Alternative because there would be no change to existing noise levels.

4.5 WATER RESOURCES

Because most of the base is located within a floodplain, any construction occurring on the base could potentially impact the floodplain. And any site that is not within the floodplain is outside of the areas determined by cited studies and reports to be optimal for basewide fire fighting and water pressure needs.

Proposed Action. It is not anticipated that activities under the Proposed Action would adversely affect the Chesapeake Bay watershed or coastal zone areas. While the proposed site of the new water tower is located near the shoreline of the Southwest Branch of the Back River, erosion control practices would minimize sedimentation into the water body. Construction activities would be conducted in accordance with local Chesapeake Bay watershed laws and ordinances and the CZMA of 1972. As described in Section 2.1.1, water released during disinfecting and flushing would be dechlorinated before entering the storm drain. Every 5 to 10 years, Langley AFB would be required to drain a partial volume of the water tower tank to conduct an inspection and maintenance. While a portion of the fresh water drainage would sheet flow over vegetation before entering the Back River, any resulting change in salinity would be much less than that resulting from fresh water discharges due to storm events. (Langley AFB, Quarterly VPDES Monitoring Report, 3rd Quarter 2000) Langley AFB is required to coordinate with VDEQ prior to discharge of large amounts of water from our water towers. There would be no long-term significant effects on water resources as a result of implementation of the Proposed Action.

Action Alternative. In addition to what was discussed above, the activities associated with the construction of the new water tower on the Island would affect the Chesapeake Bay watershed and coastal zone if there were no mitigative measures to protect the affected area and create a new productive wetland marsh. The wetland *Spartina spp.* marsh is a valuable resource. It provides a safe and protected environment for aquatic organisms to grow and mature, and it filters polluted runoff from roadways and upland areas. Regulatory permits from the Corps of Engineers, Virginia Marine Resources Commission (VMRC), and the Hampton Wetlands Board would be required, and three new square feet of wetland marsh must be created for each square foot of marsh that is destroyed to construct the new water tower (3:1). Provided regulatory permits are secured, and mitigation measures are employed as compensation for destroying wetlands, there will be no long-term significant effects on water resources as a result of construction of the new water tower on the Island.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to watersheds, coastal zones, and floodplains.

4.6 BIOLOGICAL RESOURCES

This section describes potential effects to aquatic resources, wetlands, vegetation, wildlife, and threatened and endangered species resulting from either implementation of the Proposed Action, Action Alternative, or the No-Action Alternative. There would be no long-term significant effects on biological resources as a result of implementation of the Proposed Action or Action Alternative if mitigative measures would be employed.

4.6.1 Aquatic Resources

Proposed Action. Aquatic resources would not be directly impacted by the proposed action. Runoff and localized sedimentation from the proposed new water tower construction activities could cause indirect and short-term adverse water quality impacts.

Water released during disinfecting and flushing would be dechlorinated before entering the storm drain. As discussed in Section 4.5, Langley AFB would be required to drain a partial volume of the water tank every 5 to 10 years to conduct inspections and maintenance. While a portion of the fresh water drainage would enter the Back River, any resulting change in salinity would be less than that resulting from discharges due to storm events. (Langley AFB, Quarterly VPDES Monitoring Report, 3rd Quarter 2000) Langley AFB is required to coordinate with VDEQ prior to a large discharge of water from the water towers. All construction activities would comply with Chesapeake Bay Preservation Act regulations and state and local laws and ordinance to protect.

Action Alternative. Aquatic resources would be directly impacted by the action alternative. Runoff and localized sedimentation from the proposed new water tower construction activities could cause indirect and short-term adverse water quality impacts. Construction activity from the island alternative would create siltation of the Back River during dredging operations to lay the water line and during water tower construction in the wetland marsh. However, appropriate erosion control measures and siltation screens would be employed to reduce the impacts.

Water released during disinfecting and flushing would be dechlorinated before entering the storm drain. As discussed in Section 4.5, Langley AFB would be required to drain a partial volume of the water tank every 5 to 10 years to conduct inspections and maintenance. While a portion of the fresh water drainage would enter the Back River, any resulting change in salinity would be less than that resulting from discharges due to storm events. (Langley AFB, Quarterly VPDES Monitoring Report, 3rd Quarter 2000) Langley AFB is required to coordinate with VDEQ prior to a large discharge of water from the water towers. All construction activities would comply with Chesapeake Bay Preservation Act regulations and state and local laws and ordinance to protect aquatic life.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to aquatic resources.

4.6.2 Wetlands

The area surrounding Tower 620 is a highly developed and industrial area. No jurisdictional wetlands are located in this or the surrounding area.

Proposed Action. The proposed location for the new water tower is an upland site near the CDC and Bldg. 74. It is not in a wetland, and is bordered 115 ft to the east by the shoreline of the Southwest Branch of the Back River (Figure 2-2). Short-term and direct impacts to the small patchy tidal marsh area that is located along the shoreline could potentially occur from sediment deposition during construction. The biological diversity or habitat function along the shoreline is not dependent on this wetland area and any potential effects would be temporary and minimal.

The Proposed Action site is not in a wetland, and construction measures and BMPs will be implemented to avoid or minimize any indirect impacts to the nearby wetlands. To control potential sedimentation and erosion during construction, Langley AFB will install a silt fence and diversion dikes within project limits prior to the commencement of any onsite work

associated with constructing the new water tower. Concrete pile foundation piers would be constructed as shallow as possible to minimize sediment erosion. Dewatering of the foundations will be passed through rock filters prior to discharge into the Back River Southwest Branch. All project areas disturbed by construction activities will be graded, seeded, fertilized, and mulched upon completion of proposed construction activities (Overman Associates 2000b). No long-term significant effects on wetland resources are expected as a result of implementing the Proposed Action.

Action Alternative. Jurisdictional wetlands would be impacted by the construction of a new water tower on the Island site. Approximately 24,500 square feet of existing tidal wetlands would be impacted at this site. This area will be replaced 3:1 by a like marsh in another area of the base that supports a large expanse of productive wetland habitat. Environmental permits would be obtained from the US Army COE, the VMRC and the Hampton Wetlands Board. To minimize impacts and control sedimentation and erosion of the wetland marsh and Back River during construction and pile driving, Langley AFB will implement BMPs and install siltation screens, filtration devices for dewatering, and approved rip-rap revetment structure for erosion protection. No long-term significant effects on wetland resources are expected as a result of implementing the Action Alternative.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to existing wetlands.

4.6.3 Vegetation

Proposed Action. Construction of the new water tower near the CDC and Bldg. 74 would result in the removal of several upland trees, including red cedar (*Juniperus virginiana*), as well as upland weedy and exotic vegetation. Langley AFB will establish tree protection areas and plant additional specimen trees as a replacement for trees removed during construction. All project areas disturbed by construction activities will be graded, seeded, fertilized, and mulched upon completion of proposed construction activities.

Demolition of the existing water Tower 620 would have a minimal impact on vegetation as the immediate area is grassed and the site is surrounded by concrete, asphalt and buildings. No long-term significant effects on wetland vegetation are expected as a result of implementing the proposed action.

Action Alternative. Wetland vegetation would be affected by the Alternative Action proposal. A *Spartina spp.* marsh will be destroyed and a 3:1 new *Spartina spp.* wetland marsh will be created at a regulator approved site to mitigate that area impacted by the construction of the new water tower. No long-term significant impacts on wetland vegetation are expected as a result of implementing the Action Alternative.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to existing vegetation.

4.6.4 Wildlife

Proposed Action. Wildlife resources would not be significantly impacted by the Proposed Action. The Proposed Project area does not provide optimal feeding and breeding for mammals or reptiles. Any mammal or reptile in the project area would be considered incidental or transient.

Action Alternative. Construction at the Action Alternative site would impact a productive wetland marsh, in turn interrupting the stability of sediments and site hydrology that is vital to the native bottom feeders along the shores of the island (crabs, oysters, and clams). Construction would also result in a negative impact to the common breeding birds, songbirds, shorebirds, and waterfowl that frequent the area for foraging and nesting purposes. However, 1.5 acres of *Spartina spp.* wetlands would be created adjacent to an existing marsh. Therefore, no long-term significant impacts on wildlife resources are expected as a result of implementing the Action Alternative.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to wildlife.

4.6.5 Rare, Threatened, and Endangered Species

Proposed Action. No threatened or endangered species are known to be living on Langley AFB, although bald eagles are known to feed and forage on the waters and tidal flats around the installation. No rare, threatened, or endangered plant and animal species are expected to be impacted by the Proposed Action. Copies of agency consultation letters for the Proposed Action are provided in Appendix A.

Action Alternative. No threatened or endangered species are known to be living on Langley AFB, although bald eagles are known to feed and forage on the waters and tidal flats around the installation. No rare, threatened, or endangered plant and animal species would be expected to be impacted by the Action Alternative.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to rare, threatened, and endangered plant and animal species.

4.7 SOCIOECONOMIC CONDITIONS

Proposed Action. Construction, and dismantling, demolition, and disposal activities under the Proposed Action would not result in effects to socioeconomic resources on or off the base. The Proposed Action would not increase or decrease the number of residents living on the base, nor would it change base or regional employment levels. There are no EO 12898 Environmental Justice concerns since under the Proposed Action neither minority nor low-income groups would be affected disproportionately. There are EO 13045 protection of Children concerns since the Proposed Action would construct a water tower near a Child Development Center. This may result in an environmental health and safety risk to children and their caretakers. Implementation of Best Management Practices during design and construction will keep that potential low. As a

result, no long-term significant socioeconomic effects are expected from the implementation of the Proposed Action.

Action Alternative. Construction, and dismantling, demolition, and disposal activities under the Action Alternative would not result in effects to socioeconomic resources on or off the base. There are no EO 12898 Environmental Justice concerns since under the Action Alternative neither minority nor low-income groups would be affected disproportionately. However, no long-term significant socioeconomic effects are expected from the implementation of the Action Alternative.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to existing socioeconomic resources.

4.8 LAND USE

Proposed Action. Existing land use in the Proposed Action site would not change, therefore, there would be no long-term significant effects on land use as a result of implementation of this action.

Action Alternative. Construction of a new water tower at the Action Alternative site would not be consistent with current land use. Proper environmental permitting would be secured before construction would take place.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to existing land use or recreational resources.

4.9 CULTURAL RESOURCES

Several planning areas have been delineated on Langley AFB for cultural resource management purposes. Tower 620 is in Planning Area 2 and both the Proposed Action and Action Alternative sites for the new water tower are in Planning Area 5.

It is likely that past intensive building development, installation of underground utilities, and shoreline modification have adversely affected most of the archaeological potential of Planning Area 2. Therefore the potential for archaeological resources is assessed as low. Demolition of Water Tower 620 would not likely result in subsurface disturbance. However, if subsurface disturbances occur, Langley AFB would follow AFI 32-7065, Cultural Resources Management, for unanticipated archeological discoveries during construction and subsurface disturbances (USAF 1998b).

Tower 620 is a contributing resource to the Langley Field Historic District, and its demolition could be an adverse impact to a cultural resource and historic district. Langley AFB has entered into a Memorandum of Agreement with the Virginia SHPO (Appendix A) and will comply with their requirements prior to the commencement of any dismantling activities on Tower 620.

Proposed Action. There are no known archaeological or architectural resources within the new water tower construction area near the CDC and Bldg. 74. Despite negative findings for archaeological sites from a survey conducted in 1992, it is likely that archaeological resources are present within Planning Area 5 (USAF 1998b). Langley AFB will follow AFI 32-7065, Cultural Resources Management, for unanticipated archeological discoveries during construction and subsurface disturbances.

Action Alternative. There are no known archaeological or architectural resources within the new water tower construction area near the Action Alternative site near the B-52 Memorial.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to existing archaeological, historical, and cultural resources.

4.10 AESTHETIC RESOURCES

The removal and demolition of Tower 620 would have minimal effect on the aesthetic values from inside or outside of the immediate area. Although it is a tall structure, visual attention would be drawn to the remaining Tower 616 once Tower 620 is dismantled and disposed of. The overall visual character of the area would remain the same.

Proposed Action. Due to the relative flatness of the natural and built environment at the Proposed Action new water tower site, the visual character of the area would be changed considerably with the construction of a 200-foot tall water tower. The water tower would become the most predominate visual feature in the area. Trees proposed for planting around the perimeter of the fence at the Proposed site will "soften" the tank legs and lower portion of the structure for short-range viewing. Views of the tower from off base would be diminished somewhat by the distance from which it will be viewed and the lack of bulk to most of the structure. Painting the tower a light neutral color would further diminish its presence.

Although the visual character of the area would change, there would be no significant adverse impacts on aesthetic resources as a result of implementation of the Proposed Action due to the existing minimal aesthetic value of the area.

Action Alternative. Due to the relatively flatness of the natural and built environment at the Action Alternative new water tower site, the visual character of the area would be changed considerably with the construction of a 200-foot tall water tower. The water tower would become the most predominate visual feature in the area. Views of the tower from off base would be diminished somewhat by the distance from which it would be viewed and the lack of bulk to most of the structure. Painting the tower a light neutral color would further diminish its presence. Planting in the area would be limited to the native *Spartina spp.* that is tolerant to the tidal inundation of the site. No taller tree materials would be incorporated into the project, as the elevation would not support their survival. Any time a productive marsh system is disturbed with construction, there is a great possibility of the site becoming invaded by phragmites. The phragmites species quickly spreads throughout the disturbed areas outcompeting the valuable native marsh vegetation and threatening the natural biodiversity of the marsh system.

Although the visual character of the area would change, there would be no significant adverse impacts on aesthetic resources as a result of implementation of the Action Alternative due to the existing minimal aesthetic value of the area.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to existing aesthetic values.

4.11 HAZARDOUS MATERIALS AND WASTE MANAGEMENT

Practices related to the handling and disposition of hazardous waste generated by numerous past activities at Langley AFB have resulted in the creation of waste sites that require remediation under CERCLA. Since passage of the Superfund Amendments and Reauthorization Act of 1986, Federal installations have been subject to CERCLA to the same extent as private sector sites. Waste sites at Langley AFB locations have been identified and are now being addressed by remedial program efforts.

Proposed Action. The Proposed Action would not affect, or be affected by, such remediation. The two ERP sites described in Section 3.11.2 (Sites LF-05 and OT-56) would not be affected by implementation of the Proposed Action. Therefore, no significant impacts to the environment would result from implementing the Proposed Action.

Langley AFB is aware that the tank and tank legs of Tower 620 contain lead-based paint. All cuts to the tank would be carefully performed and the cut surfaces vacuumed so that paint chips are collected and disposed of in accordance with the base Hazardous Waste Management Plan. Abatement and/or encapsulation activities would be conducted in accordance with Subpart D of 29 CFR 1926. Both the Proposed Action and Alternative Action new water towers would be painted with non-lead based paint.

Action Alternative. At the Action Alternative location, the ERP site SS-63 adjacent that site would not be affected by remediation activities. However, the construction of a water tower at the Action Alternative location would affect the remediation of the site, as a waiver approved by the regulating agencies would be required. No long-term significant impacts would result from implementation of the Action Alternative.

No-Action Alternative. No effects would be expected under the No-Action Alternative because there would be no change to in hazardous waste generation.

Neither the proposed activities under the Proposed Action or the Action Alternative, nor the No-Action Alternative, would cause any long-term increase in hazardous waste generation. All hazardous and non-hazardous waste would be disposed of according to all applicable federal, state, and local rules and regulations.

5. CUMULATIVE IMPACTS

5.1 Definition of Cumulative Impacts

Cumulative impacts on environmental resources result from incremental impacts of proposed actions, when combined with other past, present, and reasonably foreseeable future projects in the area. Cumulative impacts can result from minor, but collectively substantial, actions undertaken over a period of time by various agencies (Federal, state, and local) or individuals. In accordance with NEPA, a discussion of cumulative impacts resulting from projects that are proposed, under construction, recently completed, or anticipated to be implemented in the near future is required. Recent CEQ guidance in *Considering Cumulative Effects* affirms this requirement, stating that the first steps in assessing cumulative effects involve defining the scope of the other actions and their interrelationship with the Proposed Action. The scope must consider geographic and temporal overlaps among the proposed action and other actions. It must also evaluate the nature of interactions among these actions.

5.2 Past, Present, and Reasonably Foreseeable Actions

Langley AFB is an active military installation that undergoes changes in mission and in training requirements in response to defense policies, current threats, and tactical and technical advances. The base, like any other major institution (e.g., university, industrial complex), requires new construction, facility improvements, infrastructure upgrades, and maintenance and repairs. In addition, tenant organizations such as the Air National Guard and NASA occupy portions of the base, conduct aircraft operations, and maintain facilities. All of these factors (i.e., mission changes, facility improvements, and tenant use) have and will continue to apply before, during, and after the proposed action.

At the same time, Langley's Natural Resources Management Program has an on-going effort to proactively provide stewardship of the lands under Air Force control. As part of their participation in the Chesapeake Bay Program, Langley AFB has developed a 10-phase shoreline restoration plan. In implementing that plan, the base has restored 600 ft of the Back River shoreline. The restoration involved removing large concrete rubble blocks, contouring, and controlling erosion by replanting with native wetland plants. Other activities include planting an acre of submerged aquatic vegetation to improve near-shore water quality and removing undesirable invader plants. In addition, the base implemented a program to clean and maintain the extensive Chesapeake Bay shoreline at Langley AFB using a variety of volunteer and civic groups.

During the timeframe for construction of the new water towers and the draining, demolishing, and disposing of existing water tower 620, Langley AFB has proposed other actions that are independent of the Proposed Actions, and these would be implemented irrespective of a decision on the Proposed Actions. These proposed actions include a beddown of F-22 aircraft at Langley AFB and training in associated airspace; construction of dormitories and renovation of family

housing; and replacement of water mains in a portion of the base. Other ongoing maintenance and repair activities are also likely to occur at the base during this period.

Other regional projects include continuing upgrades to Interstate 64, additions to the Thomas Nelson Community College, expansion of commercial buildings, and construction of manufacturing complexes such as West Park. These projects are part of the ongoing construction within the region and are not expected to cause any change in employment or population that could affect the environment.

Impacts to the Back River aquatic system from the infrequent fresh water discharges from all the water towers are minimal and much less than the frequent discharges that occur during rain events. This is evidenced by the discharge results, in Million Gallons per Day, that are supplied to the Virginia Department of Environmental Quality as part of Langley's quarterly VPDES permit requirements.

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7. CONSULTATION AND COORDINATION

This section lists agencies and individuals contacted during development and preparation of this EA.

7.1 AGENCIES CONTACTED

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7.2 INDIVIDUALS CONTACTED

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Brewer, Mr. Michael. April, May, June, and October 2000. Project Design Engineer, 1 CES/CECN, Langley Air Force Base, VA 23665, (757) 764-1480.

Morris, Lt. Matt. April 2000. Project Design Engineer, 1 CES/CECN. Langley Air Force Base, VA 23665, (757) 764-1446

Wittkamp, Mr. Thomas. April, May, June, October and November 2000. Natural Resource Program Manager, 1 CES/CEV, Langley Air Force Base, VA 23665, (757) 764-1135.

8. LIST OF PREPARERS

This EA has been prepared by engineering-environmental Management, Inc. (e^2M) under the direction of Mr. Thomas Wittkamp of Langley Air Force Base. Mr. Wittkamp provided invaluable assistance in the development and technical review of this EA. The individuals who contributed to the preparation of this document are listed in the table below. In addition, portions of this EA were developed by HQ ACC, Environmental Planning.

Table 8-1
List of Preparers

Name	Degree/Discipline	Professional Experience	Responsibility
James A. Denier	MBA, Management BA, Zoology	20 years of experience in environmental impact assessment; 10 years of NEPA experience	Project Manager and principal author of EA
Jennifer Buzun	MS, Environmental Engineering BA, Mathematics and Computer Science	20 years of experience in water quality and water resources	Site surveys and descriptions; contributing author of Infrastructure and Water Resources sections of EA
Jayme Melofchik	BA, Biology	12 years of experience in environmental impact assessment and compliance	Site survey
Jayne Aaron	MA, Environmental Policy and Management BA, Environmental Design	10 years of experience in environmental impact assessment and compliance	Contributing author of Cultural Resource and Aesthetic Resource sections of EA

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APPENDIX A

May 10, 2000

Ms. Cindy Schulz
U.S. Fish & Wildlife Service
Virginia Field Office
6669 Short Lane, P.O. Box 99
Gloucester, Virginia 23061

Dear Ms. Schulz:

On behalf of Langley Air Force Base (AFB), engineering environmental Management, Inc (e2M) is preparing National Environmental Protection Policy Act (NEPA) documentation for the installation of a water tower at Langley Air Force Base. The documentation will be prepared in accordance with Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process*, and NEPA regulations.

Langley AFB is located in Hampton, Virginia between the cities of Newport News and Norfolk. The Langley AFB installation consists of 2,883 acres shared by Langley AFB and the National Aeronautics and Space Administration (NASA). The base lies on a peninsula at the confluence of the northwest and southwest branches of the Back River, a tidal tributary to the lower Chesapeake Bay (Figure 1-1 – Location of Langley Air Force Base, Virginia Map).

Langley AFB is proposing to upgrade water towers at the installation by installing a 200-foot tall, 300,000-gallon water storage tank with pump station, aircraft warning lights, and beacon in the southeast portion of the property. As part of this project, a 250,000-gallon water tank (Tower #620) would be properly drained, demolished, and disposed of (Figure 1-2 – Langley Air Force Base Installation Map).

To assist us in identifying environmental issues that may effect implementation of the renovation project, please provide us with written comments concerning interests within your agency's responsibilities, specifically wetlands and the presence of federal or state listed rare, threatened, or endangered species (Section 7 compliance).

Your response within 20 days from the date of receipt of this letter will be greatly appreciated. A letter has also been sent to the Virginia Department of Conservation and Recreation and Virginia Department of Game and Inland Fisheries in regards to the presence of state protected wetlands and rare, threatened, or endangered species.

If you have any questions regarding this request, please contact me at (303) 721-9219 or Mr. Thomas Wittkamp (Langley Air Force Base, Environmental Management Flight) at (757) 764-1135.

Sincerely,
e²M

James A. Denier
Senior Project Manager

Enclosures

7000 S. Yosemite Street, Suite 295, Englewood, CO 80112 • (303) 721-9219 • fax (303) 721-9202

DENVER, CO TULSA, OK SAN DIEGO, CA JACKSONVILLE, FL

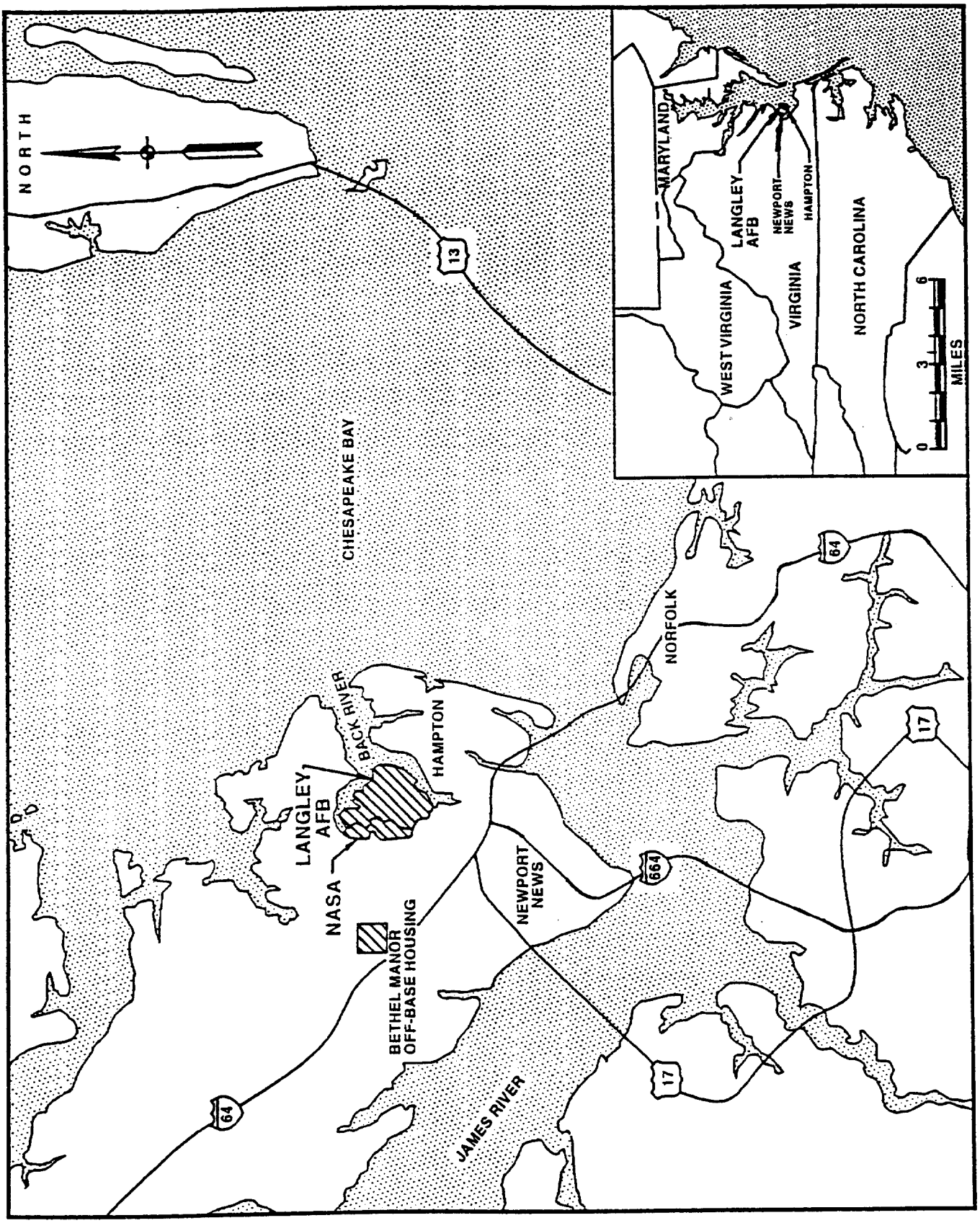


Figure 1-1
Location of Langley Air Force Base, Virginia

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Ecological Services
6669 Short Lane
Gloucester, Virginia 23061

May 18, 2000

Mr. James A. Denier
Engineering-Environmental Mngt. Inc.
7000S. Yosemite Street, Suite 295
Englewood, Colorado 80112

Greetings:

The U.S. Fish and Wildlife Service has received your request to review the attached project for potential impacts to federally listed or proposed endangered and threatened species and designated critical habitat in Virginia pursuant to the Endangered Species Act (87 Stat. 884, as amended; 16 U.S.C. 1531 et seq.). Attached are lists of species with federal status and species of concern that have been documented or may occur in the county(s) where your project is located. These lists were prepared by this office and are based on information obtained from previous surveys for rare and endangered species.

Due to the limited staff in this office, we are unable to review projects in a timely manner. Therefore, we request that you send the attached project to the following state agencies for review:

Plant Protection
Virginia Department of Agriculture and Consumer Services
P.O. Box 1163
Richmond, VA 23218
(804) 786-3515

Virginia Department of Game and Inland Fisheries
Environmental Services Section
P.O. Box 11104
Richmond, VA 23230
(804) 367-1000

Virginia Department of Conservation and Recreation
Division of Natural Heritage
217 Governor Street, 3rd Floor
Richmond, VA 23219
(804) 786-7951

KEY

LE - federally listed endangered.

LT - federally listed threatened.

PE - federally proposed endangered.

PT - federally proposed threatened.

EX - believed to be extirpated in Virginia.

LE(S/A) - federally listed endangered due to similarity of appearance to a federally listed species.

LT(S/A) - federally listed threatened due to similarity of appearance to a federally listed species.

C - candidate species; the U.S. Fish and Wildlife Service has enough information to list the species as threatened or endangered, but this action is precluded by other listing activities.

SOC - species of concern; those species that have been identified as potentially imperiled or vulnerable throughout their range or a portion of their range. These species are not protected under the Endangered Species Act.

C2 - former U.S. Fish and Wildlife Service category 2 candidate species.

G - global rank; the species rarity throughout its total range.

G1 - extremely rare and critically imperiled with 5 or fewer occurrences or very few remaining individuals; or because of some factor(s) making it especially vulnerable to extinction.

G2 - very rare and imperiled with 6 to 20 occurrences or few remaining individuals; or because of some factor(s) making it vulnerable to extinction.

G3 - either very rare and local throughout its range or found locally (abundantly at some of its locations) in a restricted range; or vulnerable to extinction because of other factors. Usually fewer than 100 occurrences are documented.

G_T_ - signifies the rank of a subspecies or variety. For example, a G5T1 would apply to a subspecies of a species that is demonstrably secure globally (G5) but the subspecies warrants a rank of T1, critically imperiled.

G_Q - The taxon has a questionable taxonomic assignment.

Bald Eagle

Haliaeetus leucocephalus

Description - The bald eagle occurs throughout the United States. It is a large bird-of-prey with dark brown plumage, a white head and tail, and a yellow bill, feet, and eyes. Juvenile eagles generally have a dark brown body, sometimes with white patches on the tail, belly, and underwings. The head and tail become completely white when full adult plumage is reached at four to five years of age.

Life History - The majority of Virginia's eagle population is found on the coastal plain. The bald eagle breeding season begins in mid-November when large nests are built (or the previous year's nest is repaired) usually in loblolly pine trees that are in close proximity to water. Eagles lay one to three eggs between mid-January and late March. In March, most eggs hatch and by June or July most young have fledged. However, the young will continue to use the nest for several weeks. In Virginia, during the summer and winter months, juvenile and nonbreeding adult eagles congregate along large rivers in areas with abundant food and little human disturbance. During the day, these eagles feed and perch along the river shoreline. In late afternoon, they move inland to roost either singly or communally. Roosts are typically located away from human disturbance and near water and a food source. Bald eagles feed primarily on fish, but will also eat carrion, waterfowl, small mammals, snakes, and turtles.

Conservation - The bald eagle was federally listed as an endangered species in the Chesapeake Bay Region on March 11, 1967. On July 12, 1995, the bald eagle was reclassified to threatened throughout the 48 lower states because the population had increased due to the banning persistent pesticides, habitat protection, and other recovery activities. On July 6, 1999, the bald eagle was proposed for removal from the list of endangered and threatened wildlife in the lower 48 states. This action was proposed because the available data indicated that this species has recovered. The recovery is due in part to habitat protection and management actions initiated under the Endangered Species Act. It is also due to reduction in levels of persistent pesticides occurring in the environment. If and when the eagle is no longer protected by the Endangered Species Act, it will still be protected by the Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, and state laws. Until the eagle is officially delisted, it will continue to receive protection pursuant to the Endangered Species Act. Bald eagles in the Chesapeake Bay are increasing. However, habitat destruction through urban and residential development and human disturbance in nesting, roosting, and foraging habitats continue to be a threat.

What You Can Do To Help - If you know of a bald eagle nest on or near property proposed for clearing, development, or logging please contact one of the following agencies for assistance:

Virginia Department of Game and Inland Fisheries
P.O. Box 11104
Richmond, Virginia 23230
(804) 367-1000

U. S. Fish and Wildlife Service
6669 Short Lane
Gloucester, Virginia 23061
(804) 693-6694

References

U.S. Fish and Wildlife Service. 1990. Chesapeake Bay Region bald eagle recovery plan: first revision. Newton Corner, Massachusetts.

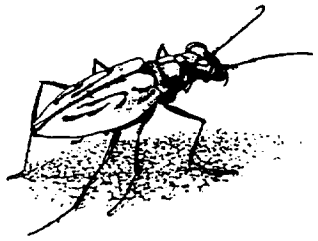
U.S. Fish and Wildlife Service. 1999. Proposed rule to remove the bald eagle in the lower 48 states from the list of endangered and threatened wildlife. Federal Register 64(128): 36453-36464.

Watts, B.D., K.W. Cline, and M.A. Byrd. 1994. The bald eagle in Virginia: An information booklet for land planners. The Center for Conservation Biology, College of William and Mary, Williamsburg, Virginia.

U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, Virginia 23061
(804) 693-6694
http://www.fws.gov
August 1999

Northeastern Beach Tiger Beetle

Cicindela dorsalis dorsalis



Description - Historically, the northeastern beach tiger beetle was common on coastal beaches from Massachusetts to central New Jersey, and along the Chesapeake Bay in Maryland and Virginia. Currently, the only populations known to exist along the Atlantic Coast are in New Jersey and southeastern Massachusetts. The majority of populations occur in the Chesapeake Bay. This insect measures 0.5 inches in length. It has white to light tan wing covers, often with several fine grayish-green lines, and a bronze-green head and body.

Life History - Adult and larval tiger beetles are found on long, wide, dynamic beaches that have little human and vehicular activity, fine sand-particle size, and a high degree of exposure to tidal action. Adult beetles are present from June through August and are active on warm, sunny days where they can be seen feeding, mating, or basking along the water's edge. Adults are active predators that forage on small invertebrates or scavenge on dead fish, crabs, and amphipods. Larvae are sedentary predators that live in well-formed burrows from which they extend to capture passing prey. During the summer, adult tiger beetles lay eggs on the beach. After hatching, the larvae pass through three developmental stages and emerge from their burrows as adults two years following egg-laying.

Conservation - The northeastern beach tiger beetle was federally listed as a threatened species on August 7, 1990. Few northeastern beach tiger beetle sites are protected and many are threatened by human activities. Loss of this beetle from most of its range has been attributed primarily to destruction and disturbance of natural beach habitat from shoreline development, beach stabilization, and high levels of recreational use. Additional threats include pollution, pesticides, oil slicks, and off-road vehicle traffic. Natural limiting factors include winter storms, beach erosion, flood tides, hurricanes, parasites, and predators. Recovery for the tiger beetle depends to a large extent on re-establishing the subspecies across its former range along the Atlantic Coast and protecting it within the Chesapeake Bay.

What You Can Do To Help - If you plan to stabilize a tidal beach along the Chesapeake Bay or its tributaries, please contact the U.S. Fish and Wildlife Service. Such activity may require a federal permit, for more information contact:

U.S. Army Corps of Engineers
Norfolk District
803 Front Street
Norfolk, Virginia 23510-1096
(757) 441-7652

References

Knisley, C.B. 1991. Northeastern beach tiger beetle. Pages 233-234 in K. Terwilliger, ed. Virginia's Endangered Species, Proceedings of a Symposium. McDonald and Woodward Publishing Company, Blacksburg, Virginia.

Knisley, C.B., J.I. Luebke, and D.R. Beatty. 1987. Natural history and population decline of the coastal tiger beetle, *Cicindela dorsalis dorsalis* Say (Coleoptera: Cicindelidae). Virginia Journal of Science 38: 293-303.

U.S. Fish and Wildlife Service. 1994. Northeastern beach tiger beetle (*Cicindela dorsalis dorsalis* Say) recovery plan. Hadley, Massachusetts.

U.S. Fish and Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, Virginia 23061
(804) 693-6694
http://www.fws.gov
August 1999

May 10, 2000

Mr. John Tate
VA Department of Agricultural and Consumer Services
Bureau of Plant Protection
1100 Bank Street
Richmond, Virginia 23219

Dear Mr. Tate:

On behalf of Langley Air Force Base (AFB), engineering environmental Management, Inc (e2M) is preparing National Environmental Protection Policy Act (NEPA) documentation for the installation of a water tower at Langley Air Force Base. The documentation will be prepared in accordance with Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process,* and NEPA regulations.

Langley AFB is located in Hampton, Virginia between the cities of Newport News and Norfolk. The Langley AFB installation consists of 2,883 acres shared by Langley AFB and the National Aeronautics and Space Administration (NASA). The base lies on a peninsula at the confluence of the northwest and southwest branches of the Back River, a tidal tributary to the lower Chesapeake Bay (Figure 1-1 – Location of Langley Air Force Base, Virginia Map).

Langley AFB is proposing to upgrade water towers at the installation by installing a 200-foot tall, 300,000-gallon water storage tank with pump station, aircraft warning lights, and beacon in the southeast portion of the property. As part of this project, a 250,000-gallon water tank (Tower #620) would be properly drained, demolished, and disposed of (Figure 1-2 – Langley Air Force Base Installation Map).

To assist us in identifying environmental issues that may effect implementation of the renovation project, please provide us with written comments concerning interests within your agency's responsibilities, specifically wetlands and the presence of federal or state listed rare, threatened, or endangered plant and insect species (Section 7 compliance).

Your response within 20 days from the date of receipt of this letter will be greatly appreciated. A letter has also been sent to the Virginia Department of Conservation and Recreation, the Virginia Department of Game and Inland Fisheries, and the U.S. Fish and Wildlife Service in regards to the presence of state protected wetlands and rare, threatened, or endangered species.

If you have any questions regarding this request, please contact me at (303) 721-9219 or Mr. Thomas Wittkamp (Langley Air Force Base, Environmental Management Flight) at (757) 764-1135.

Sincerely,
e²M

James A. Denier
Senior Project Manager

Enclosures

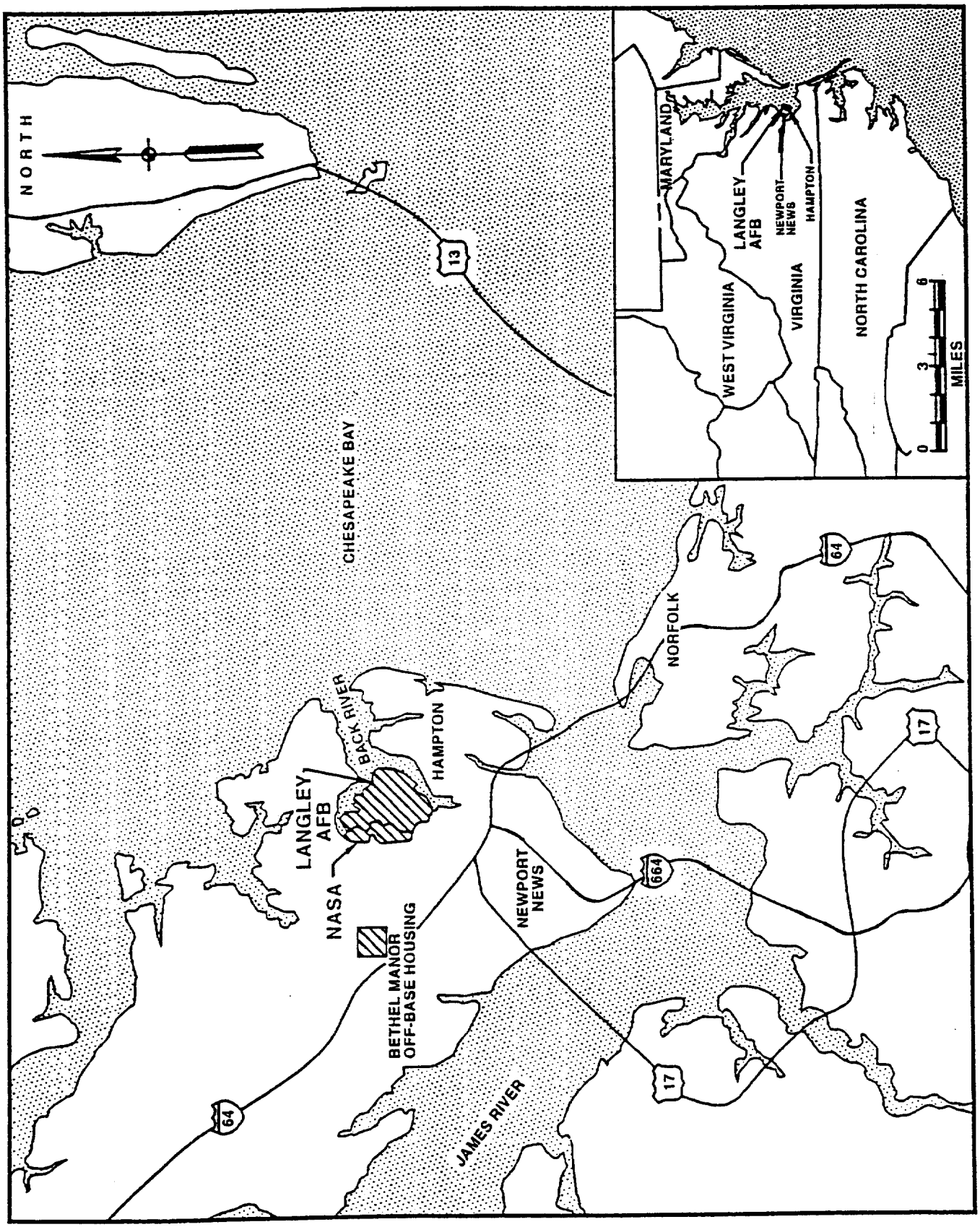


Figure 1-1
Location of Langley Air Force Base, Virginia

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

David G. Brickley
Director

COMMONWEALTH of VIRGINIA

DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street, 3rd Floor
TDD (804) 786-2121 Richmond, Virginia 23219 (804) 786-7951 FAX (804) 371-2674
http://www.state.va.us/~dcr/vaher.html

James A. Denier
Engineering-Environmental Management, Inc.
7000 S. Yosemite Street, Suite 295
Englewood CO 80112

May 22, 2000

Re: Water Tower at Langley AFB

Dear Mr. Denier:

The Department of Conservation and Recreation's Division of Natural Heritage (DCR) has searched its Biological and Conservation Data System (BCD) for occurrences of natural heritage resources from the area outlined on the submitted map. Natural heritage resources are defined as the habitat of rare, threatened, or endangered plant and animal species, unique or exemplary natural communities, and significant geologic formations.

According to the information currently in our files, natural heritage resources have not been documented in the project area. In addition, our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

The absence of data may indicate that the project area has not been surveyed, rather than confirm that the area lacks natural heritage resources. New and updated information is continually added to BCD. Please contact DCR for an update on this natural heritage information if a significant amount of time passes before it is utilized.

A fee of $50.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, 203 Governor Street, Suite 402, Richmond, VA 23219, ATTN: Cashier. Payment is due within thirty days of the invoice date.

Should you have any questions or concerns, feel free to contact me at 804-371-2708. Thank you for the opportunity to comment on this project.

Sincerely,

Lesa S. Berlinghoff
Project Review Coordinator

. Carlton Courter, III
Commissioner

COMMONWEALTH of VIRGINIA

Department of Agriculture and Consumer Services
Division of Consumer Protection
Office of Plant & Pest Services
PO Box 1163, Richmond, Virginia 23218
Phone: 804/786-3515 • Fax: 804/371-7793 • Hearing Impaired: 800/828-1120
http://www.state.va.us/~vdacs/vdacs.htm

May 19, 2000

Mr. James A. Denier
Engineering-Environmental Management, Inc.
7000 S. Yosemite Street
Suite 295
Englewood, CO 80112

RE: Langley Air Force Base Water Tower

Dear Mr. Denier:

This letter is in response to your request for information on listed threatened or endangered plant or insect species in the vicinity of the proposed water tower demolition and installation at Langley Airforce Base in the Hampton area. The federal threatened northeastern tiger beetle (*Cicindela dorsalis dorsalis*) has been documented in the Hampton area. If any of the proposed construction, or demolition impacts the northeastern tiger beetle in any way, including movement and storage of equipment, a survey for the beetle is recommended and the U.S. Fish and Wildlife Service should be consulted to avoid any violation of the Endangered Species Law.

The Virginia Department of Agriculture and Consumer Services has jurisdiction over listed plant and insect species only. The Virginia Department of Game and Inland Fisheries has jurisdiction over all other listed threatened or endangered species. Additional information on unique geologic formations, rare or critical habitat, rare and candidate species can be obtained from the Virginia Department of Conservation and Recreation, Division of Natural Heritage.

Thank you for your interest in the endangered or threatened plant and insect species in Virginia. If you have any questions or need any additional information, please contact me.

Sincerely,

Frank M. Fulgham
Program Manager

May 10, 2000

Project Review Coordinator
VA Department of Conservation and Recreation
Division of Natural Heritage
217 Governor Street, Third Floor
Richmond, Virginia 23219

Dear Sir or Madam:

On behalf of Langley Air Force Base (AFB), engineering environmental Management, Inc (e2M) is preparing National Environmental Protection Policy Act (NEPA) documentation for the installation of a water tower at Langley Air Force Base. The documentation will be prepared in accordance with Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process,* and NEPA regulations.

Langley AFB is located in Hampton, Virginia between the cities of Newport News and Norfolk. The Langley AFB installation consists of 2,883 acres shared by Langley AFB and the National Aeronautics and Space Administration (NASA). The base lies on a peninsula at the confluence of the northwest and southwest branches of the Back River, a tidal tributary to the lower Chesapeake Bay (Figure 1-1 – Location of Langley Air Force Base, Virginia Map).

Langley AFB is proposing to upgrade water towers at the installation by installing a 200-foot tall, 300,000-gallon water storage tank with pump station, aircraft warning lights, and beacon in the southeast portion of the property. As part of this project, a 250,000-gallon water tank (Tower #620) would be properly drained, demolished, and disposed of (Figure 1-2 – Langley Air Force Base Installation Map).

To assist us in identifying environmental issues that may effect implementation of the renovation project, please provide us with written comments concerning interests within your agency's responsibilities, specifically wetlands and the presence of federal or state listed rare, threatened, or endangered species (Section 7 compliance).

Your response within 20 days from the date of receipt of this letter will be greatly appreciated. A letter has also been sent to the Virginia Department of Game and Inland Fisheries and the U.S. Fish and Wildlife Service in regards to the presence of state protected wetlands and rare, threatened, or endangered species.

If you have any questions regarding this request, please contact me at (303) 721-9219 or Mr. Thomas Wittkamp (Langley Air Force Base, Environmental Management Flight) at (757) 764-1135.

Sincerely,
e^2M

James A. Denier
Senior Project Manager

Enclosures

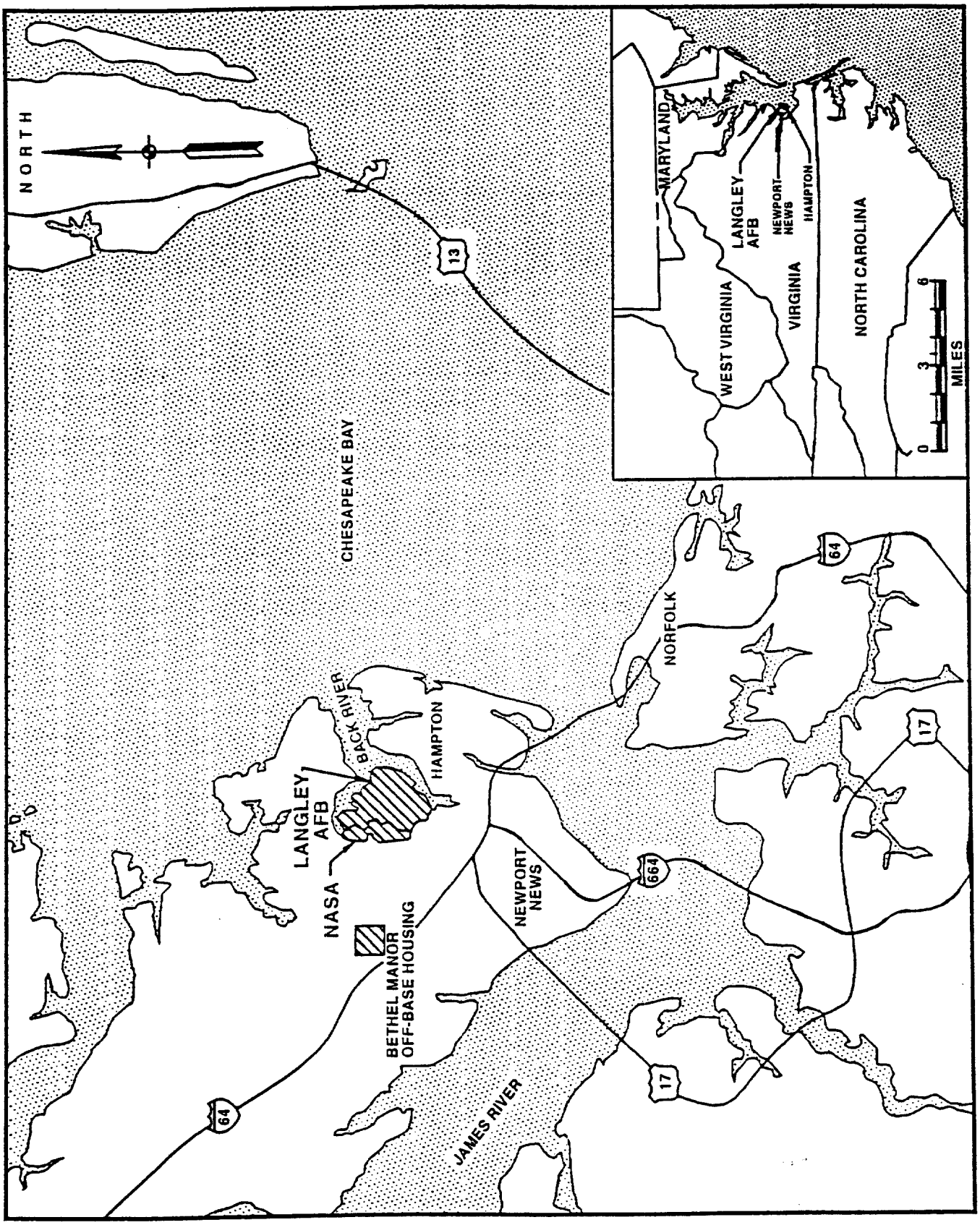


Figure 1-1
Location of Langley Air Force Base, Virginia

May 10, 2000

Project Review Coordinator
VA Department of Game and Inland Fisheries
4010 West Broad Street
Richmond, Virginia 23230

Dear Sir or Madam:

On behalf of Langley Air Force Base (AFB), engineering environmental Management, Inc (e2M) is preparing National Environmental Protection Policy Act (NEPA) documentation for the installation of a water tower at Langley Air Force Base. The documentation will be prepared in accordance with Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process,* and NEPA regulations.

Langley AFB is located in Hampton, Virginia between the cities of Newport News and Norfolk. The Langley AFB installation consists of 2,883 acres shared by Langley AFB and the National Aeronautics and Space Administration (NASA). The base lies on a peninsula at the confluence of the northwest and southwest branches of the Back River, a tidal tributary to the lower Chesapeake Bay (Figure 1-1 – Location of Langley Air Force Base, Virginia Map).

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To assist us in identifying environmental issues that may effect implementation of the renovation project, please provide us with written comments concerning interests within your agency's responsibilities, specifically wetlands and the presence of federal or state listed rare, threatened, or endangered species (Section 7 compliance).

Your response within 20 days from the date of receipt of this letter will be greatly appreciated. A letter has also been sent to the Virginia Department of Conservation and Recreation and the U.S. Fish and Wildlife Service in regards to the presence of state protected wetlands and rare, threatened, or endangered species.

If you have any questions regarding this request, please contact me at (303) 721-9219 or Mr. Thomas Wittkamp (Langley Air Force Base, Environmental Management Flight) at (757) 764-1135.

Sincerely,
e²M

James A. Denier
Senior Project Manager

Enclosures

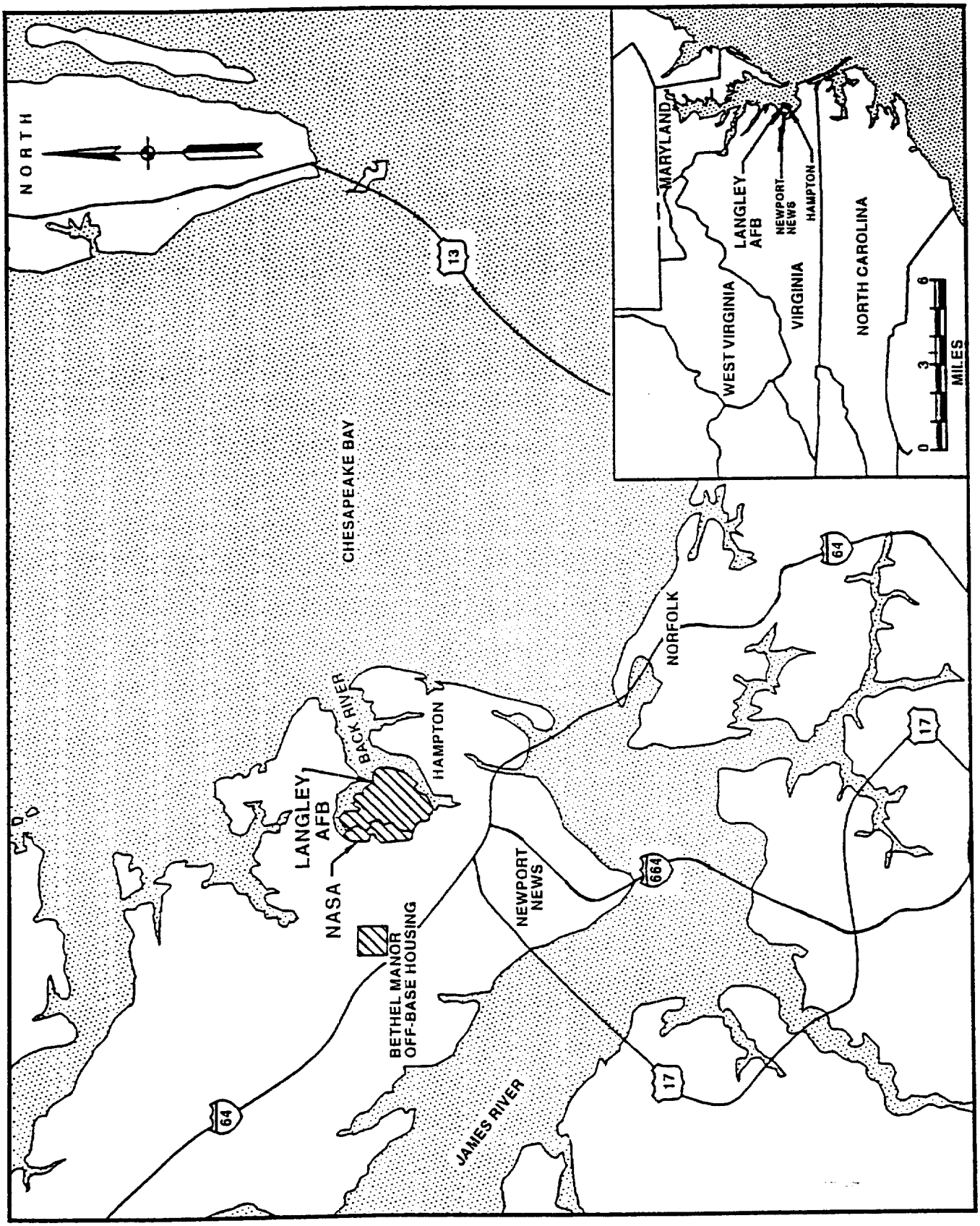

Figure 1-1
Location of Langley Air Force Base, Virginia

COMMONWEALTH of VIRGINIA

James S. Gilmore, III
Governor
John Paul Woodley, Jr.
Secretary of Natural Resources

Department of Game and Inland Fisheries

William L. Woodfin, Jr.
Director

July 11, 2000

James A. Denier
Engineering-Environmental Management, Inc.
7000 S. Yosemite Street, Suite 295
Englewood, CO 80112

RE: ESSLOG 13701; Upgrade of water tower facilities at Langley Air Force Base

Dear Mr. Denier:

This letter is in response to your request for information related to the presence of threatened or endangered species in the vicinity of the above referenced project.

Information about fish and wildlife species was generated from our agency's computerized Fish and Wildlife Information System, which describes animals that are known or may occur in a particular geographic area. Field surveys may be necessary to determine the presence or absence of some of these species on or near the proposed area. Also, additional sensitive animal species may be present, but their presence has not been documented in our information system.

No threatened or endangered species have been documented within the proposed project area. However, there are several documented occurrences of sensitive species in the 2-mile radius surrounding the project area. These species may occur at the project area if appropriate habitat exists. There are two documented occurrences of the state endangered canebrake rattlesnake (*Croatulus horridus atricaudatus*) found within 2 miles of the project site. The federal species of concern northern diamondback terrapin (*Malaclemys terrapin terrapin*) also has been documented within 1.5 miles of the project area. Two state species of concern have been documented within ½ mile of the project area: Forster's tern (*Sterna forsteri*) and least tern (*Sterna antillarum*). The following state species of concern have been documented within approximately 1 mile of the project area: great egret (*Ardea alba egretta*), northern harrier (*Circus cyaneus*), glossy ibis (*Plegadis falcinellus*), yellow-crowned night heron (*Nyctanassa violacea violacea*), and Caspian tern (*Sterna caspia*). The classification, "species of concern", is not a legal designation and does not require coordination. There are also two colonial water bird sites within 1 mile of the project area.

Endangered plants and insects are under the jurisdiction of the Virginia Department of Agriculture and Consumer Services, Bureau of Plant Protection. Questions concerning sensitive plant and insect species occurring at the project site should be directed to their endangered species coordinator at (804) 786-3515.

June 6, 2000

Ms. Ellie Irons
Department of Environmental Quality
Virginia Coastal Program
629 East Main Street
Richmond, VA 23219

Dear Ms. Irons:

On behalf of Langley Air Force Base (AFB), engineering environmental Management, Inc (e2M) is preparing National Environmental Protection Policy Act (NEPA) documentation for the installation of a water tower at Langley Air Force Base. The documentation will be prepared in accordance with Air Force Instruction (AFI) 32-7061, *The Environmental Impact Analysis Process,* and NEPA regulations.

Langley AFB is located in Hampton, Virginia between the cities of Newport News and Norfolk. The Langley AFB installation consists of 2,883 acres shared by Langley AFB and the National Aeronautics and Space Administration (NASA). The base lies on a peninsula at the confluence of the northwest and southwest branches of the Back River, a tidal tributary to the lower Chesapeake Bay (Figure 1-1 – Location of Langley Air Force Base, Virginia Map).

Langley AFB is proposing to upgrade water towers at the installation by installing a 200-foot tall, 300,000-gallon water storage tank with pump station, aircraft warning lights, and beacon in the southeast portion of the property. As part of this project, a 250,000-gallon water tank (Tower #620) would be properly drained, demolished, and disposed of (Figure 1-2 – Langley Air Force Base Installation Map).

To assist us in identifying environmental issues that may effect implementation of the renovation project, please provide us with written comments concerning interests within your agency's responsibilities in accordance with the Coastal Zone Management Act of 1972.

Your response within 20 days from the date of receipt of this letter will be greatly appreciated. A letter has also been sent to the Virginia Department of Conservation and Recreation, VA Department of Agricultural and Consumer Services - Bureau of Plant Protection, Virginia Game and Inland Fisheries, and the U.S. Fish and Wildlife Service in regards to the presence of state protected wetlands and rare, threatened, or endangered species.

If you have any questions regarding this request, please contact me at (303) 721-9219 or Mr. Thomas Wittkamp (Langley Air Force Base, Environmental Management Flight) at (757) 764-1135.

Sincerely,
e^2M

James A. Denier
Senior Project Manager

Enclosures

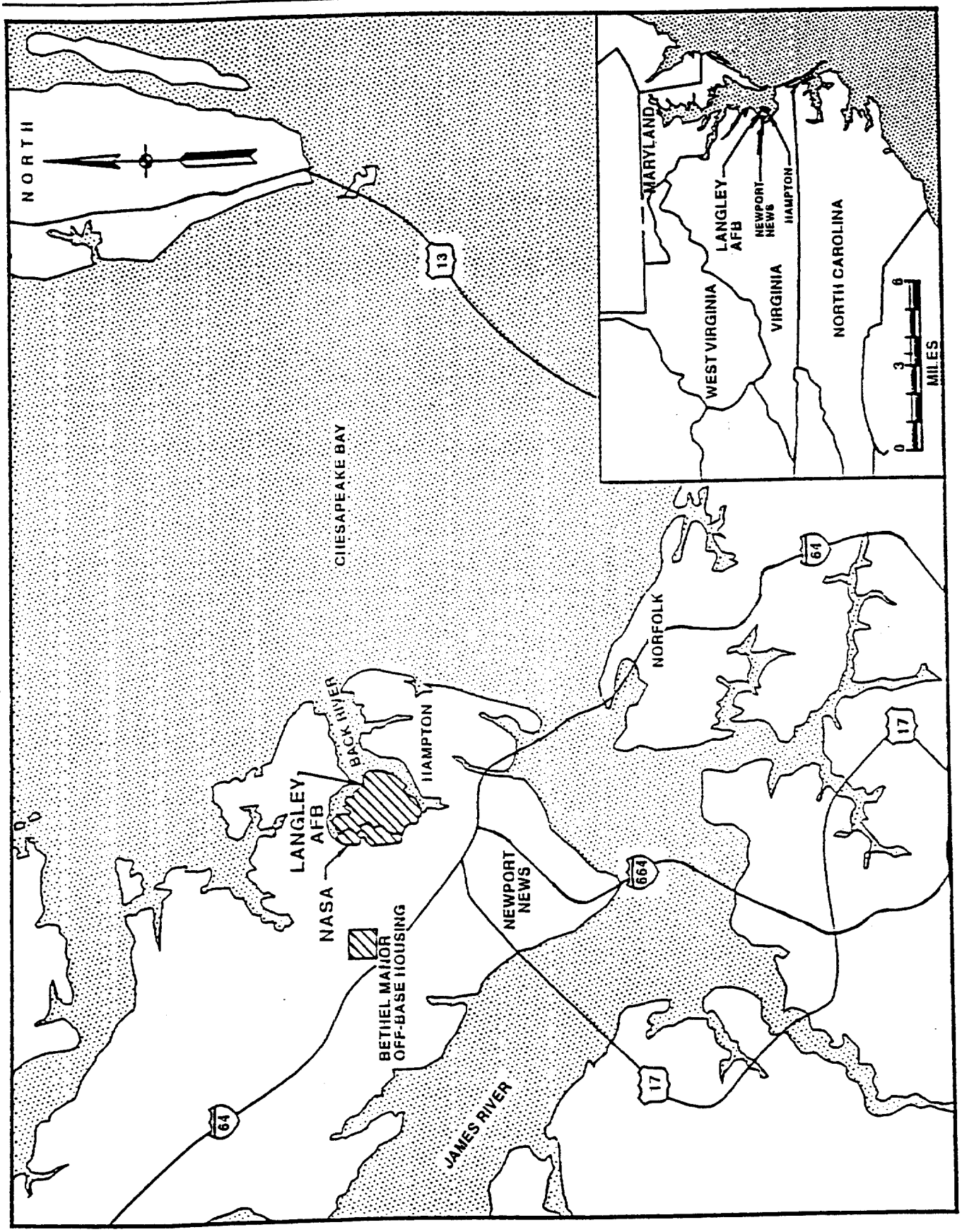

Figure 1-1
Location of Langley Air Force Base, Virginia

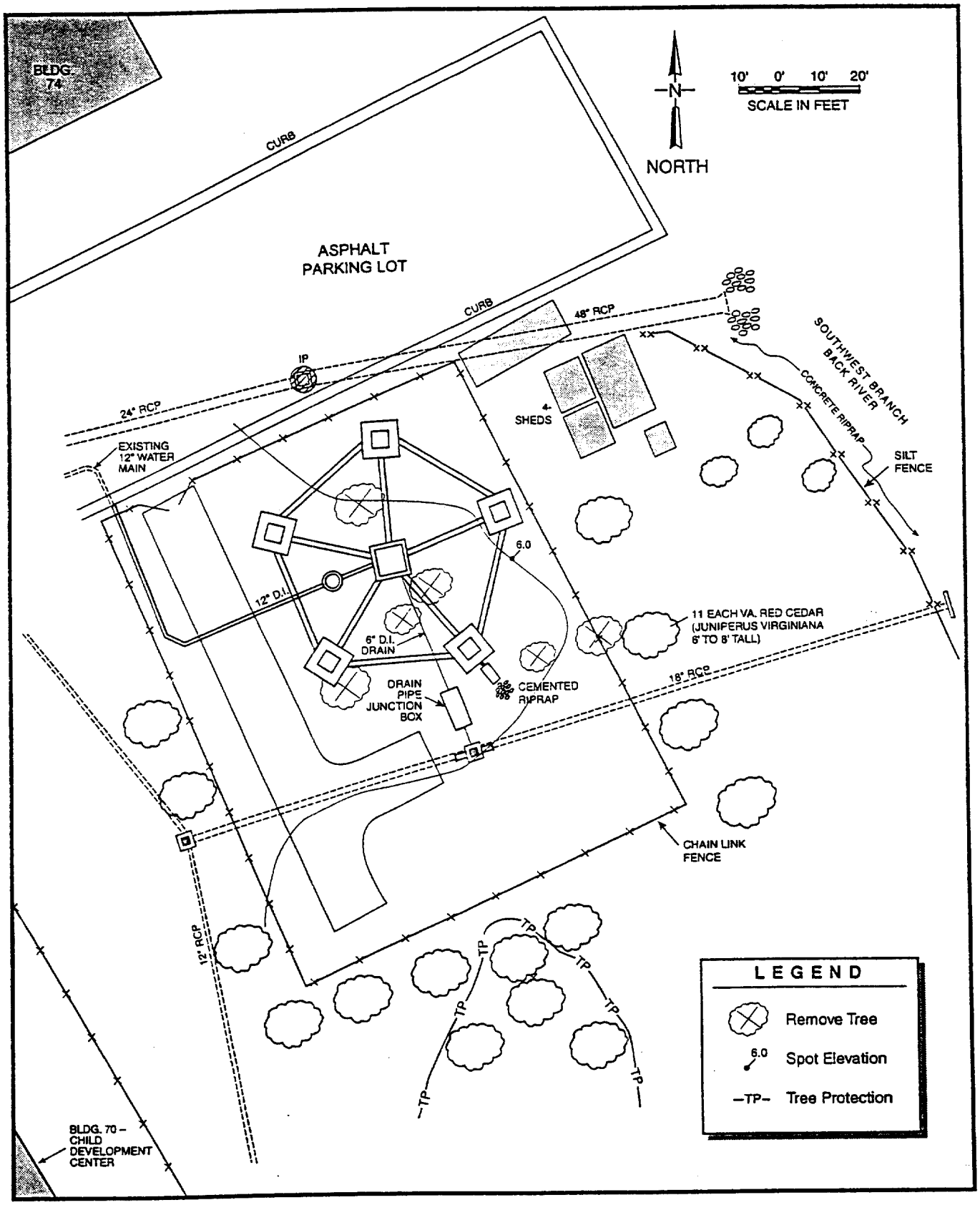

Figure 2-2
Proposed Site Plan for New Water Tower on Langley Air Force Base

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
ecretary of Natural Resources

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

Dennis H. Treacy
Director

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

June 9, 2000

Mr. James A. Denier
Senior
Project Manager
engineering environmental Management, Inc.
7000 S. Yosemite St., Suite 295
Englewood, Colorado 80112

RE: Langley Air Force Base, Installation of Water Tower

Dear Mr. Denier:

This letter is in response to your June 6, 2000, correspondence, requesting information concerning the implementation of the Coastal Zone Management Act of 1972, as amended, by the Virginia Department of Environmental Quality (DEQ). The Act requires federal agencies to provide a federal consistency determination that the proposed action, which can affect the Virginia's Coastal Resources Management Area, will be conducted in a manner which is consistent with the Virginia Coastal Resources Management Program (VCP). The VCP consists of a network of programs which comprise the enforceable program of the VCP.

Federal actions and programs that can affect Virginia's coastal zone must be carried out in a manner that is consistent with the VCP. DEQ is the lead agency that coordinates the review of federal agency determinations and agrees or disagrees with the determinations based on adherence to the enforceable policies of the core regulatory agencies. In order to be consistent with VCP, Langley Air Force Base must receive all applicable permits and approvals listed under the Enforceable Programs of the VCP prior to commencing the project. A list of the regulatory programs is attached for your convenience (Attachment 1). Also attached are the VCP's Advisory Policies (Attachment 2). We encourage you to include the consistency determination in the NEPA document. If this is done, DEQ will coordinate its federal consistency review concurrently with its coordinated review of the NEPA document.

Thank you for your inquiry. We appreciate your interest in complying with the provisions of Virginia's Coastal Resources Management Program established pursuant to the Coastal Zone Management Act. If you have any further questions, please do not hesitate to call me at (804) 698-4488.

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

Street address: 629 East Main Street, Richmond, Virginia 23219
Mailing address: P.O. Box 10009, Richmond, Virginia 23240
Fax (804) 698-4500 TDD (804) 698-4021
http://www.deq.state.va.us

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural Resources

Dennis H. Treacy
Director

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

Attachment 1

Enforceable Regulatory Programs comprising Virginia's Coastal Resources Management Program (VCP)

a. Fisheries Management - The program stresses the conservation and enhancement of finfish and shellfish resources and the promotion of commercial and recreational fisheries to maximize food production and recreational opportunities. This program is administered by the Marine Resources Commission (VMRC); Virginia Code §28.2-200 to §28.2-713 and the Department of Game and Inland Fisheries (DGIF); Virginia Code §29.1-100 to §29.1-570.

The State Tributyltin (TBT) Regulatory Program has been added to the Fisheries Management program. The General Assembly amended the Virginia Pesticide Use and Application Act as it related to the possession, sale, or use of marine antifoulant paints containing TBT. The use of TBT in boat paint constitutes a serious threat to important marine animal species. The TBT program monitors boating activities and boat painting activities to ensure compliance with TBT regulations promulgated pursuant to the amendment. The VMRC, DGIF, and Virginia Department of Agriculture Consumer Services (VDACS) share enforcement responsibilities; Virginia Code §3.1-249.59 to §3.1-249.62.

b. Subaqueous Lands Management - The management program for subaqueous lands establishes conditions for granting or denying permits to use state-owned bottomlands based on considerations of potential effects on marine and fisheries resources, tidal wetlands, adjacent or nearby properties, anticipated public and private benefits, and water quality standards established by the Department of Environmental Quality (DEQ). The program is administered by the Marine Resources Commission; Virginia Code §28.2-1200 to §28.2-1213.

c. Wetlands Management - The purpose of the wetlands management program is to preserve wetlands, prevent their despoliation, and accommodate economic development in a manner consistent with wetlands preservation.

(1) The tidal wetlands program is administered by the Marine Resources Commission; Virginia Code §62.1-1301 through §62.1-1320.

(2) The Virginia Water Protection Permit program administered by DEQ includes protection of wetlands --both tidal and non-tidal; Virginia Code §62.1-44.15:5 and Water Quality Certification pursuant to Section 401 of the Clean Water Act.

Attachment 2

Advisory Policies for Geographic Areas of Particular Concern

a. Coastal Natural Resource Areas - These areas are vital to estuarine and marine ecosystems and/or are of great importance to areas immediately inland of the shoreline. Such areas receive special attention from the Commonwealth because of their conservation, recreational, ecological, and aesthetic values. These areas are worthy of special consideration in any planning or resources management process and include the following resources:

a) Wetlands
b) Aquatic Spawning, Nursery, and Feeding Grounds
c) Coastal Primary Sand Dunes
d) Barrier Islands
e) Significant Wildlife Habitat Areas
f) Public Recreation Areas
g) Sand and Gravel Resources
h) Underwater Historic Sites.

b. Coastal Natural Hazard Areas - This policy covers areas vulnerable to continuing and severe erosion and areas susceptible to potential damage from wind, tidal, and storm related events including flooding. New buildings and other structures should be designed and sited to minimize the potential for property damage due to storms or shoreline erosion. The areas of concern are as follows:

i) Highly Erodible Areas
ii) Coastal High Hazard Areas, including flood plains.

c. Waterfront Development Areas - These areas are vital to the Commonwealth because of the limited number of areas suitable for waterfront activities. The areas of concern are as follows:

i) Commercial Ports
ii) Commercial Fishing Piers
iii) Community Waterfronts

Although the management of such areas is the responsibility of local government and some regional authorities, designation of these areas as Waterfront Development Areas of Particular Concern (APC) under the VCRMP is encouraged. Designation will allow the use of federal CZMA funds to be used to assist planning for such areas and the implementation of such plans. The VCRMP recognizes two broad classes of priority uses for waterfront development APC:

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 1ST FIGHTER WING
LANGLEY AIR FORCE BASE VA

31 MAY 2000

Mr. Bruce W. MacDonald
Deputy Base Civil Engineer
37 Sweeney Boulevard
Langley AFB VA 23665-2101

Ms. Susan Smead
State Historic Preservation Office
2801 Kensington Avenue
Richmond VA 23221

Dear Ms. Smead

The 1st Civil Engineer Squadron (1 CES) at Langley AFB is planning a project to demolish facility number 620, one of the base water towers. Facility 620 is eligible for listing on the National Historic Register. At this time, we wish to initiate consultation in accordance with 36 CFR 800, Section 106.

Tank number 620 is nearing the end of its useful life due to extreme rust pitting and structural support deterioration which places it beyond economical repair. The "Report for Water Tower Repair/Replacement" by Krummel and Associates, dated 7 Aug 96, indicates that the deterioration in this tank has already exceeded acceptable limits and thus is a major safety concern. Therefore, we will be forced to abandon this tower and build another. Since facility 620 will not be in use, it must be demolished due to both safety and the fact that it is a large airfield obstruction.

Attached is the location of the tower for your reference. Your expeditious review of this request will be greatly appreciated. If you have any questions, please feel free to contact Lt Matt Morris at (757) 764-1446.

Sincerely

Bruce W. MacDonald

BRUCE W. MacDONALD, GM-14

Attachment:
Location Plan

Global Power For America

MEMORANDUM OF AGREEMENT

BETWEEN

LANGLEY AIR FORCE BASE (AFB)

AND

THE VIRGINIA DEPARTMENT OF HISTORIC RESOURCES (VDHR)

WHEREAS, Langley AFB has determined that demolition and replacement of Facility 620 will have an adverse effect upon the Langley Field Historic district, a property eligible for inclusion in the National Register of Historic Places, and has consulted with the Virginia Department of Historic Resources (VDHR), also known as the Virginia State Historic Preservation Office, pursuant to 36 CFR Part 800, regulations implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470f);

NOW, THEREFORE, Langley AFB and the VDHR agree that this proposed undertaking shall be implemented in accordance with the following stipulations in order to take into account the effect of the undertaking on historic properties.

Stipulations

Langley AFB shall ensure that the following recordation measures are carried out in consultation with the VDHR prior to demolition of Facility 620.

1. Recordation

The subject building will be documented as follows:

- Plan view drawing of the site
- 5" x 7" black and white photos of the interior and exterior
- Concise description and statement of significance for the structure
- Completion of the VDHR Intensive Level Survey Field Form.

2. Draft documentation materials are to be reviewed and approved by the VDHR for substantive and technical context.

3. Final original recordation materials will be submitted to the Virginia Department of Historic Resources for permanent curation. Copies of the recordation materials will be curated at the Air Combat Command Historian's Office.

4. A copy of this executed MOA will be sent to the Advisory Council on Historic Preservation.

Other Terms and Conditions

Should the VA SHPO object to any studies, plans, drawings, or other documentation submitted pursuant to this Agreement, said objections shall be made in writing to Langley AFB within 30 days of their receipt. Langley AFB shall then consult with the objecting party to resolve the objection. If Langley AFB determines that the objection cannot be resolved, Langley AFB will request the comments of the ACHP pursuant to 36 CFR Part 800.6(b).

This agreement shall be null and void if its terms are not carried out within five (5) years from the date of its execution, unless the signatories agree in writing to an extension for carrying out its terms.

Execution of this Memorandum of Agreement and implementation of its terms by Langley AFB and the VDHR are evidence that Langley AFB has afforded the Council an opportunity to comment on the demolition of Facility 620 and its effects on historic properties, and that Langley AFB has taken into account the effects of the undertaking on historic properties.

LANGLEY AIR FORCE BASE

By: _____ Date: 27 Mar 01
KEITH R. BELL, Colonel, USAF
Commander, 1st Support Group

VIRGINIA DEPARTMENT OF HISTORIC RESOURCES

By: _____ Date: 3/29/01
KATHLEEN S. KILPATRICK
Director