Environmental Assessment

BRAC EA for the Construction and Operation of an Armed Forces Reserve Center

Willow Grove Naval Air Station Joint Reserve Base, Pennsylvania

Prepared for

U.S. Army Reserve

Prepared by

U.S. Army Corps of Engineers, Mobile District

June 2009

Draft
Finding of No Significant Impact

Construction and Operation of Armed Forces Reserve Center
Willow Grove Naval Air Station Joint Reserve Base
Willow Grove, Pennsylvania

Introduction

The 99th Regional Support Command (RSC) of the U.S. Army Reserve (USAR) prepared an Environmental Assessment (EA) that evaluated the potential environmental and socioeconomic impacts associated with construction of new United States Army Reserve Center (USARC) that would be constructed on the Willow Grove Naval Air Station (NAS) Joint Reserve Base (JRB). On September 8, 2005, the Defense Base Closure and Realignment (BRAC) Commission (Commission) recommended the closure of seven facilities in the Willow Grove, Pennsylvania area, and realignment of displaced units of the 99th RSC into a new USARC that would be constructed on the Willow Grove NAS JRB. The facilities recommended for closure include Reese USARC, Chester, PA; Germantown Veterans Memorial USARC, Philadelphia, PA; Horsham Memorial USARC, Horsham, PA; 1LT Ray S. Musselman Memorial USARC, Norristown, PA; North Penn Memorial USARC, Norristown, PA; MG J. Wurts Memorial USARC, Willow Grove, PA; and Area Maintenance Support Activity (AMSA) #23, Willow Grove, PA. These actions reflect the recommendations of the BRAC Commission and were approved by the President on September 23, 2005. On November 9, 2005, the recommendations became law without alteration. The law requires that the recommendations of the Commission be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

In addition to the Army BRAC recommendations listed above, the Commission has made other recommendations at Willow Grove NAS JRB including the closure of the Naval Air Station and the establishment of an enclave for the Air National Guard 270th Engineering Installation Squadron, the Air National Guard 111th Fighter Wing, and the relocated Army Reserve units. The actions considered in this Environmental Assessment are limited to the construction and operation of a new AFRC at Willow Grove NAS JRB and do not include the closure of Willow Grove NAS JRB or the establishment of the new enclave. These Navy BRAC actions will be reviewed under separate NEPA analysis.

The USAR coordinated preparation of this EA with the US Navy and the US Air Force. The location of the preferred alternative is in the northeastern portion of the Willow Grove NAS JRB. The land is currently owned by the Navy, but will be transferred to the Air Force in 2011 under BRAC.

1. Description of the Proposed Action

Proposed Action. The proposed action involves implementation of the BRAC Commission recommendations. To accomplish these recommendations, the USAR is realigning units from the six USARCs and one AMSA described in the BRAC legislation to a new facility that would be constructed at Willow Grove NAS JRB. At present, there are no facilities at Willow Grove NAS JRB sufficient to support the units that are being realigned. The proposed action would result in the realignment of approximately 38 full-time personnel and up to 800 reservists to the new USARC. No relocation of USAR personnel is required as all units are currently assigned within the Philadelphia area.

2. Description of the Alternatives

Preferred Alternative. The preferred alternative includes demolition of existing facilities, construction of a USARC, relocation of facilities, widening of Privet Road, construction of a stormwater retention pond, and realignment of USAR units and associated personnel to the new USARC at Willow Grove NAS JRB. The new USARC would provide an 800-member training facility for the units being realigned as directed by BRAC. The facility would be located in the northeastern portion of Willow Grove NAS JRB and would be bounded by Skyhawk Avenue on the east, Johnson Street to the north, Griffis Street to the west, and the airfield apron to the south.

The proposed USARC would be a two-story structure providing administrative, educational, assembly, library, learning center, vault, weapons simulator, and physical fitness areas for the realigned USAR units. The combined AMSA/OMS (Organizational Maintenance Shop) facility would consist of a one-story structure with mechanical and electrical equipment, a locker room, latrine, break/assembly area, and repair and machine shops. Additional support facilities would include unit storage space and adequate parking for military and privately owned vehicles. The AMSA/OMS would be co-located with the USARC to reduce construction costs and provide greater ease of access by all associated units. To facilitate access, Privet Road would be widened from approximately 15 feet to 24 feet. Consistent with the Army's sustainability policy, all new construction associated with implementing the proposed action will meet the Leadership in Energy and Environmental Design Silver standard. Sustainable design will improve energy efficiency of the facilities throughout the lifespan of the new training complex.

Five facilities currently located in the project area would be demolished to allow construction of the proposed USARC. The buildings planned for demolition are the salt shed, recycle building, bowling alley, liquid oxygen farm, and fuel farm office and associated fuel tanks and piping.

Alternative Not Considered in Detail. A second location within the Willow Grove NAS JRB facility was considered for construction of the proposed AFRC. This alternative included additions to or expansion of the existing MG J. Wurts Memorial USARC located on the west side of Willow Grove NAS JRB. The facility is approximately 0.3 miles southeast of the intersection of Privet Road and State Road 463 (Horsham Road).

The components of this alternative were the same as those described for the preferred alternative, except that there would be no demolition or relocation of existing facilities. Further investigations identified that land associated with the MG J. Wurts Memorial USARC may not be located within the revised boundaries of the future enclave. Compliance with BRAC requires the proposed facilities to be located at Willow Grove NAS JRB; therefore, the alternative was not considered viable and was eliminated from further consideration.

No Action Alternative. In addition to the preferred alternative, a no action alternative was analyzed. The no action alternative would not satisfy the need for the proposed action, but was considered in the analysis to provide a baseline for comparison of impacts of the proposed action.

Under the no action alternative, the USAR would not construct the new USARC. Implementation of the no action alternative would result in units continuing to occupy multiple facilities throughout the Willow Grove area. The existing facilities are not properly configured to allow the most effective training to complete mission requirements. Under the no action alternative, the BRAC recommendation would not be implemented.

3. Environmental Analysis

Implementation of the preferred alternative would result in no impacts to land use, aesthetics or visual resources, geology, prime farmland, surface water, groundwater, floodplains, threatened or endangered species, cultural resources, demographics, housing, environmental justice, or protection of children. Implementation of the proposed action would result in minor short-term adverse impacts to air quality from construction, temporary construction-related noise, minor alteration of topography and soils, minor impacts to stormwater during and after construction including a minor increase in stormwater flow to receiving surface waters, minor adverse impacts on common urban flora and fauna, minor adverse impacts to traffic on weekends, minor increase in demand of local utilities, and minor generation of construction-related waste. Implementation of the preferred alternative would result in minor short-term beneficial impacts to economic development in the local area during construction. Implementation of the preferred alternative would result in minor impacts from the use of small quantities of hazardous and toxic materials during operation of the AFRC and AMSA. Potential benefit from additional soil remediation at Site 10 could occur. Soil borings would be collected during the demolition of the fuel farm to determine if any contamination associated with the former USTs is still present. Further actions would be based on results of the soil borings.

Based upon estimated emissions, operation and training activities would result in a long-term increase of criteria pollutants from stationary and mobile sources. However, the preferred alternative is not anticipated to significantly impact existing or future air quality as the estimated emissions from operation of the proposed AFRC are well below the threshold levels of regulatory programs.

A positive impact to air quality in the region is a likely result of the reduction in overall military operations at Willow Grove NAS JRB. The Department of Defense Base Redevelopment and Realignment Manual recommends that installations determine how air

emission credits may be allocated when there is a base closure action with the potential for air emission trading credits (DoD 4165.66-M, 2006).

Under the preferred alternative the USAR would consume less utilities including; water, wastewater, electrical and natural gas. Consolidating USAR facilities into the proposed AFRC allows for the efficient use of these resources and reduces the USAR's overall demand for utilities.

The preferred alternative could cause minor encroachment on vegetated stormwater drainages which may be jurisdictional wetlands. The primary hydrologic function of the stormwater drainages is to convey stormwater runoff from the proposed project area and adjacent land. Site design would avoid encroachment on these areas to the extent practicable. If impacts are unavoidable, required permits would be obtained prior to impacting the wetlands. Permit conditions, including required mitigation, would be implemented to minimize impacts. A wetland delineation would be conducted prior to ground-disturbing activities to identify the presence of jurisdictional waters of the U.S. and to determine the potential impact to these resources. BMPs would be implemented to control stormwater runoff and thus minimize the potential for incidental impacts to wetlands.

Mitigation. No mitigation measures will be necessary to reduce adverse impacts to less than significant levels. The minor encroachment on stormwater drainages would not require mitigation. Minor impacts to air quality, soils and storm water would occur during construction. To mitigate the minor adverse impacts, appropriate Best Management Practices (BMPs) would be implemented to minimize construction and demolition-related fugitive dust, erosion, and impact from stormwater runoff.

4. Regulations

The proposed action will not violate the National Environmental Policy Act, its regulations promulgated by the Council on Environmental Quality (CEQ), *Environmental Analysis of Army Actions,* or any other federal, state, or local environmental regulations.

5. Commitment to Implementation

The USAR and U.S. Army Corps of Engineers affirm their commitment to implement this EA in accordance with NEPA. Implementation is dependent on funding. The USAR will ensure that adequate funds are requested in future years' budgets to achieve the goals and objectives set forth in this EA.

6. Public Review and Comment

The EA and draft FNSI will be available for public review and comment for 30 days following publication of the draft FNSI's public notice. Review locations will be listed in the public notice. Throughout this process, the public may obtain information on the status and progress of the proposed action and the EA through the USAR, 99th Regional Support Command. Copies may be obtained by mail, and written comments may be submitted to:

USAR, 99th Regional Support Command
ATTN: Laura Dell'Olio
5231 South Scott Plaza
Fort Dix, NJ 08640

The EA and draft FNSI will also be available to the public at the following website: http://www.hqda.army.mil/acsim/brac/env_ea_review.htm.

7. Finding of No Significant Impact

Based on the information presented in the EA, the USAR proposes to implement the preferred alternative. Once public comments have been addressed, and if a determination is made that the preferred alternative will have no significant impacts, the FNSI will be signed and the action will be implemented. The requirements of NEPA and the CEQ regulations will have been met. An Environmental Impact Statement will not be prepared, and the USAR will issue this Finding of No Significant Impact.

Date

Joseph H. Ledlow
Colonel, US Army Reserve
99th Regional Readiness Command
Regional Engineer

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Environmental Assessment for Construction and Operation of Armed Forces Reserve Center and Organizational Maintenance Shop; Willow Grove Naval Air Station Joint Reserve Base Willow Grove, Pennsylvania

Prepared by:

U.S. Army Corps of Engineers

Mobile District

2 JUN '09

Byron G. Jorns
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Date

Approved by:

99th Regional Support Command

8 JUN 2009

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Executive Summary

ES-1 Introduction

On September 8, 2005, the Defense Base Closure and Realignment (BRAC) Commission (Commission) recommended the closure of seven facilities in the Philadelphia, Pennsylvania area, and realignment of displaced units of the 99th Regional Support Command (RSC) into a new United States Armed Forces Reserve Center (AFRC) that would be constructed on the Willow Grove Naval Air Station (NAS) Joint Reserve Base (JRB). The facilities recommended for closure include: Reese United States Army Reserve Center (USARC), Chester, PA; Germantown Veterans Memorial USARC, Philadelphia, PA; Horsham Memorial USARC, Horsham, PA; 1LT Ray S. Musselman Memorial USARC, Norristown, PA; North Penn Memorial USARC, Norristown, PA; MG J. Wurts Memorial USARC, Willow Grove, PA; and Area Maintenance Support Activity (AMSA) #23, Willow Grove, PA. Willow Grove NAS JRB is located approximately 18 miles north of the City of Philadelphia in Willow Grove, Montgomery County, Pennsylvania (Figure 1-1). The Commission recommendations were approved by the President on September 23, 2005, and forwarded to Congress. On November 9, 2005, the recommendations became law without alteration. The law requires that the recommendations of the Commission be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

In addition to the Army BRAC recommendations listed above, the Commission has made other recommendations concerning Willow Grove NAS JRB, including the closure of the Naval Air Station and the establishment of an enclave for the Air National Guard 270th Engineering Installation Squadron, the Air National Guard 111th Fighter Wing, and the relocated Army Reserve units. The actions considered in this Environmental Assessment (EA) are limited to the construction and operation of a new AFRC at Willow Grove NAS JRB and do not include the closure of Willow Grove NAS JRB or the establishment of the new enclave. These Navy BRAC actions will be reviewed under separate NEPA analysis.

The USAR coordinated preparation of this EA with the US Navy and the US Air Force. The location of the preferred alternative is in the northeastern portion of the Willow Grove NAS JRB (Figure 1-2). The land is currently owned by the Navy, but will be transferred to the Air Force in 2011 under BRAC.

ES-2 Proposed Action and Alternatives

Proposed Action

The purpose and need for the proposed action is to enhance the ability of the United States Army Reserve (USAR) to fulfill its military missions by providing facilities at Willow Grove NAS JRB with the capabilities to support national defense requirements, meet the peacetime mission requirements, and meet the cost-saving requirements of BRAC. The proposed action would enhance the ability of the USAR to fulfill its training requirements by allowing the consolidation of units from multiple locations into new centralized facilities.

The proposed action would implement the BRAC Commission recommendations. To accomplish these recommendations, the USAR is realigning units from the six USARCs and one AMSA described in the BRAC legislation to a new facility that would be constructed at Willow Grove NAS JRB. At present, there are no facilities at Willow Grove NAS JRB sufficient to support the units that are being realigned. The proposed action would result in the realignment of approximately 38 full-time personnel and up to 800 reservists to the new AFRC. No relocation of USAR personnel is required, as all units are currently assigned within the Philadelphia area.

Preferred Alternative

The preferred alternative includes demolition of existing facilities, construction of an AFRC, relocation of facilities, widening of Privet Road, and realignment of USAR units and associated personnel to the new AFRC at Willow Grove NAS JRB. The new AFRC would provide an 800-member training facility for the units being realigned as directed by BRAC. To support the USAR units being realigned, the USAR would demolish five facilities totaling approximately 10,546 square feet (ft^2), construct an AFRC consisting of a 73,281-ft^2 AFRC training building, a 16,452-ft^2 combined AMSA/OMS (Organizational Maintenance Shop), a 5,467-ft^2 unheated storage building, approximately 24,040 square yards (yd^2) of organizational parking, 8,470 yd^2 of privately owned vehicle parking and roads (includes Privet Road widening), and construction of a stormwater retention pond. The facility would be located in the northeastern portion of Willow Grove NAS JRB and would be bounded by Skyhawk Avenue on the east, Johnson Street to the north, Griffis Street to the west, and the airfield apron to the south (Figure 2-1). The new AFRC would have the capacity to support the USAR personnel assigned to Willow Grove NAS JRB. The proposed action would result in the realignment of approximately 43 full-time personnel and up to 800 reservists to the new AFRC. No relocation of USAR personnel is required, as all units are currently assigned within the Willow Grove area.

The proposed AFRC would be a two-story structure providing administrative, educational, assembly, library, learning center, vault, weapons simulator, and physical fitness areas for the realigned USAR units (Figure 2-2). The combined AMSA/OMS facility would consist of a one-story structure with mechanical and electrical equipment, a locker room, latrine, break/assembly area, and repair and machine shops. Additional support facilities would include unit storage space and adequate parking for military and privately owned vehicles. The AMSA/OMS would be colocated with the AFRC to reduce construction costs and provide greater ease of access by all associated units. To facilitate access, Privet Road would be widened from approximately 15 feet to 24 feet.

There are five facilities currently located in the project area that would be demolished as part of the construction of the proposed AFRC:

- Building 640, salt shed (1,620 ft^2), would be demolished and storage of salt would be moved to the vicinity of Building 78 at Willow Grove NAS JRB.
- Building 641, recycle building (240 ft^2), would be demolished and recycling operations would be moved to Building 127 at Willow Grove NAS JRB. Demolition would include cleaning and removal of the grit chamber.

- Building 192, bowling alley (6,200 ft²), would be demolished. This facility is no longer needed and would therefore not be replaced or relocated.
- Buildings 128 and 129, liquid oxygen farm (884 ft²), which includes the liquid oxygen storage tanks (one 2,000-gallon tank and two 1,000-gallon tanks) and associated structures and piping, would be demolished after April 1, 2011, when the Naval mission would be complete and the liquid oxygen farm would no longer be needed.
- Buildings 81 and 147, fuel farm office (1,600 ft²), and associated fuel tanks and piping would be demolished. These tanks are currently empty and unused. This facility is no longer needed and would therefore not be replaced or relocated. The fuel farm is located in a former fuel farm area (Site 10), which included two 210,000-gallon underground storage tanks, a 500-gallon waste oil tank, and associated piping. A release of fuel in 1986 led to remediation of portions of the site from 1998 to 2003. In 2004, the Pennsylvania Department of Environmental Protection agreed that no further remedial action was needed. However, the soil and groundwater do not meet the conditions of unrestricted use. Therefore, additional remediation of the site may be required under Pennsylvania Act 2 as part of this demolition and construction project.

Consistent with the Army's sustainability policy, all new construction associated with implementing the proposed action will meet the Leadership in Energy and Environmental Design Silver standard. Sustainable design will improve energy efficiency of the facilities throughout the lifespan of the new training complex.

Alternatives Not Considered in Detail

A second location within the Willow Grove NAS JRB facility was considered for construction of the proposed AFRC. This alternative included additions to or expansion of the existing MG J. Wurts Memorial USARC located west of the Willow Grove NAS JRB. The facility is located in Building 176, approximately 0.3 miles southeast of the intersection of Privet Road and State Road 463 (Horsham Road) (Figure 1-2). The components of this alternative were the same as those described for the preferred alternative, except that there would be no demolition or relocation of facilities. Further investigations identified that land associated with the MG J. Wurts Memorial USARC may not be located within the revised boundaries of the future enclave. Compliance with BRAC requires the proposed facilities to be located at Willow Grove NAS JRB; therefore, the alternative was not considered viable and was eliminated from further consideration.

No Action Alternative

Under the no action alternative, the USAR would not construct the new AFRC. Implementation of the no action alternative would result in units continuing to occupy multiple facilities throughout the Philadelphia area. The existing facilities are not properly configured to allow the most effective training to complete mission requirements. Under the no action alternative, the BRAC recommendation would not be implemented.

The no action alternative would not address the purpose and need for the proposed action; however, inclusion of the no action alternative serves as a benchmark for evaluation of the potential effects of the proposed federal action. Therefore, the no action alternative is evaluated in detail in this EA.

ES-3 Environmental Consequences

Table ES-1 summarizes the consequences of the proposed action, the action alternative, and the no action alternative, which are discussed below.

TABLE ES-1
Summary of Potential Environmental and Socioeconomic Consequences
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

	Environmental and Socioeconomic Consequences	
Resource	**No Action**	**Preferred Alternative**
Land Use	No Change from Baseline Conditions	No Impact
Aesthetics and Visual Resources	No Change from Baseline Conditions	No Impact
Air Quality	No Change from Baseline Conditions	Minor short-term impact from construction-related fugitive dust that would be controlled through appropriate Best Management Practices (BMPs). Based upon estimated emissions, operation and training activities would result in a long-term increase of criteria pollutants from stationary and mobile sources. However, the preferred alternative is not anticipated to significantly impact existing or future air quality as the estimated emissions from operation of the proposed AFRC are well below the threshold levels of regulatory programs.
Noise	No Change from Baseline Conditions	Minor construction-related impact: appropriate worker safety measures would be implemented; no long-term effects from operation. Minor noise disturbance at nearby residences is possible.
Geology and Soils		
Geology/Topography	No Change from Baseline Conditions	Minor impact from topographic alteration of previously cleared and graded site through re-clearing and re-grading for site preparation.
Soils	No Change from Baseline Conditions	Minor impact: appropriate BMPs would be implemented to minimize erosion and impact from stormwater runoff.
Prime Farmland	No Change from Baseline Conditions	No Impact
Water Resources		
Surface Water	No Change from Baseline Conditions	No Impact
Hydrogeology/ Groundwater	No Change from Baseline Conditions	No Impact

TABLE ES-1
Summary of Potential Environmental and Socioeconomic Consequences
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

	Environmental and Socioeconomic Consequences	
Resource	**No Action**	**Preferred Alternative**
Floodplains	No Change from Baseline Conditions	No Impact
Biological Resources		
Vegetation	No Change from Baseline Conditions	Minor adverse impact to common flora.
Wildlife	No Change from Baseline Conditions	Minor adverse impact to common fauna.
Wetlands	No Change from Baseline Conditions	No Impact
Sensitive Species	No Change from Baseline Conditions	No Impact
Cultural Resources		
Historic Resources	No Change from Baseline Conditions	No Impact
Archeological Resources	No Change from Baseline Conditions	No Impact
Native American Resources	No Change from Baseline Conditions	No Impact
Socioeconomics		
Economic Development	No Change from Baseline Conditions	Minor benefit to local economy during construction. No impact from operation.
Demographics	No Change from Baseline Conditions	No Impact
Housing	No Change from Baseline Conditions	No Impact
Environmental Justice	No Change from Baseline Conditions	No Impact
Protection of Children	No Change from Baseline Conditions	No Impact
Transportation	No Change from Baseline Conditions	Minor adverse during training weekends.
Utilities		
Potable Water	No Change from Baseline Conditions	Minimal Impact, slight increase in demand for Willow Grove NAS JRB drinking water service.
Wastewater	No Change from Baseline Conditions	Minimal Impact, slight increase in demand for Willow Grove NAS JRB service; system has capacity.

TABLE ES-1
Summary of Potential Environmental and Socioeconomic Consequences
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

	Environmental and Socioeconomic Consequences	
Resource	**No Action**	**Preferred Alternative**
Energy	No Change from Baseline Conditions	Minimal Impact, slight increase in demand as electricity would be purchased from a local utility.
Solid Waste	No Change from Baseline Conditions	Minor Impact: typical construction wastes that would be within the capacity of local and regional waste disposal facilities.
Stormwater	No Change from Baseline Conditions	Minor impact: use of appropriate BMPs and stormwater controls would prevent impacts from construction activities. Stormwater controls, including construction of a stormwater retention pond, would be designed to prevent post-construction runoff from exceeding pre-construction runoff. Pond would be designed to be wet only during storm events to minimize potential as a bird attractant.
Hazardous Materials, Wastes, IRP Sites, and Stored Fuels		
Hazardous/Toxic Materials	No change in current use on Willow Grove NAS JRB	No change in current use on Willow Grove NAS JRB from construction. Minor impact from small quantities of cleaners, solvents, and lubricants associated with operation of AFRC and AMSA.
IRP	No Change from Baseline Conditions	Potential benefit from additional soil remediation at Site 10 could occur. Soil borings would be collected during the demolition of the fuel farm to determine if any contamination associated with the former underground storage tanks (USTs) is still present. Further actions, such as removal and restoration, would be based on results of the soil borings.
Indirect and Cumulative Impacts	No Change from Baseline Conditions	Potential for positive impact to air quality in the region as a result of reduction in military operations at Willow Grove NAS JRB.

Consequences of the Preferred Alternative

Implementation of the preferred alternative would result in no impacts to land use, aesthetics or visual resources, geology, prime farmland soils, surface water, wetlands, groundwater, floodplains, threatened or endangered species, cultural resources, demographics, housing, environmental justice, or protection of children. Implementation of the preferred alternative would result in minor short-term adverse impacts to air quality from construction, temporary construction-related noise, minor alteration of topography and soils, minor impacts to stormwater during and after construction including a minor increase in stormwater flow to receiving surface waters, minor adverse impacts on common urban flora and fauna, minor adverse impacts to traffic on weekends, minor increase in

demand of local utilities, and minor generation of construction-related waste. Implementation of the preferred alternative would result in minor short-term beneficial impacts to economic development in the local area during construction. Implementation of the preferred alternative would result in minor impacts from the use of small quantities of hazardous and toxic materials during operation of the AFRC and AMSA. Potential benefit from additional soil remediation at Site 10 could occur. Soil borings would be collected during the demolition of the fuel farm to determine if any contamination associated with the former USTs is still present. Further actions would be based on results of the soil borings.

Based upon estimated emissions, operation and training activities would result in a long-term increase of criteria pollutants from stationary and mobile sources. However, the preferred alternative is not anticipated to significantly impact existing or future air quality as the estimated emissions from operation of the proposed AFRC are well below the threshold levels of regulatory programs.

A positive impact to air quality in the region is a likely result of the reduction in overall military operations at Willow Grove NAS JRB. The Department of Defense Base Redevelopment and Realignment Manual recommends that installations determine how air emission credits may be allocated when there is a base closure action with the potential for air emission trading credits (DoD 4165.66-M, 2006).

Under the preferred alternative, the USAR would consume less utility resources, including water, wastewater, electrical, and natural gas. Consolidating USAR facilities into the proposed AFRC would allow for more efficient use of these resources and would reduce the USAR's overall demand for utilities.

Consequences of the No Action Alternative

Implementation of the no action alternative would not result in impacts to the resources evaluated in this EA.

ES-4 Conclusions

Based upon the environmental impact analysis, it has been concluded that no significant environmental or socioeconomic impacts would result from the preferred alternative. Therefore, it is not necessary to prepare an Environmental Impact Statement to address the preferred alternative and a Finding of No Significant Impact (FNSI) should be issued.

Throughout the EA process, the public may obtain information on the status and progress of the preferred alternative and the EA through the USAR, 99th Regional Support Command, attention: Laura Dell'Olio, 5231 South Scott Plaza, Fort Dix, New Jersey, 08640. The EA and Draft FNSI will also be available to the public at the following website: http://www.hqda.army.mil/acsim/brac/env_ea_review.htm.

Contents

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Appendices

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1.0 Purpose, Need, and Scope

1.1 Introduction

On September 8, 2005, the Defense Base Closure and Realignment (BRAC) Commission (Commission) recommended the closure of seven facilities in the Philadelphia, Pennsylvania area, and realignment of displaced units of the 99th Regional Support Command (RSC) into a new United States Armed Forces Reserve Center (AFRC) that would be constructed on the Willow Grove Naval Air Station (NAS) Joint Reserve Base (JRB). The facilities recommended for closure include: Reese USARC, Chester, PA; Germantown Veterans Memorial USARC, Philadelphia, PA; Horsham Memorial USARC, Horsham, PA; 1LT Ray S. Musselman Memorial USARC, Norristown, PA; North Penn Memorial USARC, Norristown, PA; MG J. Wurts Memorial USARC, Willow Grove, PA; and Area Maintenance Support Activity (AMSA) #23, Willow Grove, PA. Willow Grove NAS JRB is located approximately 18 miles north of the City of Philadelphia in Willow Grove, Montgomery County, Pennsylvania (Figure 1-1). The Commission recommendations were approved by the President on September 23, 2005, and forwarded to Congress. On November 9, 2005, the recommendations became law without alteration. The law requires that the recommendations of the Commission be implemented as provided for in the Defense Base Closure and Realignment Act of 1990 (Public Law 101-510), as amended.

In addition to the Army BRAC recommendations listed above, the Commission has made other recommendations concerning the Willow Grove NAS JRB, including the closure of the Naval Air Station and the establishment of an enclave for the Air National Guard 270th Engineering Installation Squadron, the Air National Guard 111th Fighter Wing, and the relocated Army Reserve units. The actions considered in this Environmental Assessment (EA) are limited to the construction and operation of a new AFRC at Willow Grove NAS JRB and do not include the closure of Willow Grove NAS JRB or the establishment of the new enclave. These Navy BRAC actions will be reviewed under separate NEPA analysis

The USAR coordinated preparation of this EA with the US Navy and the US Air Force. The location of the preferred alternative is in the northeastern portion of the Willow Grove NAS JRB (Figure 1-2). The land is currently owned by the Navy, but will be transferred to the Air Force in 2011 under BRAC.

This EA analyzes and documents environmental effects associated with the Army's proposed action. Details on the proposed action are provided in Section 2.

1.2 Purpose and Need

The purpose and need for the proposed action is to enhance the ability of the United States Army Reserve (USAR) to fulfill its military missions by providing facilities at Willow Grove NAS JRB with the capabilities to support national defense requirements, meet the peacetime mission requirements, and meet the cost-saving requirements of BRAC. The proposed action would enhance the ability of the USAR to fulfill its training requirements by allowing the consolidation of units from multiple locations into new centralized facilities.

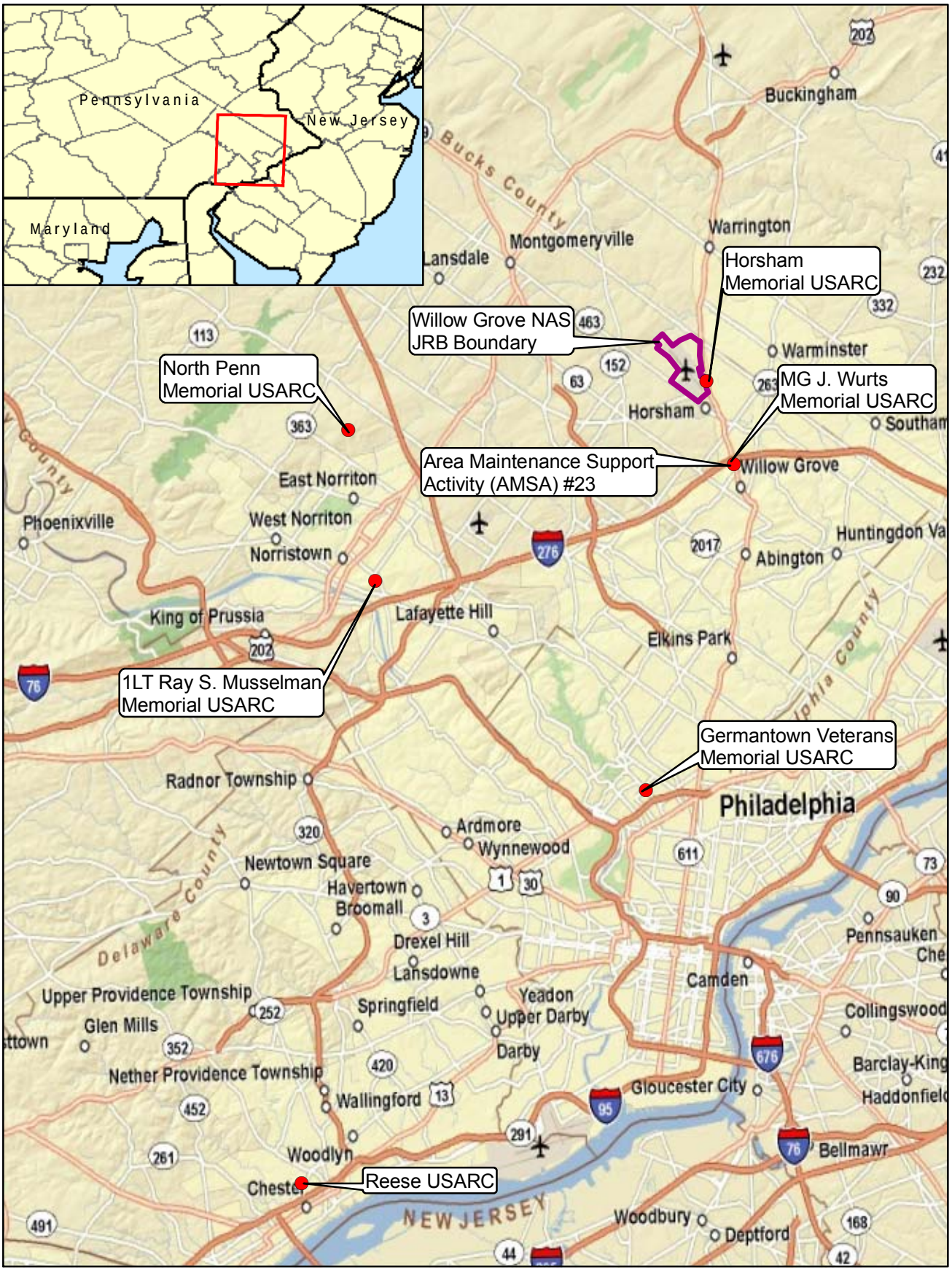
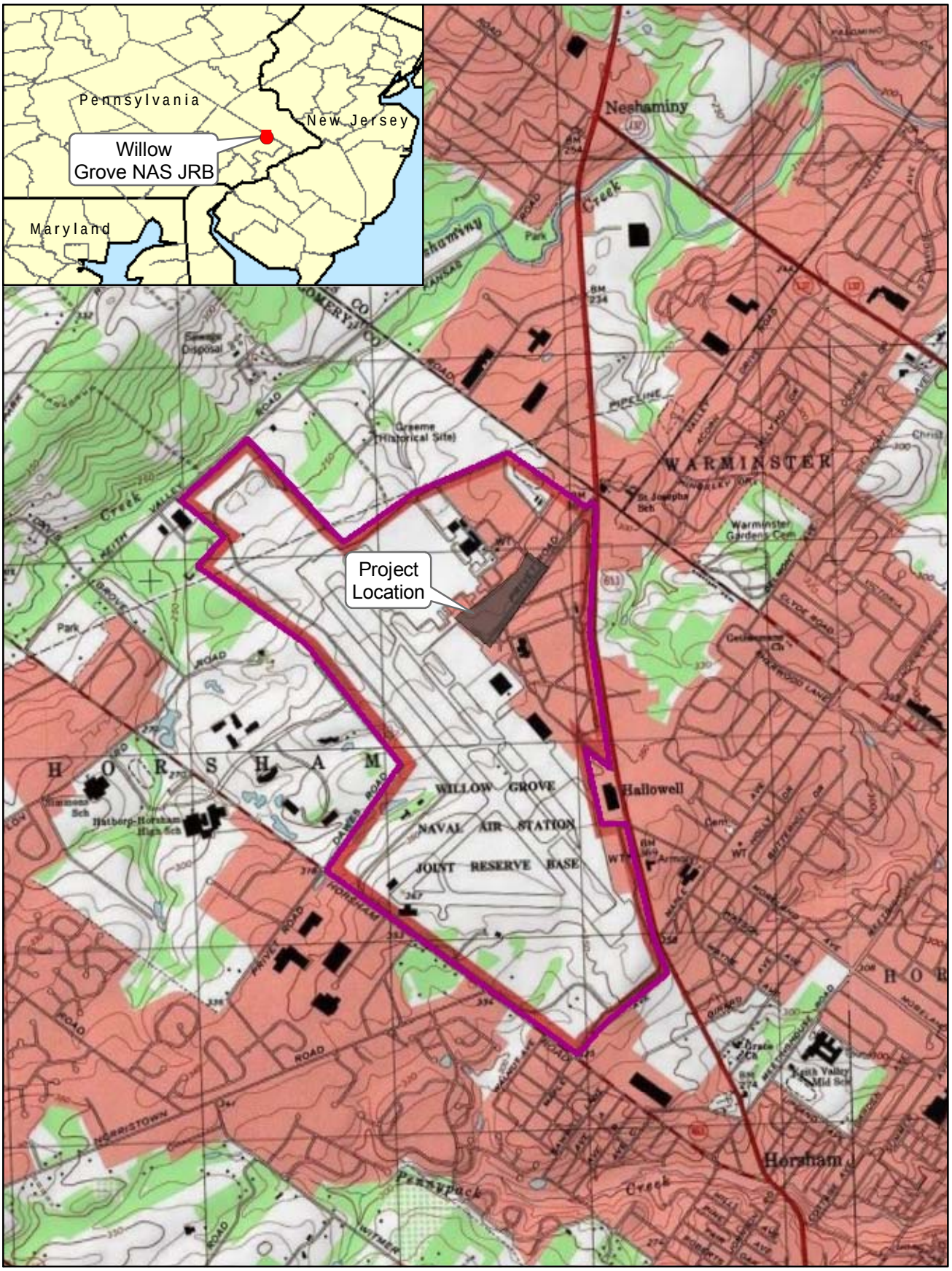


FIGURE 1-1
US Army Reserve Centers Recommended for Closure
BRAC Environmental Assessment
Willow Grove NAS JRB, Pennsylvania



LEGEND

Project Location

Willow Grove NAS JRB Boundary

N

0 750 1,500 3,000

Feet

FIGURE 1-2
Project Location Map
BRAC Environmental Assessment
Willow Grove NAS JRB, Pennsylvania

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The recommendations of the Commission, made in conformance with the provisions of the Defense Base Closure and Realignment Act of 1990, as amended, require the realignment of USAR personnel to Willow Grove NAS JRB, and the construction of support facilities. Pursuant to the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations, the Army has prepared this EA to address the environmental and socio-economic impacts of training activities and building construction to support realignment. This assessment includes an evaluation of reasonable alternatives.

The USAR is realigning units as directed by the Commission. This includes closing Pennsylvania USARCs in the cities of Chester, Philadelphia, Horsham, Norristown, and Willow Grove, and an AMSA in Willow Grove. These units are being realigned to Willow Grove NAS JRB. The proposed action would provide adequate consolidated facilities to support the units and facilities involved in the BRAC action.

The existing USAR facilities in the Willow Grove area are located on separate properties that cannot be expanded to house the realigned units. Existing facilities at Willow Grove NAS JRB are inadequate to support the operational requirements of the realigned USAR units, because they are not properly configured to allow the most effective training. Appropriate facilities must be provided to meet readiness, recruiting and retention, and training objectives. If the proposed AFRC is not provided, the units would have to operate and train in facilities not properly configured to allow the most effective training to complete mission requirements, and the BRAC recommendation would not be implemented.

1.3 Scope

This EA has been developed in accordance with NEPA and implementing regulations found at 40 Code of Federal Regulations (CFR) Part 1500 through Part 1508 (President's Council on Environmental Quality [CEQ], 2002), and 32 CFR 651 (Office of the Deputy Assistant Secretary of the Army, 2002). Its purpose is to inform decision-makers and the public of the likely environmental consequences of the proposed action and alternatives.

The Defense Base Closure and Realignment Act of 1990 specifies that in applying the provisions of NEPA to the process, the Secretary of Defense and the secretaries of the military departments concerned do not have to consider "(i) the need for closing or realigning the military installations which have been recommended for closure or realignment by the Commission, (ii) the need for transferring functions to any military installation that has been selected as the receiving installation, or (iii) military installations alternative to those recommended or selected" (Sec. 2905(c)(2)(B), Public Law 101-510, as amended). The Commission's deliberations and decisions, as well as the need for closing or realigning a military installation, are exempt from NEPA. Accordingly, this EA does not address the need for closure or realignment.

This EA identifies, documents, and evaluates the environmental and socioeconomic effects of demolition of existing facilities, construction of an AFRC, relocation of two facilities, widening of Privet Road, and realignment of USAR units and associated personnel to a new AFRC proposed at Willow Grove NAS JRB. An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and military technicians has analyzed the proposed action and alternatives in light of existing

conditions and has identified relevant beneficial and adverse effects associated with the action and alternatives.

This EA includes discussion of the potential environmental effects of the demolition, construction, facility relocation, road widening, and routine operation of the AFRC for the USAR units proposed at Willow Grove NAS JRB. Reasonably foreseeable future needs are assessed in the cumulative effects summary section of this EA. Additional requirements stemming from other military actions will undergo separate NEPA analysis and evaluation.

This EA also considers the potential impacts of the no action alternative, as required by NEPA, to provide a benchmark for comparison of the potential impacts of the proposed action and the alternatives.

1.4 Public Involvement

The Army invites public participation in the proposed federal action through the NEPA process. Consideration of the views and information of all interested persons promotes open communication and enables better decision-making. All agencies, organizations, and members of the public having a potential interest in the proposed action, including minority, low-income, disadvantaged, and Native American groups, are urged to participate in the decision-making process. Initial agency coordination letters were submitted to the United States Fish and Wildlife Service (USFWS) and the Pennsylvania State Historic Preservation Office (SHPO) (Appendix A). Responses to the coordination letters and documentation of follow-on coordination with these agencies are provided in Appendix A.

Public participation opportunities with respect to this EA and decision-making on the proposed action are guided by 32 CFR Part 651. Upon completion of the environmental analysis, the EA and Draft Finding of No Significant Impact (FNSI) will be made available to the public for comment for a period of 30 days, from June 22, 2009 through July 21, 2009. At the end of the 30-day period, the USAR will consider all comments submitted by individuals, agencies, and organizations. As appropriate, the USAR may then execute the FNSI and proceed with implementation of the proposed action. If it is determined that implementation of the proposed action would result in significant impacts, the USAR may commit to mitigation measures designed to reduce potential impacts below a level of significance, in which case the EA could still conclude with a FNSI. Alternatively, if a mitigated FNSI is not feasible, the USAR will publish in the Federal Register a Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS).

Throughout this process, the public may obtain information on the status and progress of the proposed action and the EA through the USAR, 99th Regional Support Command, attention: Laura Dell'Olio, 5231 South Scott Plaza, Fort Dix, New Jersey, 08640. The EA and Draft FNSI will also be available to the public at the following website: http://www.hqda.army.mil/acsim/brac/env_ea_review.htm.

1.5 Relevant Statutes and Executive Orders

A decision on whether to proceed with the proposed action depends on numerous factors such as mission requirements, schedule, availability of funding, and environmental considerations. In addressing environmental considerations, the USAR is guided by relevant

statutes (and their implementing regulations) and Executive Orders (EOs) that establish standards and provide guidance on environmental and natural resources management and planning. These include the Clean Air Act, Clean Water Act, Noise Control Act, Endangered Species Act, Migratory Bird Treaty Act, National Historic Preservation Act (NHPA), Archaeological Resources Protection Act, Native American Graves Protection and Repatriation Act, American Indian Religious Freedom Act, Resource Conservation and Recovery Act (RCRA), and Toxic Substances Control Act. EOs bearing on the proposed action include EO 11988 (*Floodplain Management*), EO 11990 (*Protection of Wetlands*), EO 12088 (*Federal Compliance with Pollution Control Standards*), EO 12580 (*Superfund Implementation*), EO 12898 (*Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*), EO 13045 (*Protection of Children from Environmental Health Risks and Safety Risks*), EO 13423 *(Strengthening Federal Environmental, Energy, and Transportation Management),* EO 13175 (*Consultation and Coordination with Indian Tribal Governments*), and EO 13186 (*Responsibilities of Federal Agencies to Protect Migratory Birds*). These authorities are addressed in various sections throughout this EA when relevant to particular environmental resources and conditions. The full text of the laws, regulations, and EOs is available on the Defense Environmental Network & Information Exchange Web site at http://www.denix.osd.mil. In addition, to the extent that other federal, state, or local laws or regulations are identified as being relevant to this proposed action, they are discussed in the body of this EA.

The means available to Army installation commanders to satisfy their facilities' space requirements are subject to policies set forth in various Army Regulations (ARs). AR 210-20 (*Installation Master Planning*) establishes Army policy to maximize use of existing facilities. The regulation directs that new construction will not be authorized to meet an installation mission that can be supported by existing underutilized and adequate facilities, provided that the use of such facilities does not degrade operational efficiency.

2.0 Description of the Proposed Action

2.1 Introduction

This section describes the Army's proposed action for carrying out the Commission's recommendation. The proposed action is to implement the Commission's recommendation as mandated by the BRAC legislation. The Commission's recommendation is to:

"Close the Reese United States Army Reserve Center in Chester, PA, the United States Army Reserve Organizational Maintenance Shop in Chester, PA, the Germantown Veterans Memorial United States Army Reserve Center in Philadelphia, PA, the Horsham Memorial United States Army Reserve Center in Horsham, PA, the 1LT Ray S. Musselman Memorial United States Army Reserve Center in Norristown, PA, and the North Penn Memorial United States Army Reserve Center in Norristown, PA, and relocate units to a new Armed Forces Reserve Center with an organizational maintenance facility at Willow Grove Joint Reserve Base, PA. The Army shall establish an enclave at Willow Grove Joint Reserve Base, PA, to retain essential facilities to support activities of the Reserve Components."

To accomplish this recommendation, the USAR is realigning units from the six USARCs and one AMSA described in the BRAC legislation above to a new facility that would be

constructed within the reserve enclave being retained at Willow Grove NAS JRB. At present, there are no facilities within the enclave being retained at Willow Grove NAS JRB sufficient to support the units that will be realigned.

2.2 Implementation Proposed

The proposed action implements the BRAC Commission recommendations. To accomplish these recommendations, the USAR is realigning units from the six USARCs and one AMSA described in the BRAC legislation to a new facility that would be constructed at Willow Grove NAS JRB. At present, there are no facilities at Willow Grove NAS JRB sufficient to support the units that will be realigned. The proposed action would result in the realignment of approximately 38 full-time personnel and up to 800 reservists to the new AFRC. No relocation of USAR personnel is required, as all units are currently assigned within the Philadelphia area.

3.0 Alternatives

This section presents information on the alternatives considered. The preferred alternative will meet all requirements of the purpose and need and is further discussed in Section 3.1. As is discussed in Section 3.2, another alternative was considered early in the NEPA process; however, because it did not fully meet the needs of the proposed action it will not be carried forward for further analysis. The no action alternative is presented in Section 3.3.

The suitability of alternatives was evaluated on the basis of their:

- Feasibility
- Compliance with BRAC Recommendations
- Environmental and Cultural Resource Constraints
- Military Constraints

3.1 Preferred Alternative

The preferred alternative includes demolition of existing facilities, construction of an AFRC, relocation of facilities, widening of Privet Road, and realignment of USAR units and associated personnel to the new AFRC at Willow Grove NAS JRB. Table 3-1 identifies the components of the proposed AFRC and the area associated with each component.

TABLE 3-1
Proposed Construction Components
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Activity	Approximate Area
Construct Armed Forces Reserve Center	73,281 ft^2
Construct AMSA /OMS	16,452 ft^2
Construct Unheated Storage Building	5,467 ft^2
Construct Organizational Parking	24,040 yd^2
Construct Privately Owned Vehicle Parking	8,470 yd^2

TABLE 3-1
Proposed Construction Components
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

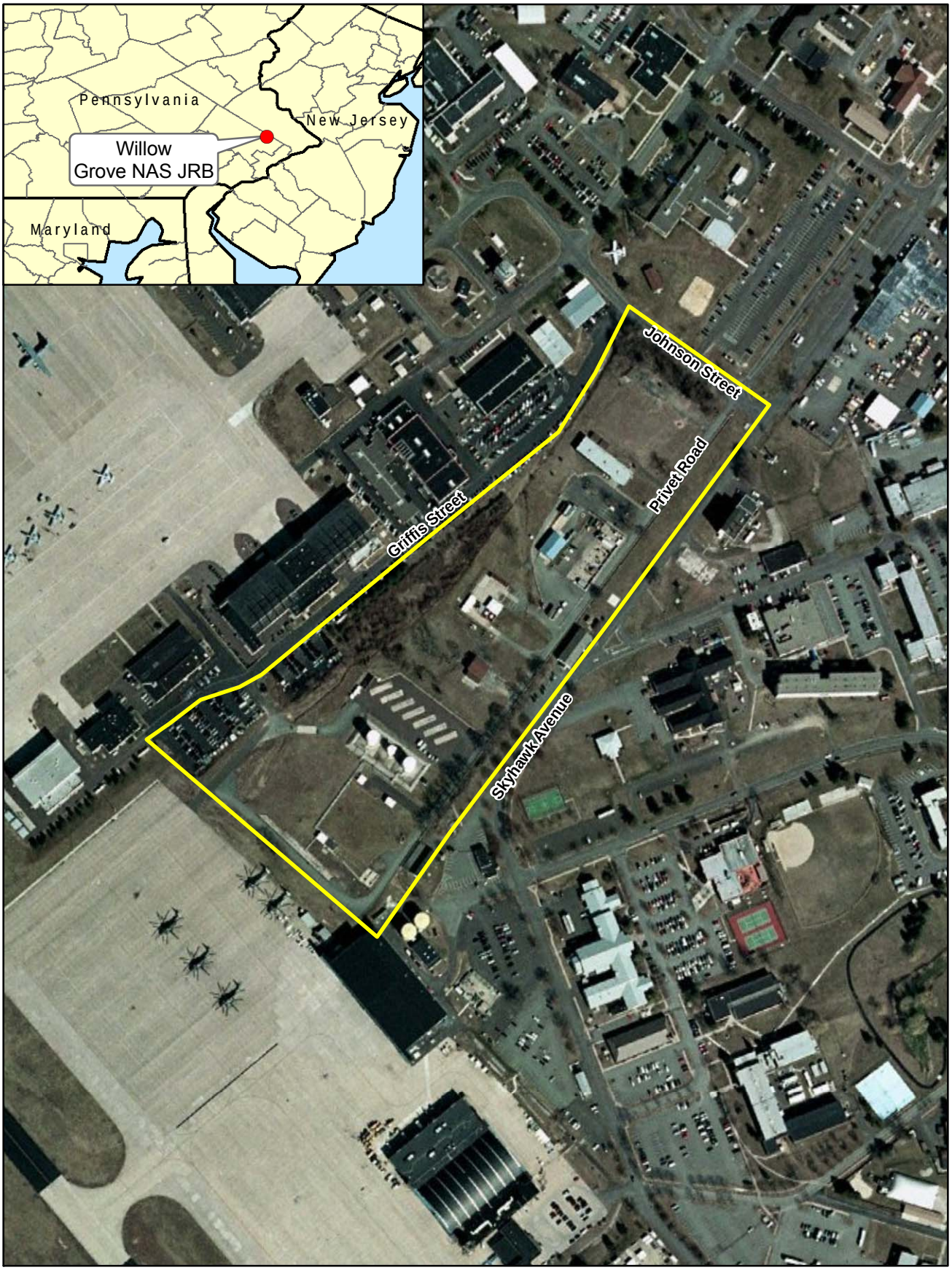
Activity	Approximate Area
and Roads (includes Privet Road widening)	
Demolish Five Existing Facilities	- 10,546 ft^2
Construct Stormwater Retention Pond	27,000 ft^2
TOTAL	**Structures: 95,200 ft^2** **Parking & Roads: 32,510 yd^2** **Demolition: 10,546 ft^2**

The preferred alternative would be implemented in the northeastern portion of the Willow Grove NAS JRB and would be bounded by Skyhawk Avenue on the east, Johnson Street to the north, Griffis Street to the west, and the airfield apron to the south (Figure 3-1).

The proposed AFRC would be a two-story structure providing administrative, educational, assembly, library, learning center, vault, weapons simulator, and physical fitness areas for the realigned USAR units (Figure 3-2). The combined AMSA/OMS facility would consist of a one-story structure with mechanical and electrical equipment, a locker room, latrine, break/assembly area, and repair and machine shops. Additional support facilities would include unit storage space and adequate parking for military and privately owned vehicles. The AMSA/OMS would be colocated with the AFRC to reduce construction costs and provide greater ease of access by all associated units. To facilitate access, Privet Road would be widened from approximately 15 feet to 24 feet.

There are five facilities currently located in the project area that would be demolished as part of the construction of the proposed AFRC.

- Building 640, salt shed (1,620 ft^2), would be demolished and storage of salt would be moved to the vicinity of Building 78 at Willow Grove NAS JRB.
- Building 641, recycle building (240 ft^2), would be demolished and recycling operations would be moved to Building 127 at Willow Grove NAS JRB. Demolition would include cleaning and removal of the grit chamber.
- Building 192, bowling alley (6,200 ft^2), would be demolished. This facility is no longer needed and would therefore not be replaced or relocated.
- Buildings 128 and 129, liquid oxygen farm (884 ft^2), which includes the liquid oxygen storage tanks (one 2,000-gallon tank and two 1,000-gallon tanks) and associated structures and piping, would be demolished after April 1, 2011, when the Naval mission would be complete and the liquid oxygen farm would no longer be needed.



LEGEND

Project Location

N

0 100 200 400

Feet

FIGURE 3-1
Proposed Project Location
BRAC Environmental Assessment
Willow Grove NAS JRB, Pennsylvania

CH2MHILL

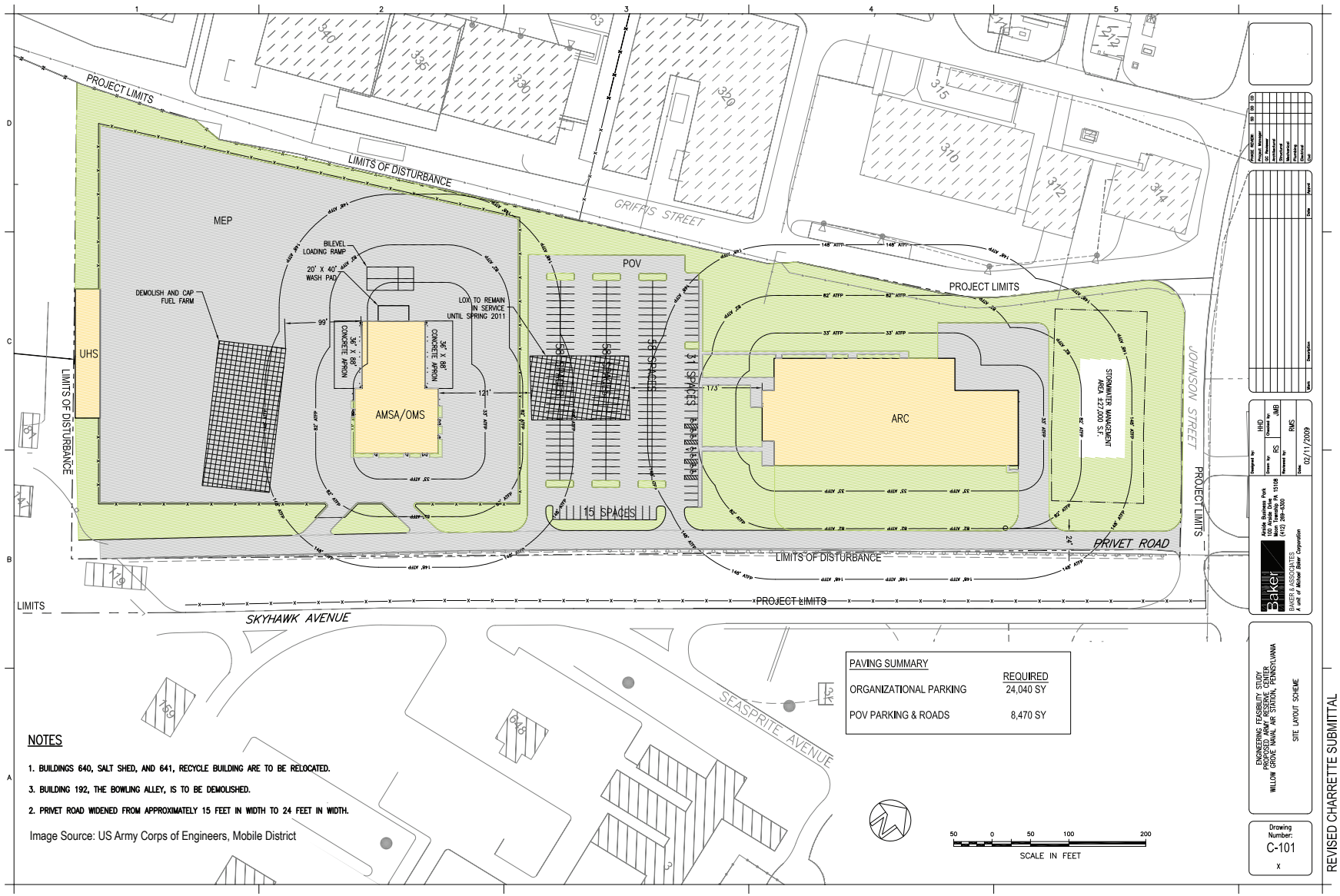


FIGURE 3-2
Preferred Alternative
BRAC Environmental Assessment
Willow Grove NAS JRB, Pennsylvania

- Buildings 81 and 147, fuel farm office (1,600 ft^2), and associated fuel tanks and piping would be demolished. These tanks are currently empty and unused. This facility is no longer needed and would therefore not be replaced or relocated. The fuel farm is located in a former fuel farm area (Site 10), which included two 210,000-gallon underground storage tanks, a 500-gallon waste oil tank, and associated piping. A release of fuel in 1986 led to remediation of portions of the site from 1998 to 2003. In 2004, the Pennsylvania Department of Environmental Protection (PADEP) agreed that no further remedial action was needed. However, the soil and groundwater do not meet the conditions of unrestricted use. Therefore, additional remediation of the site may be required under Pennsylvania Act 2 as part of this demolition and construction project.

Consistent with the Army's sustainability policy, all new construction associated with implementing the proposed action will meet the Leadership in Energy and Environmental Design Silver standard. Sustainable design will improve energy efficiency of the facilities throughout the lifespan of the new training complex.

3.2 Alternative Not Considered in Detail: Construct AFRC and OMS at Another Location

A second location within the Willow Grove NAS JRB facility was considered for construction of the proposed AFRC. This alternative included additions to or expansion of the existing MG J. Wurts Memorial USARC located on the western side of Willow Grove NAS JRB. The facility is located in Building 176, approximately 0.3 miles southeast of the intersection of Privet Road and State Road 463 (Horsham Road) (Figure 1-2). The components of this alternative were the same as those described for the preferred alternative, except that there would be no demolition or relocation of facilities. Further investigations identified that land associated with the MG J. Wurts Memorial USARC would likely not be located within the revised boundaries of the future enclave. Compliance with BRAC requires the proposed facilities to be located at Willow Grove NAS JRB; therefore, the alternative was not considered viable and was eliminated from further consideration.

3.3 No Action Alternative

Under the no action alternative, the USAR would not construct the new AFRC. Implementation of the no action alternative would result in units continuing to occupy multiple facilities throughout the Philadelphia area. The existing facilities are not properly configured to allow the most effective training to complete mission requirements. Under the no action alternative, the BRAC recommendation would not be implemented.

The no action alternative would not address the purpose and need for the proposed action; however, inclusion of the no action alternative serves as a benchmark for evaluation of the potential effects of the proposed federal action. Therefore, the no action alternative is evaluated in detail in this EA.

4.0 Affected Environment and Consequences

4.1 Introduction

This section describes the existing environmental and socioeconomic conditions potentially affected by the proposed action as well as the potential environmental and socioeconomic impacts of implementing the proposed action or the no action alternative.

This section provides information to serve as a baseline from which to identify and evaluate environmental and socioeconomic changes likely to result from implementation of the proposed action. Baseline conditions represent current conditions.

In compliance with NEPA, CEQ guidelines, and 32 CFR Part 651, et seq., the description of the affected environment focuses on those resources and conditions potentially subject to impacts. These include land use, aesthetics and visual resources, air quality, noise, geology and soils, water resources, biological resources, cultural resources, socioeconomics, transportation, utilities, and hazardous and toxic substances.

Subsequent to the description of the components of the affected environment, this section presents the analysis of the direct, indirect, and cumulative environmental and socioeconomic effects that would likely occur with the proposed action or no action alternative and identifies adverse environmental effects that cannot be avoided through project design.

4.1.1 Direct versus Indirect Effects

The terms "effect" and "impact" are synonymous as used in this EA. Effects may be beneficial or adverse and may apply to the full range of natural, aesthetic, historic, cultural, and economic resources within the project area and also within the surrounding area. Definitions and examples of direct and indirect impacts as used in this document are as follows:

- ***Direct Impact.*** A direct impact is one that would be caused directly by implementing an alternative and that would occur at the same time and place.
- ***Indirect Impact.*** An indirect impact is one that would be caused by implementing an alternative that would occur later in time or farther removed in distance but would still be a reasonably foreseeable outcome of the action. Indirect impacts may include induced changes in the pattern of land use, population density, or growth rate, and indirect effects to air, water, and other natural resources and social systems.
- ***Relationship between Direct versus Indirect Impacts.*** For direct impacts to occur, a resource must be present. For example, if highly erodible soils were disturbed as a direct result of the use of heavy equipment during construction of a home, there could be a direct effect on soils resulting from erosion. This could indirectly affect water quality if stormwater runoff containing sediment from the construction site were to enter a stream.

4.1.2 Short-Term versus Long-Term Effects

Effects are also expressed in terms of duration. The duration of short-term impacts is considered to be one year or less. For example, the construction of a building would likely expose soil in the immediate area of construction. However, this effect would be considered short-term because it would be expected that vegetation would re-establish on the disturbed area within a year of the disturbance. Long-term impacts are described as lasting beyond one year. Long-term impacts can potentially continue in perpetuity, in which case they would also be described as permanent.

4.1.3 Intensity of Effects

The magnitude of effects of an action must be considered regardless of whether the effects are adverse or beneficial. The following terms are used to describe the magnitude of impacts:

- No Impact: The action does not cause a detectable change.
- Negligible: The impact is at the lowest level of detection.
- Minor: The impact is slight but detectable.
- Moderate: The impact is readily apparent.
- Major: The impact is severely adverse or exceptionally beneficial.

4.1.4 Significance

In accordance with CEQ regulations and implementing guidance, impacts are also evaluated in terms of whether they are significant. Both short-term and long-term effects are relevant to the consideration of significance. Significant, as defined in the CEQ regulations for implementing NEPA at 40 CFR 1508.27, requires consideration of context and intensity.

Context requires that significance may be considered with regard to society, the affected region, affected interests, and the locality. The scale of consideration for context varies with the setting and magnitude of the action. A small, site-specific action is best evaluated relative to the location rather than to the entire world.

4.1.5 Cumulative Effects

The most severe environmental degradation may not result from the direct effects of a particular action, but from the combination of effects of multiple, independent actions over time. As defined in 40 CFR 1508.7 CEQ Regulations, a cumulative effect is the

> impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions.

Some authorities contend that most environmental effects can be seen as cumulative because almost all systems have already been modified. Principles of cumulative effects analysis are described in the CEQ guide *Considering Cumulative Effects under the National Environmental Policy Act*. CEQ guidance on cumulative impacts analysis states:

> For cumulative effects analysis to help the decision-maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully. The boundaries for evaluating cumulative effects should be expanded to the point at which the resource is no longer affected significantly or the effects are no longer of interest to affected parties. (CEQ, 2006)

4.1.6 Mitigation

The alternatives considered in this EA could have environmental and socioeconomic impacts resulting from implementation that would require mitigation. Where potentially significant impacts are identified, measures that could be implemented to mitigate the magnitude of impacts will be discussed. Potential mitigation actions could include:

- Rectifying an impact by repairing, rehabilitating, or restoring the affected environment.
- Reducing or eliminating an impact over time by preservation and maintenance operations during the life of the action.
- Compensating for an impact by replacing or providing substitute resources or environments.

Where no significant adverse impacts are identified, mitigation measures are not proposed. Absent mitigation, Willow Grove NAS JRB will implement best management practices (BMPs) and project design features to avoid or minimize unavoidable impacts so they would not be significant.

4.2 Land Use

4.2.1 Affected Environment

4.2.1.1 Regional Geographic Setting and Location

Willow Grove NAS JRB occupies approximately 1,088 acres in Horsham Township, Montgomery County, approximately 18 miles north of Philadelphia (population 1,449,634). Surrounding communities include Hallowell, Neshaminy, Prospective, and Maple Glen. Land use adjacent to the base is characterized by the urban development originating from the greater Philadelphia metropolitan area to the south. Land use to the south and east of the base includes a mixture of residential, commercial, and industrial uses. Land use to the north and west of the base includes a mixture of agricultural, undeveloped, residential, and commercial use (Willow Grove NAS JRB, 2001).

4.2.1.2 Installation Land

Willow Grove NAS JRB is divided into three general sections. The northeast section consists of a densely developed area of approximately 200 acres containing the majority of the Navy structures on-base including administrative, housing, personnel, and utility functions (Willow Grove NAS JRB, 2006). The proposed project area is located in this section. The southeast section is approximately 250 acres, less developed than the northeast section, and contains the majority of the Army and Marines Reserve activities and munitions storage.

The MG J. Wurts Memorial USARC is located in this area (Willow Grove NAS JRB, 2006). The largest section, of approximately 460 acres separating the other two areas, contains the main runway with associated buildings to support flight activity and storage (Willow Grove NAS JRB, 2006).

Willow Grove NAS JRB does not have local zoning restrictions. The majority of lands adjacent to Willow Grove NAS JRB are zoned light industrial and commercial with scattered residential developments just beyond (Willow Grove NAS JRB, 2006).

The proposed project area is in the northeast section of Willow Grove NAS JRB. This area is bounded by Skyhawk Avenue on the east, Johnson Street to the north, Griffis Street to the west, and the airfield apron to the south.

Five structures exist in the proposed project area: the bowling alley, recycle center, salt shed, liquid oxygen farm (including liquid oxygen storage tanks), and the fuel farm office and associated fuel tanks and piping.

4.2.1.3 Surrounding Land Use

Lands surrounding the proposed project area are part of Willow Grove NAS JRB and are used for military purposes. These areas are generally used to support base operations and include a multitude of operational and personnel support facilities and buildings (Willow Grove NAS JRB, 2001).

Notable land uses include the Family Support Center (Building 167), which lies between Skyhawk Avenue and Privet Road east of the proposed project area and the Child Development Center (Building 3) and the Housing Services Building (Building 12), which are located southeast of the proposed project area, east of Skyhawk Avenue. To the north, west, and southwest of the proposed project area are Navy airfield support structures, including a runway and tarmac. In addition, the Air National Guard (ANG) occupies the area across Griffis Street, to the northwest of the proposed project area.

4.2.2 Consequences

4.2.2.1 Preferred Alternative

No impact to the surrounding land use at Willow Grove NAS JRB is expected under the preferred alternative. The proposed project area consists of lands previously disturbed or already containing development (that is, buildings and parking lots). The proposed AFRC would be similar to and would not conflict with the adjacent military land uses on Willow Grove NAS JRB. A minor change in land use is expected from the preferred alternative because some of the land that is currently green space would be converted to parking lots, buildings, or additional road area from the widening of Privet Road.

4.2.2.2 No Action Alternative

No impact to land use at Willow Grove NAS JRB would occur under the no action alternative. Under this alternative, no construction would take place and therefore no changes to existing land use would occur.

4.3 Aesthetics and Visual Resources

4.3.1 Affected Environment

There are five facilities currently located in the project area. These buildings include the salt shed, recycle building, bowling alley, liquid oxygen farm (including liquid oxygen storage tanks), and the fuel farm office and associated fuel tanks and piping.

4.3.2 Consequences

4.3.2.1 Preferred Alternative

Existing structures within the proposed project area would be demolished and replaced with the proposed AFRC. No impacts to aesthetics or visual resources are expected to occur as a result of implementation of the preferred alternative because the visual environment would remain one of a military installation.

The proposed structures would not be visible from SR 611 or SR 463, because the views are blocked by existing development. The preferred alternative would be constructed within an already developed area with an array of structures and manmade features that are typical of a military installation. The preferred alternative would not introduce a noticeable change in this already-modified visual environment.

4.3.2.2 No Action Alternative

No impacts to aesthetics or visual resources would occur, as no construction would be done. Conditions would remain as they are.

4.4 Air Quality

4.4.1 Affected Environment

4.4.1.1 Ambient Air Quality Conditions

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS include two types of air quality standards. Primary standards protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (EPA, 2006). EPA has established NAAQS for six principal pollutants, which are called "criteria pollutants" (Table 4-1).

TABLE 4-1
Criteria Pollutants within NAAQS
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Pollutant	Primary Standards[a]	Averaging Times	Secondary Standards
Carbon Monoxide (CO)	9 ppm (10 mg/m^3)	8-hour[b]	None
	35 ppm (40 mg/m^3)	1-hour[b]	None
Lead	0.15 µg/m^3	Rolling 3-Month Average	Same as Primary
	1.5 µg/m^3	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter (PM)			
PM_{10}	150 µg/m^3	24-hour[c]	
$PM_{2.5}$	15.0 µg/m^3	Annual[d] (Arithmetic Mean)	Same as Primary
	35 ug/m^3	24-hour[e]	
Ozone	0.075 ppm	8-hour[f]	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arithmetic Mean)	
	0.14 ppm	24-hour[b]	
		3-hour[b]	0.5 ppm (1300 µg/m^3)

[a] ppm = parts per million, µg/m^3 = micrograms per cubic meter

[b] Not to be exceeded more than once per year.

[c] Not to be exceeded more than once per year on average over 3 years.

[d] To attain this standard, the 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.

[e] To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3 (effective December 17, 2006).

[f] To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)

Source: http://www.epa.gov/air/criteria.html (EPA, 2009)

Areas that meet the air quality standard for the criteria pollutants are designated as being "in attainment." Areas that do not meet the air quality standard for one of the criteria pollutants may be subject to the formal rule-making process and designated as being "in nonattainment" for that standard.

Nonattainment areas for some pollutants, including ozone, are further classified as regulated under Subpart 1 or Subpart 2, based on the magnitude of the problem. Subpart 1 ("basic" nonattainment) is applied to those areas where the problem is less severe and contains general requirements for nonattainment areas. Subpart 2 is applied to areas with severe problems and establishes a classification scheme for ozone nonattainment areas with more specific requirements. An area would be classified under Subpart 2 as marginal,

moderate, serious, or severe based on the most recent 3 years of data. All other 8-hour ozone nonattainment areas are covered under Subpart 1 (EPA, 2006).

4.4.1.2 Air Pollutant Emissions at Willow Grove NAS JRB

Federal regulations in 40 CFR 81 delineate certain air quality control regions, based on population and topographic criteria closely approximating each air basin. The potential influence of emissions on regional air quality would typically be confined to the air basin in which the emissions occur. Willow Grove NAS JRB is located in the Philadelphia-Wilmington, PA-NJ-DE, nonattainment area for $PM_{2.5}$; and in the Philadelphia-Wilmington-Atlantic City, PA-NJ-MD-DE, nonattainment area for ozone (PADEP, 2008). The project area is located in Montgomery County close to the Bucks County line. The PADEP indicates that Montgomery and Bucks Counties are in nonattainment for $PM_{2.5}$ and moderate nonattainment for the 8-hour ozone standard (PADEP, 2008).

Willow Grove NAS JRB is subject to its Title V/State Operating Permit No. 46-00079, which is administered by PADEP. The permit authorizes and limits the operation of small combustion units, a boiler steam plant, small generators, natural gas units, jet engine test cells, aboveground storage tanks, paint booths, and painting activities (PADEP, 2001). The current activities at the base are regulated under the PADEP permit and are not considered to be an air quality impact as long as they do not exceed the levels indicated in the permit.

4.4.2 Consequences

Potential air quality impacts associated with the proposed action area were evaluated based on the following factors: (1) whether potential emissions are localized and temporary; and (2) whether a reasonable potential exists for a violation of an ambient air quality standard.

4.4.2.1 Preferred Alternative

The preferred alternative would result in short-term, localized air quality impacts during demolition, building construction, and road widening associated with the new AFRC. The operation of heavy construction equipment and its associated exhaust would increase diesel exhaust emissions and would suspend fugitive dust and other construction related particles in the air. The volume of dust emitted would vary depending on the level of activity, specific construction techniques, soil characterizations, and weather conditions. These temporary impacts would be minimized by requirements in the specifications that the contractor keep the equipment maintained and operating in a clean manner. Construction dust and particles would be reduced by implementing fugitive dust control measures, such as the use of water. Construction activities would not violate applicable air quality control regulations as described below.

The operation and training activities anticipated from the preferred alternative would result in a long-term increase of criteria pollutants from stationary and mobile sources. Emissions of criteria pollutants would result from the proposed natural gas-fired boilers and natural-gas water heaters that would be installed in the heated facilities. No other new stationary sources of emissions are anticipated from the preferred alternative. Mobile source emissions would also be generated from the projected addition of 219 new vehicles (both government-owned and privately-owned vehicles). If the new emission sources result in a need to change the Title V permit, the USAR would coordinate with PADEP, to modify the permit.

Emissions from stationary and mobile sources are quantified by using the Air Conformity Applicability Model (ACAM), version 4.3.0 (AFCEE, 2005a; AFCEE, 2005b). The ACAM model was used to quantify all demolition, construction, and point source emissions, including the mobile emissions of construction workers or mobile construction equipment from the preferred alternative. Table 4-2 summarizes the projected total air emissions. The projected emissions have been estimated using typical equipment selection for similar construction. Actual specifications of fuel usages, construction equipment, and vehicle mileage have been estimated based on other similar projects. Calculations used to develop these estimates are included in Appendix B. PM_{10} emission factors were conservatively used to estimate emissions of PM_{25}.

TABLE 4-2
Summary of 2009 to 2012 Total Emissions from Action at Willow Grove NAS JRB
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Source Category	CO	NO_X	SO_2	VOC	PM_{10}
Emissions (tpy)					
2009					
Area Sources					
Other Phase I Const. – Grading Operations	0.00	0.00	0.00	0.00	3.08
Other Phase II Const. – Acres Paved	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. – Mobile Equipment	4.26	10.17	1.26	0.93	0.82
Other Phase II Const. – Non-Residential Architectural Coatings	0.00	0.00	0.00	0.09	0.00
Other Phase II Const. – Residential Architectural Coatings	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. – Stationary Equip.	28.91	0.75	0.04	1.08	0.02
Other Phase II Const. – Workers Trips	0.80	0.05	0.00	0.05	0.01
Other Phase I Const. – Grading Equipment	0.05	0.19	0.02	0.02	0.02
Demolition	0.00	0.00	0.00	0.00	1.37
2009 Total	34.02	11.15	1.31	2.17	5.31
2010					
Area Sources					
Other Phase II Const. – Workers Trips	1.91	0.09	0.00	0.09	0.02
Other Phase II Const. – Acres Paved	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. – Mobile Equipment	10.24	24.41	3.02	2.23	1.97
Other Phase II Const. – Non-Residential Architectural Coatings	0.00	0.00	0.00	0.22	0.00
Other Phase II Const. – Residential Architectural Coatings	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. – Stationary Equip.	69.43	1.80	0.09	2.60	0.05

TABLE 4-2
Summary of 2009 to 2012 Total Emissions from Action at Willow Grove NAS JRB
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Source Category	CO	NO_X	SO_2	VOC	PM_{10}
Emissions (tpy)					
2010 Total	81.58	26.31	3.11	5.14	2.04
2011					
Area Sources					
Other Phase II Const. – Mobile Equipment	3.45	8.23	1.02	0.75	0.66
Other Phase II Const. – Non-Residential Architectural Coatings	0.00	0.00	0.00	0.07	0.00
Other Phase II Const. – Residential Architectural Coatings	0.00	0.00	0.00	0.00	0.00
Other Phase II Const. – Stationary Equip.	23.40	0.61	0.03	0.88	0.02
Other Phase II Const. – Workers Trips	0.64	0.03	0.00	0.03	0.01
Other Phase II Const. – Acres Paved	0.00	0.00	0.00	0.00	0.00
Total	27.49	8.86	1.05	1.73	0.69
Mobile Sources					
Mobile – On-Road GOV VMT	0.80	0.11	0.00	0.07	0.00
Off-Road Base Support Vehicles	0.28	0.12	0.01	0.03	0.01
Total	1.08	0.23	0.01	0.10	0.01
Point Sources					
Miscellaneous Point Sources	0.00	0.00	0.00	0.00	0.00
Other Const. – Facility Heating	0.26	0.32	0.00	0.02	0.02
Residential Space Heating	0.00	0.00	0.00	0.00	0.00
Total	0.26	0.32	0.00	0.02	0.02
2011 Total	28.83	9.41	1.06	1.85	0.72
2012					
Mobile Sources					
Mobile – On-Road GOV VMT	1.60	0.22	0.00	0.14	0.00
Off-Road Base Support Vehicles	0.38	0.16	0.01	0.04	0.02
Total	1.98	0.38	0.01	0.18	0.02
Point Sources					
Miscellaneous Point Sources	0.00	0.00	0.00	0.00	0.00
Other Const. – Facility Heating	0.35	0.42	0.00	0.02	0.03
Residential Space Heating	0.00	0.00	0.00	0.00	0.00

TABLE 4-2
Summary of 2009 to 2012 Total Emissions from Action at Willow Grove NAS JRB
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Source Category	CO	NO_X	SO_2	VOC	PM_{10}
	Emissions (tpy)				
Total	0.35	0.42	0.00	0.02	0.03
2012 Total	2.33	0.80	0.01	0.20	0.05

Source: Appendix B (ACAM Emissions Summary Report)
tpy = tons per year; VOCs = volatile organic compounds

Based upon the estimated emissions in Table 4-2, operation and training activities would result in a long-term increase of criteria pollutants from stationary and mobile sources. However, the preferred alternative is not anticipated to significantly impact existing or future air quality as the estimated emissions from operation of the proposed AFRC are well below the threshold levels of the regulatory programs outlined below.

General Conformity

The CAA General Conformity Rule (40 CFR Parts 6, 51, and 93) requires federal agencies to make written conformity determinations for federal actions in or affecting nonattainment or maintenance areas. Proposals for federal actions must include evaluations of potential changes in direct and indirect air emissions caused by the actions and must determine whether the actions conform to applicable state and federal implementation plans.

The maximum increase in air emissions that is exempt from a detailed air quality analysis is called the *de minimis* level. As defined by the general conformity rule, if the emissions of a criteria pollutant (or its precursors) do not exceed the *de minimis* level, the federal action has minimal air quality impact, and therefore, the action is determined to conform for the pollutant under study and no further analysis is necessary. Conversely, if the total direct and indirect emissions of a pollutant are above the *de minimis* level, a formal general conformity determination is required for that pollutant. The *de minimis* levels for each pollutant are defined in the Federal Conformity Rule and vary depending on the pollutant and the severity of the nonattainment status.

Montgomery and Bucks Counties are in attainment area for all NAAQS pollutants except for ozone and $PM_{2.5}$. The region is considered to be in moderate nonattainment for ozone. For a moderate ozone nonattainment area, the *de minimis* criterion is 100 tpy for the ozone precursor NO_x and 50 tpy for the ozone precursor VOC. The $PM_{2.5}$ nonattainment designation has a *de minimis* criterion of 100 tpy for directly emitted $PM_{2.5}$ and each of the precursors that form it (NOx, SO_2, VOCs, and ammonia [NH_3]). The 100 tpy threshold applies separately to each precursor. Ammonia is not a significant pollutant generated from the preferred alternative, and was not modeled.

Air quality emissions from the preferred alternative are not expected to result in an exceedance of the *de minimis* levels for NOx, VOC, or $PM_{2.5}$ precursors (See Table 4-2). Therefore, on the basis of the *de minimis* criteria set forth in the General Conformity rule, the preferred alternative is exempt from the CAA conformity requirements and does not

require a detailed analysis of air quality. Appendix C contains a general conformity record of non-applicability for the preferred alternative.

Prevention of Significant Deterioration (PSD)

The PSD program is designed to keep an attainment area in continued compliance with the NAAQS. PSD seeks to limit the amount of air pollutants released by a new or modified facility in an area that meets NAAQS. As stated earlier, the proposed project area is located in an attainment area for all criteria pollutants, except for ozone and $PM_{2.5}$. PSD approval would be required for the facility if the proposed project was a new major source or a major source making a major modification in an attainment area, resulting in a net emissions increase as specified in the Clean Air Act (CAA). A major source is defined as a stationary source having the potential to emit 250 tpy or more of a regulated new source review pollutant. The operation of the AFRC is expected to generate emissions well below the PSD threshold of 250 tpy (Table 4-2); therefore, the preferred alternative would not be subject to PSD requirements. Emissions from construction are not subject to PSD requirements because they are temporary in nature.

Nonattainment New Source Review (NNSR)

CAA and Pennsylvania regulations require that owner/operators proposing a new major stationary source or modification to a major stationary source in a nonattainment area must obtain NSR approval from the PADEP prior to construction. Willow Grove NAS JRB is located in a non-attainment area for ozone and therefore must be evaluated against ozone precursors, nitrogen oxide (NOx) and VOCs, and $PM_{2.5}$. As the estimated permanent emissions from operation of the proposed AFRC provided in Table 4-2 do not exceed new major stationary source/modification thresholds for NOx (25 tpy), VOC (25 tpy), or $PM_{2.5}$ (100 tpy), the NNSR Program does not apply to the preferred alternative. Emissions from construction are not subject to NNSR Program requirements because they are temporary in nature.

4.4.2.2 No Action Alternative

Implementation of the no action alternative would not result in a change in current conditions, and therefore, no impacts to air quality would occur.

4.5 Noise

4.5.1 Affected Environment

For determination of impacts to human receptors, noise measurements are weighted to increase the contribution of noises within the normal range of human hearing and decrease the contribution of noises outside the normal range of human hearing. Human hearing is best approximated by using an A-weighted decibel scale (dBA). When sound pressure doubles, the dBA level increases by 3. Psychologically, most humans perceive a doubling of sound as an increase of 10 dBA. Sound pressure decreases with distance from the source. Typically, the amount of noise is halved as the distance from the source doubles (EPA, 1974).

Willow Grove NAS JRB is located in an urban area with nearby commercial and residential areas. The closest noise receptors are located approximately 0.3 miles northeast of the proposed project area and include the residences on West County Line Road south of the intersection with SR 611. Noise at the base is generated by stationary sources (that is, HVAC systems, emergency power generators, and various mechanical units) and by mobile sources (that is, heavy equipment, military vehicles and aircraft). Noise at the proposed project area is dominated by the aircraft operations at the adjacent airfield located to the south (Willow Grove NAS JRB, 2001).

4.5.2 Consequences

4.5.2.1 Preferred Alternative

The preferred alternative would cause minor short-term adverse impacts to noise from construction activities. The noise impacts would be restricted to the daylight hours during weekdays. The noise increase would be most noticeable during demolition and grading activities. Because of the timing of the construction-related noise (weekdays during the day), persons outdoors at nearby residences could experience an increase in noise. The minor, temporary impacts from construction noise would not be significant. No negative health impacts would result from construction-related noise.

Routine operation of the AFRC would result in intermittent vehicle noise that could be audible from the nearby residences. However, these noise levels are not anticipated to be substantially higher than what is currently produced in the project area, and would likely be indistinguishable from the surrounding vehicle traffic noise. Noise would typically be limited to normal daytime working hours and could result in minor noise disturbances and would not appreciably alter the noise environment.

Training activities would occur on weekends, with increased noise associated with that training activity; however, these actions would occur during daytime hours, be of short duration, and typically remote from potentially sensitive receptors. Increased vehicle trips to the proposed project area during weekends would generate noise during the morning and evening commutes. This noise is not anticipated to unreasonably disturb the public and would be consistent with the surrounding noise from vehicles.

4.5.2.2 No Action Alternative

No impacts to the noise environment would occur from the no action alternative, as no construction would occur and there would be no increase in training.

4.6 Geology and Soils

4.6.1 Affected Environment

4.6.1.1 Geologic and Topographic Conditions

Willow Grove NAS JRB is located in the Triassic Lowlands of the Piedmont physiographic province and is underlain by rocks of the Stockton Formation. The Triassic bedrock is a coarse grained sandstone. The top of the bedrock is 5 to 25 feet below ground surface at

Willow Grove NAS JRB. The Stockton Formation includes sandstone, shale, and siltstone (Maguire Group, Inc., 2001a).

Elevations at Willow Grove NAS JRB range from 240 feet above mean sea level along the north boundary (Keith Valley Road) to 360 feet above mean sea level in southern portions of Willow Grove NAS JRB with gradual slopes of approximately 1.5 percent. Slopes throughout the station generally range from 1 to 5 percent with isolated areas of 5 to 10 percent slopes (Maguire Group, Inc., 2001a). The proposed project area is relatively flat, with elevations ranging from 300 to 330 feet above sea level.

4.6.1.2 Soils

There are five major soil types at Willow Grove NAS JRB: Lawrenceville silt loam, Readington silt loam, Lansdale loam, Lansdale silt loam, and made land (Maguire Group, Inc., 2001a).

Lawrenceville silt loam and Readington silt loam are both deep, moderately drained soils (Maguire Group, Inc., 2001a). The seasonal high water table is between 1 to 2 feet below ground surface. Lawrenceville and Readington soils are generally found in relatively flat areas of the station. In areas with higher slopes, these soils are susceptible to erosion hazards when disturbed.

Lansdale loam and silt loam are moderately deep and well drained (Maguire Group, Inc., 2001a). The seasonal high water table is more than 3 feet below ground surface. These soils have moderate permeability and high water-holding capacity. In general, these soil types have slopes that can range from 0 to 35 percent. Surface runoff is medium and the erosion hazard is moderate in areas with lower slopes (3 to 8 percent). Both runoff and erosion hazards increase with slope.

The made land occurs along the runways and taxiways and in the developed eastern portion of the base (Maguire Group, Inc., 2001a). This is urban land where earthmoving and development have removed or altered the characteristics of the original soils, such as in the construction of a runway. These soils vary in depth and drainage condition, ranging from very well to moderately well drained.

The majority of the soils under the proposed project area are classified as made land; however, soils in the northwestern portion of the proposed project area along Griffis Street include Doylestown silt loam and Readington silt loam in the south (Michael Baker, 2009). Doylestown silt loam are deep, poorly drained soils (Maguire Group, Inc., 2001a). The USDA NRCS classifies the soil type as urban land with 0 to 8 percent slopes (USDA NRCS, 2009).

The proposed project area contains soils in two areas that are associated with Installation Restoration Sites 1 and 10 (Navy, 2006). Soils at Site 1 were contaminated and have been cleaned up to state and federal standards and no further action is required. Soils at Site 10 have been partially remediated and have a no further action determination from the state with land use controls. The land use controls indicate that future use of this site could require additional investigation and/or remediation. These sites are described in more detail in Section 4.13, hazardous and toxic substances.

4.6.1.3 Prime Farmland

The USDA NRCS web soil survey indicated there is no prime or unique farmland, or farmland of statewide importance, in the proposed project area (USDA NRCS, 2009).

4.6.1.4 Seismic Conditions

Earthquakes occasionally occur in Pennsylvania but at a relatively low level. The state is affected by earthquakes from bordering areas and those generated on local faults. According to the USGS program Earthquake Ground Motion Parameters, the proposed project area is rated as Seismic Site Class B referring to rock as the underlying substrate (Michael Baker, 2009). The seismic site class is a measure of the local soils ability to transmit motion from the underlying rock to the surface. Class B areas have rock as the underlying substrate; therefore, the likelihood of earthquakes is relatively low in the project area.

4.6.2 Consequences

4.6.2.1 Preferred Alternative

Minor impacts to geology, topography, and soils would occur from implementation of the preferred alternative. Under the preferred alternative, up to approximately 21 acres of the proposed project area would be disturbed as a result of construction. The proposed construction would affect topography and soils at the proposed project site. These effects would be minor because of the previous disturbances at the site. Bedrock would not be impacted. There are no special qualities associated with the soils or geologic resources at these sites. Implementation of construction BMPs would minimize impacts associated with erosion. These BMPs would include, but not be limited to, installation of silt fencing and sediment traps, and revegetation of disturbed areas as soon as possible. Therefore, potential impacts to geological and soil resources as a result of the preferred alternative would be minimal.

No impacts to prime farmland are anticipated under the preferred alternative because prime farmland does not exist in the proposed project area. Seismic conditions are not anticipated to impact the integrity of the structures in the proposed project area because the likelihood of an earthquake occurring in this area is low.

The preferred alternative would not impact previously contaminated soils at Site 1 because these soils have been remediated. The preferred alternative would include further investigation into remaining contamination associated with Site 10. The Departments of the Army and Navy are currently discussing how remediation would be conducted as the part of the property transfer.

4.6.2.3 No Action Alternative

No impacts to geology, topography, soils, prime farmland or seismic condition would be likely from implementation of the preferred alternative. No impact to overall geology and soils at Willow Grove NAS JRB is expected under the no action alternative. Under this alternative, no construction would take place and therefore no changes to the local geology or soils would occur.

4.7 Water Resources

4.7.1 Affected Environment

4.7.1.1 Surface Water

Streams

Willow Grove NAS JRB lies on a topographic divide between Little Neshaminy Creek and Pennypack Creek. There are no naturally occurring streams within the proposed project area. The Little Neshaminy Creek drains surface water from the northern portions of the base by way of Park Creek. Pennypack Creek drains water from the southern portions of the base (Maguire Group, Inc., 2001b). Both streams are tributaries of the Delaware River.

Lakes

Two man-made freshwater ponds were constructed in the western portion of the base in the late 1980s. A stormwater detention basin is located north of the proposed project area. There are no lakes within the proposed project area.

Hydrogeology /Groundwater

The Stockton Formation forms a complex, heterogeneous aquifer with partially connected zones of high permeability. The aquifer is composed of a series of gently dipping lithologic units with different hydraulic properties, and permeability commonly differs from one lithologic unit to another (Sloto, 2002). Groundwater is generally encountered between 5 to 25 feet below ground surface (Michael Baker, 2009). A contaminated area of groundwater underlies the proposed project area. Volatile organic compounds occur chiefly in the deep monitoring wells (approximately 160 feet below ground surface) and are detected infrequently and at lower concentrations in the shallow monitoring wells. These low level concentrations are limited to isolated detections in shallow groundwater and do not represent definable plumes. This is described in more detail in Section 4.13, hazardous and toxic substances.

Floodplains

Willow Grove NAS JRB has two areas along the northern boundary that are inside the 100-year flood zone (ECP, 2006). The proposed project area is not located within the 100-year floodplain.

Coastal Zone

Willow Grove NAS JRB is not located within a coastal zone.

4.7.2 Consequences

4.7.2.1 Preferred Alternative

No direct impacts to surface water resources are anticipated under the preferred alternative because there are no streams or lakes within the proposed project area. The preferred alternative would result in an increase of stormwater discharge to receiving surface waters. This is not anticipated to result in an adverse impact to surface water because the stormwater would be retained in the stormwater retention pond, allowing time for sediments to settle out prior to release to the stormwater system. In addition, an oil/water separator would minimize the potential for discharge of oils into the stormwater and

receiving surface waters. A National Pollutant Discharge Elimination System (NPDES) permit would be obtained for this project to discharge stormwater to receiving surface waters.

No impacts to groundwater are anticipated under the preferred alternative because no water supply wells would be drilled on-site.

During final design of the stormwater retention pond, depth to groundwater would be determined and the pond would be designed to remain above the shallow groundwater on the proposed project area. Therefore, contaminated groundwater would not discharge to the stormwater retention pond.

Proper management of hazardous materials on-site would prevent spills from occurring. Spill containment measures would prevent releases to surface and groundwater.

A construction stormwater permit would be obtained prior to initiation of clearing and grading activities associated with construction. Installation and maintenance of appropriate stormwater BMPs would minimize impacts associated with erosion following precipitation. These BMPs could include, but not be limited to, installation of silt fencing and sediment traps, and revegetation of disturbed areas as soon as possible.

4.7.2.3 No Action Alternative

Under the no action alternative, none of the proposed construction or demolition activities would occur, and there would be no new impacts to water resources.

4.8 Biological Resources

4.8.1 Affected Environment

4.8.1.1 Vegetation

Willow Grove NAS JRB consists of both developed and undeveloped, vegetated land (Maguire Group, Inc., 2001a). Plant surveys identified 232 species expected to occur on Willow Grove NAS JRB (Maguire Group, Inc., 2001a). Vegetated areas of Willow Grove NAS JRB include landscaped areas, lawns, old field areas, wetland areas, shrubland and forested areas. Old field areas are dominated by several grasses including broomsedge (*Andropogon virginicus*), little bluestem (*Schizachyrium scoparium*), goldenrods (*Solidago* spp.) and tick-trefoils (*Desmodium* spp.) (Maguire Group, Inc., 2001a).

Shrubland areas are dominated by arrowwood (*Viburnum dentatum*), blackhaw (*Viburnum prunifolium*), multiflora rose (*Rosa multiflora*) and silky dogwood (*Cornus amomum*).

Forested areas are found on the west and south areas of Willow Grove NAS JRB. These areas have dense canopies of tulip poplar (*Liriodendron tulipifera*), red maple (*Acer rubrum*), silver maple (*Acer saccharinum*), red cedar (*Juniperus virginiana*), white oak (*Quercus alba*), black oak (*Quercus nigra*), pin oak (*Quercus palustris*), sweet gum (*Liquidambar styraciflua*), black cherry (*Prunus serotina*), cottonwood (*Populus deltoides*), big tooth aspen (*Populus grandidentata*), quaking aspen (*Populus tremuloides*), and white ash (*Fraxinus Americana*).

The proposed project area is developed land containing buildings, landscaped lawns and ornamental trees, a small area of shrubs and small trees, paved and gravel roadways, and a parking lot.

4.8.1.2 Wildlife

A thorough faunal survey was conducted on Willow Grove NAS JRB in 2000 and a list of vertebrate species documented as occurring or potential to occur at Willow Grove NAS JRB is included in the Integrated Natural Resources Management Plan (Maguire Group, Inc. 2001a). Mammalian species identified on Willow Grove NAS JRB include opossum (*Didelphis virginiana*), big brown bat, *(Eptesicus fuscus*), woodchuck (*Marmota monax*), striped skunk (*Mephitis mephitis*), meadow vole (*Microtus pennsylvanicus*), white-tailed deer (*Odocoileus virginianus*), raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), eastern cottontail (*Sylvilagus floridanus*), and the red fox (*Vulpes vulpes*). Bird species observed include the great blue heron (*Ardea herodius*), Canada goose (*Branta canadensis*), mallard (*Anas platyrhynchos*), red-tailed hawk (*Buteo jamaicensis*), ring-billed gull (*Larus delawarensis*), mourning dove (*Zenaida macroura*), great horned owl (*Bubo virginianus*), belted kingfisher (*Ceryle alcyon*), red-headed woodpecker (*Melanerpes erythrocephalus*), and the American crow (*Corvus branchyrhynchos).*

The proposed project area contains very limited habitat for wildlife. Vegetated stormwater drainages could provide habitat for common birds and wildlife including songbirds, small mammals, insects, amphibians, and reptiles.

4.8.1.3 Sensitive Species

No federally or state-listed threatened or endangered animal or plant species have been found, or are expected to occur at Willow Grove NAS JRB or at the proposed project area (Maguire Group, Inc., 2001a). A letter was sent to the USFWS to request the known locations of federally listed threatened or endangered plant or animal species within the project area. USFWS responded on May 8, 2009 (Appendix A). The response confirmed that no federally-listed species are known to occur within the project area.

The Pennsylvania Natural Diversity Inventory online website was reviewed to identify the potential presence of state-listed species or protected communities within Willow Grove NAS JRB. Based upon this review, there are no known state-listed species or protected communities within the proposed project area (PNDI, 2009; Appendix A).

4.8.1.4 Wetlands

Twenty-one wetland areas covering 14.3 acres were identified on Willow Grove NAS JRB (Maguire Group, Inc., 2001a). Wetlands were characterized as palustrine and riverine systems. Palustrine wetland systems at Willow Grove NAS JRB consisted of several subtypes including forested, scrub/shrub, emergent, and open water classes. Forested wetlands were dominated by red maple (*Acer rubrum*). Scrub/shrub wetlands are vegetated with willow (*Salix* spp.) thickets, multiflora rose, arrowwood and silky dogwood. Palustrine emergent wetland vegetation and open water vegetation was characterized by cattail, sweet flag, cinnamon fern and others. Water regimes ranged from permanently flooded to seasonally flooded palustrine forested wetlands. A small area (0.6 acres) contains permanently flooded riverine wetlands.

According to a field visit conducted by the USACE Philadelphia District in June 2009, the proposed project area does not contain wetlands (Appendix D).

4.8.2 Consequences

4.8.2.1 Preferred Alternative

Minor impacts to common urban flora and fauna that are well adapted to disturbed conditions and landscaped habitat would result from implementation of the preferred alternative. Indirect impacts from loss of habitat and temporary displacement during construction would be minor because the proposed AFRC would be constructed on developed lands, containing little wildlife habitat. No federally or state-listed plant or animal species or communities, or habitat capable of supporting these species are known to occur within the project area and no impacts to such species are anticipated. No wetlands are known to occur within the project area and no impacts to wetlands are anticipated.

4.8.2.3 No Action Alternative

Under the no action alternative, construction activities would not occur and there would be no new impacts to biological resources.

4.9 Cultural Resources

Within this section, the terms "significant" and "significance" are used in the context of the NEPA and the NHPA. When referring to structures, objects, or artifacts, the terms are used as defined in 36 CFR Part 800 for the NHPA. When referring to impacts, the terms are applied relative to their meaning under the NEPA.

Regulations implementing Section 106 of the NHPA, 36 CFR Part 800.8, encourage the coordination of two processes: (1) the review of possible impacts to the environment under NEPA and (2) the assessment of effects of undertakings required under the NHPA. It is the intent of Willow Grove NAS JRB that this EA support both of these independent reviews.

4.9.1 Affected Environment

Cultural resources are defined in AR 200-1, by the Department of the Army, as:

- Historic Properties, as defined by the NHPA,
- Cultural Items, as specified in the Native American Graves Protection and Repatriation Act,
- Archaeological Resources, as defined by the Archaeological Resources Protection Act,
- Sacred Sites, as defined in the American Indian Religious Freedom Act and Executive Order 13007, and
- Collections of artifacts and records pertaining to them as directed in 36 CFR 79

Cultural resources that would be potentially impacted by the preferred alternative are historic properties and archaeological resources. The Area of Potential Effect (APE) for purposes of compliance with Section 106 of the NHPA includes the immediate vicinity of

the proposed construction, where direct effects of the construction might affect historic properties. The APE also includes adjacent areas where the setting of existing historic structures may be compromised as a result of construction. Additionally, there could be long-term indirect impacts to cultural or archeological resources resulting from increased human use of an area following implementation of the project.

4.9.1.1 Prehistoric and Historic Background

The Paleoindian period encompasses the earliest human habitation of southeastern Pennsylvania. Groups of Paleoindians were apparently established in the region by 10,000 to 11,000 BC and possibly as early as 15,000 BC. During the Archaic period from 4,000 to 1,000 BC, there were a number of climactic changes such as the introduction of chestnut trees and larchwood forests that prompted late Archaic groups to employ new adaptive strategies for survival using a wider variety of habitats. In the Middle Atlantic region, the Early, Middle, and Late Woodland period date from between 1,000 BC to 1,000 AD. These periods are characterized by continuing changes in the environment and the increased residential stability, typified by large permanent or semi-permanent villages and subsistence systems that utilized horticultural products (Louis Berger and Associates Inc., 1996).

By the early sixteenth century non-local Iroquoian groups from the north had begun to establish in the Susquehanna River Valley. The period during which aboriginal populations first encountered and co-existed with European traders and colonists is termed the Contact period. Tied to the population disruptions of the early Contact period, the movement of these groups, known historically as the Susquehannocks, resulted in the disappearance of the Shenks Ferry culture. For the region surrounding Willow Grove NAS JRB, this period dates between the 1600s and 1740s. During this period increased contact with European traders and settlers resulted in the breakdown of traditional lifestyles and an increased reliance on European trade goods that were acquired in exchange for land or furs. The intensification of the fur trade ultimately led to conflict with neighboring tribes. Warfare, disease, and alcoholism decimated native populations in the region and most of the indigenous groups left the area by the 1750s (Louis Berger and Associates Inc., 1996).

4.9.1.2 Cultural Resource Inventories

There are two cultural resource inventories that were conducted over the proposed project area. Louis Berger and Associates, Inc., conducted an installation wide review of cultural resources at Willow Grove NAS JRB in 1996, while the Commonwealth Cultural Resources Group, Inc. (CCRG) survey was focused on the proposed project area and was conducted in 2009.

1996 Study

Louis Berger and Associates, Inc., conducted a Phase IA archaeological investigation and an architectural resources survey of Willow Grove NAS JRB in 1996 (Louis Berger and Associates Inc., 1996). The cultural resources survey consisted of architectural surveys including an evaluation of buildings, structures, and objects that as of 1996 were at least 50 years of age, an archaeological field study, and an assessment of archaeological sensitivity.

Four areas that were considered to have the highest potential for prehistoric archaeological resources on Willow Grove NAS JRB were analyzed during a cultural resource survey. Based upon the analysis, these sites were found to possess a low potential for prehistoric archaeological resources due to extensive and severe disturbances on the base (Louis Berger and Associates Inc., 1996). Field studies were not conducted at the proposed project site. No buildings, structures or objects were found that would meet the National Register of Historic Places Criteria for being older than 50 years old. The survey concluded that the majority of the land surface at Willow Grove NAS JRB has been subjected to severe disturbance from construction activities in the past. The potential for finding intact historic artifacts is low (Louis Berger and Associates Inc., 1996).

2009 Study

Commonwealth Cultural Resources Group, Inc. conducted a Phase I cultural resources investigation of the proposed project area in 2009 (CCRG, 2009). The cultural resources investigation was completed in compliance with Section 106 of the NHPA of 1966 (as amended 2004) and the Archaeological Resources Protection Act of 1989. The archaeological survey included a literature review to determine the locations of known cultural resource sites in the vicinity, and a field survey of the proposed project area. The 2009 survey did not identify potentially eligible above ground or archaeological resources and concluded that there were no cultural resources in the proposed project area based on the literature review and field investigations (CCRG, 2009).

4.9.1.3 Native American Resources

No evidence of Native American Resources was recorded on Willow Grove NAS JRB (Department of the Navy, 2006). No evidence of Native American Resources was recorded in the proposed project area. This area has been disturbed in the past and no resources were found at that time of disturbance. It is not expected that undiscovered cultural resources would be found during implementation of the preferred alternative; however, in the case of inadvertent discovery, construction activities would cease and the Army would notify the Willow Grove NAS JRB environmental office.

4.9.2 Consequences

4.9.2.1 Preferred Alternative

No significant impacts to architectural or archaeological resources are anticipated to result from implementation of the preferred alternative because the Phase I cultural resource investigation did not identify historical architectural resources or archaeological resources within in the project area (CCRG, 2009). Therefore, no impacts to cultural resources are expected from implementation of the preferred alternative. The Army is currently in the process of coordinating the negative findings report with the SHPO.

4.9.2.2 No Action Alternative

Under the no action alternative, none of the proposed construction activities would occur and there would be no impacts to cultural resources.

4.10 Socioeconomics

4.10.1 Affected Environment

The Willow Grove NAS JRB is located in Montgomery County and is immediately adjacent to Bucks County. The region of interest for the preferred alternative has been defined as Montgomery and Bucks Counties. These counties are growing parts of the Philadelphia-Camden-Wilmington, PA-NJ-DE-MD Metropolitan Statistical Area (Philadelphia MSA) as defined by the Office of Management and Budget (OMB) in OMB Bulletin No. 08-01 (OMB, 2007).

4.10.1.1 Economic Development

Montgomery County is an integral part of Pennsylvania's economy. Several agencies including the Montgomery County Department of Economic and Workforce Development, the Montgomery County Development Corporation, the Montgomery County Redevelopment Authority, and the Suburban Development Council, Inc., are assisting in many areas of economic development to ensure that the county economy continues to prosper (Montgomery County, Pennsylvania, 2009).

Table 4-3 presents the unemployment rate in Montgomery and Bucks Counties, the Philadelphia MSA, and Pennsylvania. Montgomery County had an unemployment rate of 5.2 percent for December 2008. Bucks County had an unemployment rate of 5.7 percent for December 2008. Both of these counties had unemployment rates lower than Pennsylvania (6.4 percent) and the United States (7.1 percent) for December 2008 (Bureau of Labor Statistics, 2009).

TABLE 4-3
Unemployment Rate in Montgomery and Bucks Counties, the Philadelphia MSA, Pennsylvania, and the United States
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Geographic Area	Unemployment Rate in December 2008
Montgomery County	5.2%
Bucks County	5.7%
Philadelphia MSA	NA
Pennsylvania	6.4%
United States	7.1%

Source: Bureau of Labor Statistics (2009)

4.10.1.2 Demographics

Table 4-4 presents the population for Montgomery and Bucks Counties, Pennsylvania, and for the United States.

TABLE 4-4
Population of Montgomery and Bucks Counties and Pennsylvania for 2000, and Projected for 2010 and 2020
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Geographic Area	2000 Population[a]	Estimated 2008 Population[b]
Montgomery County	699,475	778,048
Bucks County	606,220	621,643
Pennsylvania	12,241,488	12,448,279
United States	281,421,906	304,059,724

Sources: [a] U.S. Census Bureau 2000;[b] U.S. Census Bureau 2009

Table 4-5 presents the per capita income for Montgomery and Bucks Counties, the Philadelphia MSA, Pennsylvania, and the United States. Pennsylvania has a lower average per capita income than Montgomery and Bucks Counties, the Philadelphia MSA, and the United States.

TABLE 4-5
Per Capita Income of Montgomery and Bucks Counties, the Philadelphia MSA, Pennsylvania, and United States
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Geographic Area	2000 Per Capita Income in 1999 dollars	2007 Per Capita Income
Montgomery County	$30,898	$39,595
Bucks County	$27,430	$33,910
Philadelphia MSA	$23,699	$30,283
Pennsylvania	$20,880	$26,228
United States	$21,587	$26,688

Source: U.S. Census Bureau (2000), (2007)

4.10.1.3 Housing

Housing information was collected from the U.S. Census Bureau. Table 4-6 presents the number of housing units and percent vacant for Montgomery and Bucks Counties, the Philadelphia MSA, Pennsylvania, and the United States. As shown in Table 4-6, Montgomery and Bucks Counties have lower percentages of vacant housing than the Philadelphia MSA, Pennsylvania, and the United States.

TABLE 4-6
Housing Units and Vacancy Percentage of Montgomery and Bucks Counties, the Philadelphia MSA, Pennsylvania, and United States
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

	2000		2007	
Geographic Area	Housing Units	Percent Vacant	Housing Units	Percent Vacant
Montgomery County	297,434	3.8%	313,701	4.8%
Bucks County	225,498	3.0%	240,349	5.2%
Philadelphia MSA	2,539,825	8.6%	2,386,069	8.3%
Pennsylvania	5,249,750	9.0%	5,478,158	11.0%
United States	115,904,641	9.0%	127,895,430	12.1%

Source: U.S. Census Bureau (2000) (2007)

There are six military housing facilities located on Willow Grove NAS JRB. Jacksonville Road and Shenandoah Woods are two off-base housing facilities that include six single family homes and 199 townhouse units, respectively. They are located in southern Bucks County approximately 6 and 8 miles, respectively, northeast of Willow Grove NAS JRB (Willow Grove NAS JRB, 2006).

4.10.1.4 Quality of Life

Table 4-7 presents the number of individuals in Montgomery and Bucks Counties, Pennsylvania, the Philadelphia MSA, and the nation who live below the poverty level. The percentage of individuals who live below the poverty level is lower in Montgomery and Bucks Counties, the Philadelphia MSA, and Pennsylvania than the nation as a whole.

TABLE 4-7
Population below Poverty Level in 1999 of Montgomery and Bucks Counties, Pennsylvania, Philadelphia MSA, and United States
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Geographic Area	Percent of Individuals Living Below the Poverty Level in 2000	Estimated Percent of Individuals Living Below the Poverty Level in 2007
Montgomery County	4.4%	5.3%
Bucks County	4.5%	5.2%
Philadelphia MSA	10.9%	N/A
Pennsylvania	11.0%	11.6%
United States	12.4%	13.0%

Source: U.S. Census Bureau (2000), (2007)

4.10.1.5 Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (1994), requires federal agencies to achieve environmental justice "to the greatest extent practicable" by identifying and addressing "disproportionately high adverse human health or environmental effects of activities on minority populations and low income populations." Tables 4-8 and 4-9 display the demographics for Montgomery and Bucks Counties, Pennsylvania, the Philadelphia MSA, and the United States.

TABLE 4-8
Profile of Demographic Characteristics of Montgomery and Bucks Counties, Pennsylvania, PA MSA, and U.S. in 2000
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Geographic Area	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race	Two or More Races
Montgomery County	86.5%	7.4%	0.1%	3.9%	0.0%	0.7%	1.3%
Bucks County	92.5%	3.1%	0.1%	2.4%	0.0%	0.8%	1.1%
Philadelphia MSA	72.6%	19.4%	0.2%	3.2%	0.0%	2.7%	1.9%
Pennsylvania	85.4%	9.9%	0.2%	1.8%	0.0%	1.5%	1.3%
United States	75.1%	12.2%	0.1%	3.7%	0.1%	5.5%	2.6%

Source: U.S. Census Bureau (2000)

TABLE 4-9
Profile of Demographic Characteristics of Montgomery and Bucks Counties, Pennsylvania, Philadelphia MSA, and United States in 2007
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Geographic Area	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race	Two or More Races
Montgomery County	81.9%	8.1%	0.1%	5.3%	0.0%	0.7%	0.2%
Bucks County	88.7%	3.7%	0.1%	3.3%	0.0%	0.5%	0.3%
Philadelphia MSA	67.7%	19.9%	0.1%	4.3%	0.0%	2.8%	0.4%
Pennsylvania	81.6%	10.1%	0.1%	2.4%	0.0%	1.9%	0.3%
United States	65.8%	12.2%	0.7%	4.3%	0.1%	6.0%	0.6%

Source: U.S. Census Bureau (2007)

4.10.1.6 Protection of Children

The preferred alternative follows the guidelines specified for the protection of children in EO 13045 – *Protection of Children from Environmental Health Risks and Safety Risk* (Federal Register: April 23, 1997, Volume 62, Number 78). This EO requires that federal agencies make it a high priority to identify and assess environmental health risks and safety risks that may disproportionately affect children and ensure that policies, programs, and standards address disproportionate risks to children that result from environmental health or safety risks. Table 4-10 presents the number of individuals in Montgomery and Bucks Counties, Pennsylvania, the Philadelphia MSA, and the nation who are below the age of 18. The percentage of individuals who are below the age of 18 is equal to or lower in Montgomery and Bucks Counties, the Philadelphia MSA, and Pennsylvania than in the nation as a whole.

TABLE 4-10
Individuals Under the Age of 18 in Montgomery and Bucks Counties, Pennsylvania, Philadelphia MSA, and United States
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Geographic Area	Percentage of Individuals Under the Age of 18 in 2000	Percent Individuals Under the Age of 18 in 2007
Montgomery County	24.1%	23.2%
Bucks County	25.7%	23.0%
Philadelphia MSA	25.3%	24.1%
Pennsylvania	23.8%	22.4%
United States	25.7%	24.5%

Source: U.S. Census Bureau (2000) (2007)

The proposed project area does not have facilities that contain larger populations of children, such as schools or parks. However, a child development center is located east of Skyhawk Avenue approximately 350 feet east of the proposed project area. The child development center is separated from the proposed project area by Privet Road and Skyhawk Avenue.

4.10.2 Consequences

4.10.2.1 Preferred Alternative

The preferred alternative would be confined to Willow Grove NAS JRB and would not disproportionately impact minority or low-income populations. The preferred alternative would not create environmental health or safety risks for children. Potential impacts from construction noise are discussed in Section 4.5 and potential impacts to air quality from construction are discussed in Section 4.4. Both of these sections conclude that no significant impacts would result from implementation of the preferred alternative and discuss mitigation measures to reduce potential impacts. The preferred alternative is anticipated to result in short-term, localized noise and air quality impacts from construction. These potential impacts are not anticipated to create environmental health or safety risks for children attending the child development center because the children would have very limited exposure to the construction-related noise and air impacts. The facility is located approximately 350 feet west of the preferred alternative site and is separated by Privet Road and Skyhawk Avenue. Children could be exposed to these temporary impacts as they enter or exit the facility and when they are outside. These temporary impacts would be minimized by requirements in the specifications that the contractor keep the equipment maintained and operating in accordance with the manufacturer's specifications. Construction dust and particles would be reduced by implementing fugitive dust control measures, such as the use of water. Noise impacts would be restricted to the daylight hours during weekdays and would be most noticeable during demolition and grading activities. Access to construction areas would be controlled by fencing, thereby limiting unauthorized access by any person, including children.

The realignment of approximately 43 full-time personnel and up to approximately 800 reservists at the proposed AFRC would be a negligible impact on socioeconomic conditions of the region of interest. The preferred alternative would not result in the creation of new jobs or the relocation of military or civilian personnel into the region. The slight increase in full-time jobs at Willow Grove NAS JRB would have a minor impact on the economy, as these jobs would be relocated within the region.

Economic Impact Forecast System (EIFS)

The expenditures and employment associated with construction of the AFRC would result in minor beneficial effects to the regional economy that would cease when construction is complete. The U.S. Army's Economic Impact Forecast System (EIFS) model is used to assess the economic effects of base realignment and closure recommendations. Results are compared to Rational Threshold Values (RTVs) to evaluate the significance of these effects in relation to the regional economy. RTVs are positive and negative percent changes in population, employment, sales volume and income that represent an acceptable range around the maximum historic fluctuations within the Region of Influence (ROI) over the last 20 years or so. The EIFS model, its inputs, outputs, and significance measures are discussed in more detail in Appendix E.

Economic Development

Short-term minor beneficial effects would be expected under the preferred alternative. In the short term, the expenditures and employment associated with construction projects

would increase the sales volume, employment, and income in the ROI, as estimated by the EIFS model results. The cost of construction is estimated to be approximately $25,500,000 (US Army Corps of Engineers [USACE], 2009). Table 4-11 displays the change of direct and total economic growth (which includes induced growth) during 2010.

These economic benefits would be temporary, lasting only for the duration of construction. These changes in specific economic parameters would fall well within historical fluctuations, as represented by the RTVs shown in Table 4-11, and would be considered minor. The construction projects are not expected to trigger a temporary movement of workers to the area to fill the supply of construction job opportunities.

TABLE 4-11
EIFS Model Output for the Proposed Willow Grove Construction of Armed Forces Reserve Center
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

Indicator	Projected Change	Percentage Change	RTV Range
Direct Sales Volume	$21,283,410		
Total Sales Volume	$66,404,230	0.1%	-5.8% to 12.6%
Direct Income	$7,936,002		
Total Income	$15,787,330	0.1%	-3.7% to 11.6%
Direct Employment	172		
Total Employment	326	0.1%	-3.1% to 2.8%
Local Population	0		-0.4% to 1.3%

EIFS model results are based on peak construction year (2010) when the majority of construction projects are expected to take place. EIFS model inputs regarding relocations were derived from information provided by the USAR. Inputs regarding employment and income multipliers are provided through the EIFS software package based upon the location of the proposed project.

See Appendix E for the detailed EIFS model inputs, results, and report.

Economic Impacts of Operations

Potential changes in personnel and operations expenditures are expected to be minimal. Therefore, since there were no substantial changes in personnel and location, the EIFS model was not run to determine the long term economic effects associated with operations.

4.10.2.2 No Action Alternative

No effects on socioeconomics, environmental justice, or the protection of children would result from implementing the no action alternative. Under the no action alternative, there would be no changes to the existing condition of socioeconomic resources.

4.11 Transportation

4.11.1 Affected Environment

Montgomery and Bucks Counties have almost 673,000 daily commuters to and from work, according to the 2000 U.S. census. Approximately 570,000 commuters drive a car, van, or truck with no passengers while approximately 26,000 people use public transportation (US Census Bureau, 2000).

The major traffic routes to and from the AFRC would consist of using SR 611 and County Line Road. Average Daily Traffic (ADT) data for SR 611, south and north of the SR 611 and County Line Road intersection in 2006 was 31,958 and 30,378 vehicles respectively. ADT

data for County Line Road, east and west of the SR 611 and County Line Road intersection in 2006 was 25,025 and 18,240 vehicles, respectively (PennDOT, 2006).

The entrance to the Air National Guard portion of Willow Grove NAS JRB is located at the intersection of Privet Road, County Line Road, and SR 611. The existing gate at this intersection does not meet anti-terrorism and force protection requirements. Therefore, a new gate along County Line Road is planned that will meet these requirements, and the existing gate will be closed. The construction of a new gate is a separate and independent federal action at Willow Grove NAS JRB and is not evaluated as part of the preferred alternative in this document. Construction of the gate is evaluated under cumulative effects (see Section 4.14). Access to the AFRC would be through this proposed gate along County Line Road. Privet Road is a one-lane service road that continues in a southwest direction where it terminates at the southwest corner of the proposed project area.

4.11.2 Consequences

4.11.2.1 Preferred Alternative

As part of the preferred alternative, 43 full-time and up to approximately 800 part-time employees/military personnel would be relocated to AFRC. The full-time employees would increase the amount of traffic entering Willow Grove NAS JRB daily; however, this increase would be a minor impact on traffic and transportation at the AFRC, SR 611 and County Line Road. The part-time personnel would be associated primarily with weekend training, which would not conflict with peak hour commuting traffic. Additionally, a maximum of approximately 275 reservists would train on a given weekend. The increased weekend traffic is not expected to have a significant impact on traffic and transportation at the AFRC or on County Line Road and SR 611.

To accommodate increased traffic flow from full- and part-time personnel, Privet Road would be widened within the AFRC. This would cause short-term adverse impacts to traffic flow during construction; however, long-term impacts would be positive.

The addition of approximately 43 additional workers with associated commutes would result in a negligible increase in daily commuters traveling in Montgomery and Bucks Counties. This would be a negligible impact on traffic flow.

4.11.2.2 No Action Alternative

No impact to transportation would result under the no action alternative.

4.12 Utilities

4.12.1 Affected Environment

4.12.1.1 Potable Water Supply

Potable water at the Willow Grove NAS JRB is currently provided by two 190-foot deep on-base wells rated at one million gallons of maximum daily flow capacity. The system is supplied by two 200 gallon per minute pumps with a maximum output of 576,000 gallons per day. There are two underground reservoirs each comprised of a nominal 500,000-gallon

reinforced concrete tank. Overflow pipes limit each reservoir's capacity to approximately 370,000 gallons of non-potable water for fire protection. The existing use of potable water at Willow Grove NAS JRB is below capacity (Willow Grove NAS JRB, 2006). The proposed project area is currently owned by the Navy but will be transferred to the Air Force under BRAC in 2011. After the transfer, Willow Grove NAS JRB will convert from using the existing potable water systems to using municipal water systems. It is anticipated that the base would connect to utilities owned by Horsham Township.

The Horsham Township Water and Sewer Authority currently provides approximately 2.04 million gallons per day (mgd) of potable water to domestic, commercial, industrial, and institutional facilities in Horsham Township via 15 groundwater wells. The wells have been permitted to withdraw approximately 3.72 mgd. There is also two outside interconnects, each with an allowable purchase of 0.25 mgd (Montgomery County Planning Commission 2008).

4.12.1.2 Wastewater System

Sanitary sewer systems throughout Willow Grove NAS JRB convey sewage to the on-base sewage treatment plant located in the northeastern portion of the base (Willow Grove NAS JRB, 2001). The existing treatment facility is currently operating well below its capacity of 1 mgd (Willow Grove NAS JRB, 2008). After the transfer, as described in Section 4.12.1.1, the existing wastewater services will no longer be utilized. Wastewater services will be provided by the municipal wastewater system.

It is anticipated that the Horsham Township Park Creek sewage treatment plant would provide service to the proposed AFRC after the closure of Willow Grove NAS JRB. This sewage treatment plant is not functioning at or near capacity. The plant is currently in the process of expanding to increase its capacity from 1.0 mgd to 2.0 mgd by 2011 (Montgomery County Planning Commission, 2007).

4.12.1.3 Stormwater System

Stormwater on the Willow Grove NAS JRB is managed via a system of catch basins, pipe inlets, concrete lined channels, earthen swales, ditches, and troughs. Pipe sizes range from 8 to 62 inches and are constructed mostly of concrete. Concrete lined troughs or swales are typically used around parking lots. Earthen swales regulate stormwater flows elsewhere on base. Stormwater generated at various locations on-base is conveyed to one or more of the 14 primary stormwater outfalls on base, ultimately discharging to the Delaware River. Water samples are collected from select outfall locations and analyzed for various pollutants pursuant to the base-specific stormwater discharge permit requirements (Willow Grove NAS JRB, 2001).

Several manmade stormwater drainage swales are located in the proposed project area. A small, maintained, grassy swale runs through the central portion of the proposed project area between the liquid oxygen farm and the recycle center (Figure 4-1). This swale merges with a larger drainage swale which runs from the southwestern portion of the proposed project area along Griffis Street where it merges with a drainage swale that runs parallel to Johnson Street (Figure 4-1). The drainage swales along Griffis and Johnson Streets have not been recently maintained and contain grasses, shrubs, and trees along their edges. A concrete trench runs the length of Privet Road and conveys stormwater from adjacent areas

to the stormwater drainage system through the drainage swale along Johnson Street (Figure 4-1).

4.12.1.4 Energy Sources

Electrical service is provided to the Willow Grove NAS JRB by Philadelphia Electric Company (PECO) Energy via a high tension transmission line. From the high tension terminal points on base, the distribution of electrical power is then controlled by the Navy and Air Force on separate distribution systems. The Air Force currently has a 30 KV electrical substation located northeast of the proposed project area near the end of Privet Road adjacent to the northeastern base boundary (Willow Grove NAS JRB, 2008).

Natural gas service for the Willow Grove NAS JRB is provided by PECO Energy. PECO is responsible for the supply as well as the distribution of natural gas service throughout the base. PECO will coordinate the design and distribution requirements necessary to provide natural gas service to the AFRC when loading requirements are provided and an application for service is submitted (Willow Grove NAS JRB, 2008).

4.12.1.5 Communications

Willow Grove NAS JRB is provided telephone service by AT&T (Willow Grove NAS JRB, 2006).

4.12.1.6 Solid Waste

Solid waste generated at Willow Grove NAS JRB is collected and transported to the Montgomery County Transfer Station by facility personnel (NBRCMO, 2006).

LEGEND

Storm Water Drainage

Project Location

N

0 100 200 400

Feet

FIGURE 4-1
Storm Water Drainage Features
BRAC Environmental Assessment
Willow Grove NAS JRB, Pennsylvania

CH2MHILL

4.12.1.7 Emergency Services

Fire and ambulance emergency response services are provided at the Willow Grove NAS JRB by on-base personnel. Specially trained units respond to oil and hazardous materials spills or releases. Police services are provided at the Willow Grove NAS JRB by specially trained on-base personnel. These base police are stationed as guards at the two main base access and egress points and periodically patrol the boundaries of the base. The police station is located in the eastern portion of Willow Grove NAS JRB (Willow Grove NAS JRB, 2001).

4.12.2 Consequences

4.12.2.1 Preferred Alternative

The preferred alternative would cause an increased demand on the potable water system at Willow Grove NAS JRB. The water service demands anticipated from the preferred alternative could be accommodated under the existing system (Willow Grove NAS JRB, 2008) and by the Horsham Township Water and Sewer Authority after the closure of Willow Grove NAS JRB.

There would be increased demand on the current Willow Grove NAS JRB wastewater treatment system, but this system has excess capacity and is capable of providing service to the AFRC. Development of the proposed project area may require some relocation and/or modification of existing lines to accommodate the proposed sanitary flow, depending on the invert elevations of the existing systems. New sanitary service lines would connect to existing sanitary sewers wherever possible (Willow Grove NAS JRB, 2008). The Horsham Township Park Creek sewage treatment plant will have the capacity required to meet the demand of the proposed AFRC after the sewage treatment plant expansion is completed.

Stormwater in the proposed project area would be directed to a proposed stormwater retention pond near Johnson Street between Privet Road and Griffis Street. The retention pond would have capacity to accommodate flows from impervious areas. Stormwater from the pond would be released to the stormwater system via Johnson Street at pre-construction rates to minimize impacts to the stormwater system. During final design of the stormwater retention pond, depth to groundwater would be determined and the pond would be designed to remain above the shallow groundwater on the proposed project area. The stormwater retention pond would be wet only during storm events and would be maintained as a dry, mowed grass area at other times. This would minimize potential for the pond to become a bird attractant, which could lead to safety hazards to aircraft operations.

Increased electrical and natural gas demand would not unduly burden the existing supply. A tie-in would be made to the substation and the conduit would be run to the site for proposed electrical power requirements (Willow Grove NAS JRB, 2008). Based upon previous experience with PECO at this facility, PECO will be responsible for the design and distribution requirements necessary to provide natural gas service to the site when loading requirements are defined and an application for service is submitted (Willow Grove NAS JRB, 2008).

Telephone service would continue to be provided by AT&T. New buildings requiring telecommunications would be connected with the nearby AT&T telecommunications lines.

Solid waste produced at the AFRC would be collected and transported to the Montgomery County Transfer Station by facility personnel. The increase in solid waste would be insignificant and impacts on the local landfill would be negligible.

To accommodate future development, plans to tie into the public water system will need to be made. The Willow Grove NAS JRB fire protection system will then have excess capacity and will provide service to the AFRC without reduction of service ability to other areas (Willow Grove NAS JRB, 2006). In addition, the Horsham Fire Company has two facilities located approximately one mile southeast and one mile west of the AFRC to support the on-base fire protection service. Providing fire, rescue and emergency medical services to the AFRC would require no additional resources for the Willow Grove NAS JRB Fire Department. In addition, the Horsham Police Department is located approximately one mile west of the AFRC and the Warminster Township Police Department is located one mile east of the AFRC. These departments would be available if additional police services were required.

Consolidating multiple USAR facilities into the proposed AFRC would allow for more efficient use of water, wastewater service, and energy and would reduce the USAR's overall demand for utilities.

4.12.2.2 No Action Alternative

No impact to utilities would result under the no action alternative.

4.13 Hazardous and Toxic Substances

4.13.1 Affected Environment

4.13.1.1 Hazardous Substance Use, Storage, and Disposal

Based on the ages of the buildings within the proposed project area, lead paint is assumed to be present (Willow Grove NAS JRB, 2008). All fluorescent light tubes contain mercury. A pre-demolition survey would be conducted to determine the number and length of fluorescent tubes present. The tubes would be removed from buildings scheduled for demolition and sent to an approved recycler. Mercury may also be present in thermostats and other HVAC controls. These would be removed from affected buildings prior to demolition (Willow Grove NAS JRB, 2008).

Polychlorinated biphenyls (PCBs) are reportedly not present in the power transformers in the proposed project area (Willow Grove NAS JRB, 2008). According to the Environmental Condition of Property Report (Navy, 2006), all PCB-containing materials were removed in the late 1990s, however no documentation exists. PCBs may be present in pre-1977 fluorescent light ballasts. Based on the ages of some of the buildings to be demolished, PCB ballasts could have been present in fluorescent light fixtures. Given the nominal 20-year life span of light ballasts, some PCB ballasts could still be in service. Prior to demolition of buildings, all fluorescent light fixtures within the building would be inspected, and ballasts

which are not marked "No PCBs," would be removed for disposal as hazardous waste (Willow Grove NAS JRB, 2008).

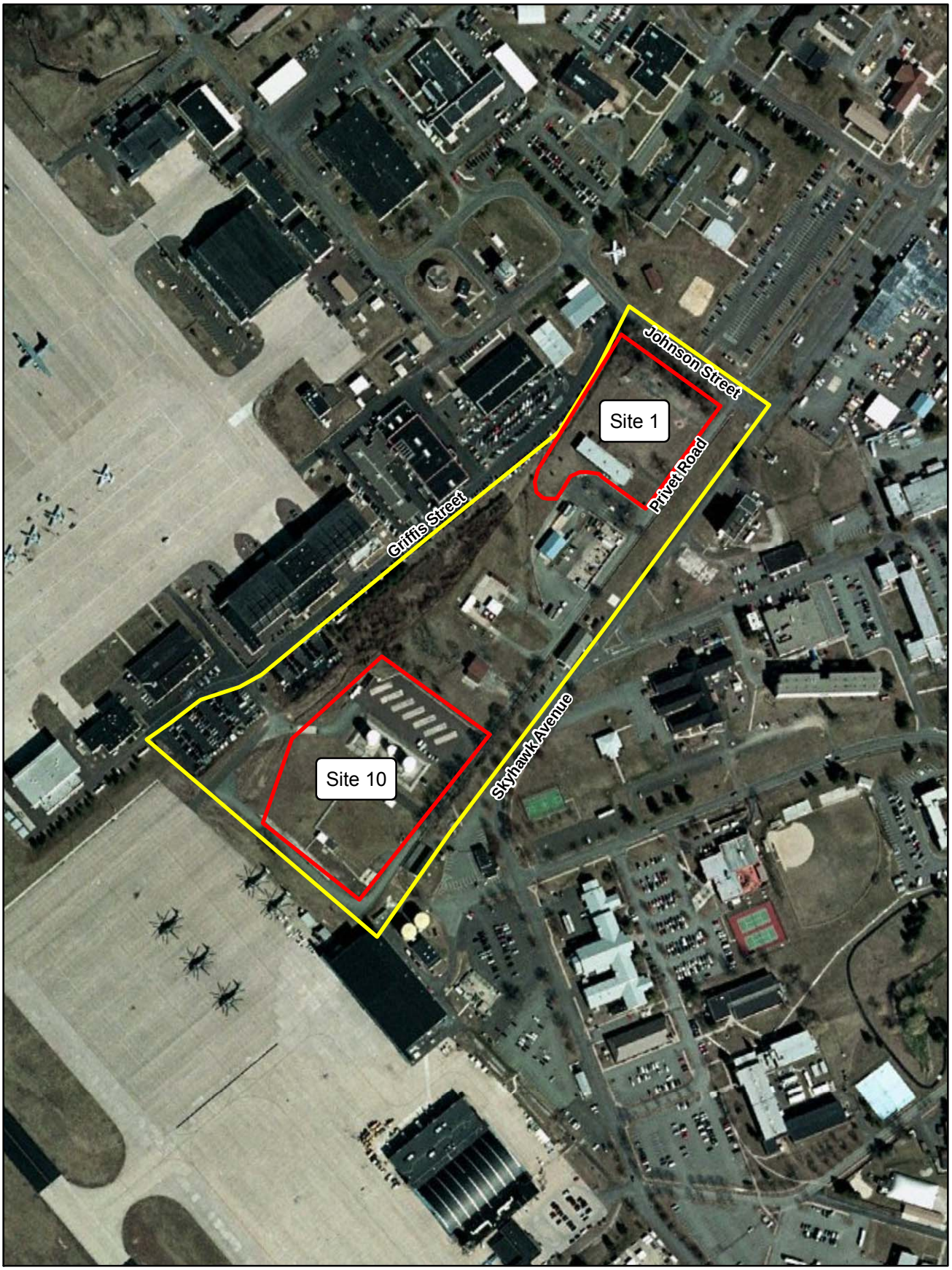
4.13.1.2 Site Contamination and Cleanup

Two sites of environmental concern are located within the boundary of the proposed project area (Figure 4-2). Site 1 is located immediately adjacent to the northeast of the bowling alley. This area was used as a transfer station for wastes, and was used as an open disposal area where wastes were burned and buried. It was also used to store several PCB-containing electrical transformers. Leakage from these transformers produced an area of surface and subsurface soils contaminated with PCB, mainly Aroclor 1260, in excess of health-based levels. In 1999, the Navy performed a remedial action which excavated approximately 1,200 tons of PCB-contaminated soils from Site 1. Post excavation confirmation sampling and laboratory analysis demonstrated successful cleanup to the residential level (1 ppm PCB). The EPA Record of Decision from September, 2006, states that no further action is required to address the soil at Site 1 (Willow Grove NAS JRB, 2008).

In addition, concentrations of chlorinated compounds were found in groundwater beneath Site 1 in excess of maximum contaminant levels (Tetra Tech, 2008). Site 1 is a probable historical contributing source to the chlorinated compounds in local groundwater; however, it is not considered a major continuing source in the area and no concentrated source of chlorinated compounds has been found (Tetra Tech, 2008). The principal source of the groundwater contamination is located off-base (Tetra Tech, 2008). VOCs occur chiefly in the deep monitoring wells (approximately 160 feet below ground surface) and are detected infrequently and at lower concentrations in the shallow monitoring wells. These low level concentrations are limited to isolated detections in shallow groundwater and do not represent definable plumes.

Site 10, the Navy Fuel Farm, is approximately two acres in size and currently consists of three large above-ground fuel storage tanks and the associated pipes and dispensing equipment. This site is located at the southwestern border of the proposed project area.

Two 210,000-gallon underground fuel tanks were previously located on the site. In 1986, one of the tanks was overfilled, and the fuel was released to the soil. The underground tanks were removed in 1991 along with the 500-gallon waste oil tank and diesel fuel storage tank. Removal of the free product was initiated in 1998, and discontinued in 2001. In April, 2004, the PADEP agreed that no further remedial action or investigation at this time is appropriate for Site 10 soils or groundwater; however, the soil and groundwater at Site 10 do not meet criteria for unrestricted use. Use of this land for the preferred alternative would require removal of the aboveground storage fuel tanks, associated pipes and dispensing equipment. PADEP has requested that soil borings be collected during demolition to investigate if there is any contamination associated with the USTs that were removed in 1991. Further actions, such as removal and restoration, would be based on the results of the soil borings.



LEGEND

IRP Sites

Project Location

N

0 100 200 400

Feet

FIGURE 4-2
Installation Restoration Program
Sites 1 and 10
BRAC Environmental Assessment
Willow Grove NAS JRB, Pennsylvania

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4.13.2 Consequences

4.13.2.1 Preferred Alternative

Construction of the preferred alternative is not expected to generate large amounts of hazardous or toxic substances, nor change the manner in which existing hazardous or toxic substances are generated, stored, or disposed on the AFRC. No impacts to the existing soils are anticipated from the construction of the stormwater retention pond near Site 1 because the contaminated soils have been removed. During final design of the stormwater retention pond, depth to groundwater would be determined and the pond would be designed to remain above the shallow groundwater on the proposed project area. Therefore, contaminated groundwater would not discharge to the stormwater retention pond. Use of this land for the preferred alternative would require removal of the aboveground storage fuel tanks, associated pipes and dispensing equipment. PADEP has requested that soil borings be collected during demolition to investigate if there is any contamination associated with the USTs that were removed in 1991. Further actions would be based on the results of the soil borings.

Operation of the AFRC would result in use or generation of small amounts of regulated substances, including cleaning solvents, mineral spirits, and oils and lubricants for vehicles and equipment. All hazardous and toxic substances that would be used would be used and disposed of in compliance with Willow Grove NAS JRB's Hazardous Waste Program. Hazardous wastes generated would be transferred from the AFRC to the hazardous waste storage igloos inside the fence for ultimate disposal.

The only interaction with base hazardous and toxic substances handling and storage would occur at the hazardous waste storage igloos. There would be no impacts to the preferred alternative from ongoing or planned operations at the Willow Grove NAS JRB and implementation of the preferred alternative would not impact ongoing or planned operations at Willow Grove NAS JRB.

Demolition and removal of the underground pipes that contain asbestos would be performed by a licensed asbestos contractor using trained workers (Willow Grove NAS JRB, 2008).

4.13.2.2 No Action Alternative

No impact to hazardous or toxic substances would be likely as part of the no action alternative. The no action alternative would not increase or decrease the existing generation or use of hazardous or toxic substances on Willow Grove NAS JRB, nor would it change the manner in which existing hazardous or toxic substances are stored or disposed.

4.14 Cumulative Effects Summary

4.14.1 Introduction

Cumulative effects can result from individually minor but collectively significant actions taking place over a period. Principles of cumulative effects analysis are described in the CEQ guide *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ, 1997). CEQ guidance on cumulative impacts analysis states: "for cumulative effects analysis

to help the decision maker and inform interested parties, it must be limited through scoping to effects that can be evaluated meaningfully."

The potential for cumulative effects to the environment from the preferred alternative was evaluated by reviewing other projects within the vicinity of the Willow Grove NAS JRB that could affect the same environmental resources as the preferred alternative. Actions that were considered include construction projects that were recently completed, are underway, or are programmed to occur within the near future.

The spatial boundary for the resource categories in the cumulative effects analysis includes all of the Willow Grove NAS JRB and immediately adjacent lands. The spatial boundary for the project was determined based on the anticipated project impact zone, which is generally not anticipated to extend beyond the Willow Grove NAS JRB boundaries. The temporal boundary for the cumulative effects analysis includes the past five years, present time, and the next five years. The temporal boundary for the project was developed considering the timeframe of the analysis conducted under the preferred alternative and the duration of the impacts anticipated.

4.14.2 Cumulative Impacts of the Preferred Alternative

The preferred alternative has potential to interact with planned or approved projects at Willow Grove NAS JRB or in the Willow Grove area.

Horsham Township is planning three construction projects located within the vicinity of Willow Grove NAS JRB over the next five years. Projects include a proposed commercial center east of SR 611, the Park Ridge Industrial Park land development plan, located along Keith Valley Road west of the base, and a proposed commercial land development located at Graeme Park Road and Keith Valley Road. Similar to other construction and demolition projects, these projects would result in potential impacts to land use, soils, air quality, noise, traffic and transportation, water resources, local utilities, and hazardous materials.

Planned military construction actions include the installation of a new access gate to replace the existing gate at the intersection of Privet Road, County Line Road, and SR 611. The gate would be constructed on the northeastern portion of the base on County Line Road. Similar to other minor construction projects, the new access gate could result in impacts to land use, soils, air quality, noise, traffic and transportation, and possibly utilities. The construction of the access gate would ultimately result in positive effects to military personnel occupying the base because it would create improve traffic and transportation efficiency and would provide the antiterrorism and force protection features required under currently military design guidelines.

Other planned actions include the modification of the existing water/sewer infrastructure, a perimeter fence, and road and parking lot modifications, and the construction of the Stryker Brigade Headquarters. The existing water and sewer infrastructure on the installation must be modified to obtain domestic water and sewer services. Potential impacts of construction could result in impacts to soils (erosion), air quality, noise, traffic and transportation, and hazardous materials.

A fence is planned to be constructed around the perimeter of the ANG portion of Willow Grove NAS JRB. A portion of the proposed fence would be installed along the eastern edge

of the proposed AFRC site along Privet Road. The proposed construction could result in minor impacts from soils erosion.

A modification to the road and parking lots west of Griffis Street must be completed to meet antiterrorism and force protection standards. The road and parking lots are located adjacent to and northwest of the proposed AFRC site. Potential impacts of construction could result in impacts to soils, air quality, noise, and traffic and transportation.

The Army National Guard has proposed construction of the Stryker Brigade Headquarters facility on Willow Grove NAS JRB, northwest of the proposed AFRC site on the former running track on the ANG property. The potential impacts of construction and operation of this facility have already been evaluated and construction is planned for the spring of 2009. The Stryker Brigade Headquarters would have direct interaction with construction and operation of the AFRC. Similar to other construction and demolition projects, the Stryker Brigade Headquarters project would be anticipated to result in impacts to land use, soils, air quality, noise, traffic and transportation, water resources, and hazardous materials.

Several other projects have been proposed but have not yet been approved. These were not evaluated because it is unknown when or if they would occur. These projects include modifications to existing buildings on Willow Grove NAS JRB.

Cumulative impacts from the projects described above are not anticipated to be significant. Implementation of BMPs as required under construction and base wide permits would minimize impacts to soils, stormwater, surface water, and air quality. Construction of the proposed Stryker Brigade Headquarters would add vehicle traffic to the installation during construction and operation of the facility. However, it is anticipated the traffic from the headquarters building would occur during the week while the majority of the traffic from the AFRC would occur during the weekends. Therefore, cumulative effects of the two projects would be minimal.

There would be no change in the relationship between the AFRC and the non-military community; however, there could be a minor beneficial economic impact from incidental purchases from reservists on training weekends in the local area. The majority of the potential impacts resulting from proposed military construction projects on Willow Grove NAS JRB, with the exception of additional traffic and potential air emissions, would be limited to the military facility and would not extend into the surrounding community.

Willow Grove NAS JRB would be closed under Navy BRAC and a new smaller military enclave would be established. The new enclave would include facilities to support the Air National Guard 270th Engineering Installation Squadron, the Air National Guard 111th Fighter Wing, and the relocated Army Reserve units. The Navy BRAC project is a separate action from the Army BRAC action described under the proposed action is this EA. The individual projects associated with the implementation of the closure of Willow Grove NAS JRB have not been fully developed. The base is anticipated to close by April 2011, when the Navy mission at Willow Grove NAS JRB is scheduled to end. The closure of Willow Grove NAS JRB would include privatization of the surplus land. However, the final disposition of the lands, the actual changes in land use, and the final timing of the change in land use is unknown so this change could not be evaluated in detail as part of the cumulative effects analysis.

It is anticipated that the change in land use from a military installation to state or privately owned operations would include some level of demolition and construction. Depending upon the types or projects planned, potential impacts related to these activities could include impacts to air quality, land use, aesthetics and visual resources, noise, soils, water and biological resources, cultural resources, socioeconomics, transportation, utilities, and hazardous and toxic resources. The potential for replacement of older buildings and facilities with newer buildings and technologies would lead to an overall benefit from an increase in energy efficiency.

A positive impact to air quality in the region is a likely result of the reduction in military operations at Willow Grove NAS JRB. The Department of Defense Base Redevelopment and Realignment Manual recommends that installations determine how air emission credits may be allocated when there is a base closure action with the potential for air emission trading credits (DoD 4165.66-M, 2006).

4.15 Mitigation Summary

Implementation of the preferred alternative would not result in significant impacts to the environmental or socioeconomic resources. Because none of the other impacts are significant, no mitigation is proposed. This section summarizes the procedures and project design features that would be implemented as part of the preferred alternative to avoid or minimize impacts to the greatest extent possible.

Soil borings would be collected during the demolition of the fuel farm ASTs to determine if any contamination associated with the former USTs is still present. Further actions, such as removal and restoration, would be based on results of the soil borings.

The Army Reserve would obtain required permits, approvals, or certifications prior to implementing construction activities.

Personnel conducting construction activities would strictly adhere to all applicable occupational safety requirements during construction activities.

Generation of fugitive dust is unavoidable during construction. Specific project design features that would be implemented to minimize or eliminate impacts from fugitive dust include use of sprinkling, irrigation, or mulching to prevent generation of airborne dust and the use of revegetation and mulching as soon as work is complete to minimize the exposure of bare soil.

Construction-related noise would occur, but would be limited to weekdays and daylight hours to minimize disturbance to nearby areas.

Appropriate BMPs that would be implemented and maintained to minimize the potential for stormwater runoff and resultant downstream impacts to water quality during construction could include, but would not be limited to, use of silt fencing and sediment traps, and revegetation/mulching of disturbed areas as soon as possible.

5.0 Findings and Conclusions

5.1 Findings

Table 5-1 summarizes the consequences of the preferred alternative and the no action alternative. The following sections provide a summary of the anticipated impacts of each alternative.

5.1.1 Consequences of the Preferred Alternative

Implementation of the preferred alternative would result in no impacts to land use, aesthetics or visual resources, geology, prime farmland soils, surface water, wetlands, groundwater, floodplains, threatened or endangered species, cultural resources, demographics, housing, environmental justice, or protection of children. Implementation of the preferred alternative would result in minor short-term adverse impacts to air quality from construction, temporary construction-related noise, minor alteration of topography and soils, minor impacts to stormwater during and after construction including a minor increase in stormwater flow to receiving surface waters, minor adverse impacts on common urban flora and fauna, minor adverse impacts to traffic on weekends, minor increase in demand of local utilities, and minor generation of construction-related waste. Implementation of the preferred alternative would result in minor short-term beneficial impacts to economic development in the local area during construction. Implementation of the preferred alternative would result in minor impacts from the use of small quantities of hazardous and toxic materials during operation of the AFRC and AMSA. Potential benefit from additional soil remediation at Site 10 could occur. Soil borings would be collected during the demolition of the fuel farm to determine if any contamination associated with the former USTs is still present. Further actions, such as removal and restoration, would be based on results of the soil borings.

Based upon estimated emissions, operation and training activities would result in a long-term increase of criteria pollutants from stationary and mobile sources. However, the preferred alternative is not anticipated to significantly impact existing or future air quality as the estimated emissions from operation of the proposed AFRC are well below the threshold levels of regulatory programs.

Under the preferred alternative the USAR would consume less utility resources, including water, wastewater, electrical, and natural gas. Consolidating USAR facilities into the proposed AFRC would allow for more efficient use of these resources and would reduce the USAR's overall demand for utilities.

5.1.2 Consequences of the No Action Alternative

There would be long-term negative impacts to transportation under the no action alternative. There would be no impact to all other resources evaluated in this EA from the no action alternative.

5.2 Conclusions

Based upon the findings presented above, it has been concluded that no significant environmental or socioeconomic impacts would result from the preferred alternative. Therefore, it is not necessary to prepare an EIS to address the preferred alternative and a FNSI should be issued.

TABLE 5-1
Summary of Potential Environmental and Socioeconomic Consequences
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

	Environmental and Socioeconomic Consequences	
Resource	**No Action**	**Preferred Alternative**
Land Use	No Change from Baseline Conditions	No Impact
Aesthetics and Visual Resources	No Change from Baseline Conditions	No Impact
Air Quality	No Change from Baseline Conditions	Minor short-term impact from construction-related fugitive dust that would be controlled through appropriate Best Management Practices (BMPs). Based upon estimated emissions, operation and training activities would result in a long-term increase of criteria pollutants from stationary and mobile sources. However, the preferred alternative is not anticipated to significantly impact existing or future air quality as the estimated emissions from operation of the proposed AFRC are well below the threshold levels of regulatory programs.
Noise	No Change from Baseline Conditions	Minor construction-related impact: appropriate worker safety measures would be implemented; no long-term effects from operation. Minor noise disturbance at nearby residences is possible.
Geology and Soils		
Geology/Topography	No Change from Baseline Conditions	Minor impact from topographic alteration of previously cleared and graded site through re-clearing and re-grading for site preparation.
Soils	No Change from Baseline Conditions	Minor impact: appropriate BMPs would be implemented to minimize erosion and impact from stormwater runoff.
Prime Farmland	No Change from Baseline Conditions	No Impact
Water Resources		
Surface Water	No Change from Baseline Conditions	No Impact

TABLE 5-1
Summary of Potential Environmental and Socioeconomic Consequences
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

	Environmental and Socioeconomic Consequences	
Resource	**No Action**	**Preferred Alternative**
Hydrogeology/ Groundwater	No Change from Baseline Conditions	No Impact
Floodplains	No Change from Baseline Conditions	No Impact
Biological Resources		
Vegetation	No Change from Baseline Conditions	Minor adverse impact to common flora.
Wildlife	No Change from Baseline Conditions	Minor adverse impact to common fauna.
Wetlands	No Change from Baseline Conditions	No Impact
Sensitive Species	No Change from Baseline Conditions	No Impact
Cultural Resources		
Historic Resources	No Change from Baseline Conditions	No Impact
Archeological Resources	No Change from Baseline Conditions	No Impact
Native American Resources	No Change from Baseline Conditions	No Impact
Socioeconomics		
Economic Development	No Change from Baseline Conditions	Minor benefit to local economy during construction. No impact from operation.
Demographics	No Change from Baseline Conditions	No Impact
Housing	No Change from Baseline Conditions	No Impact
Environmental Justice	No Change from Baseline Conditions	No Impact
Protection of Children	No Change from Baseline Conditions	No Impact
Transportation	No Change from Baseline Conditions	Minor adverse during training weekends.
Utilities		
Potable Water	No Change from Baseline Conditions	Minimal Impact, slight increase in demand for Willow Grove NAS JRB drinking water service.
Wastewater	No Change from Baseline Conditions	Minimal Impact, slight increase in demand for Willow Grove NAS JRB service; system has capacity.

TABLE 5-1
Summary of Potential Environmental and Socioeconomic Consequences
Construction and Operation of AFRC, Willow Grove NAS JRB, PA

	Environmental and Socioeconomic Consequences	
Resource	**No Action**	**Preferred Alternative**
Energy	No Change from Baseline Conditions	Minimal Impact, slight increase in demand as electricity would be purchased from a local utility.
Solid Waste	No Change from Baseline Conditions	Minor Impact: typical construction wastes that would be within the capacity of local and regional waste disposal facilities.
Stormwater	No Change from Baseline Conditions	Minor impact: use of appropriate BMPs and stormwater controls would prevent impacts from construction activities. Stormwater controls, including construction of a stormwater retention pond, would be designed to prevent post-construction runoff from exceeding pre-construction runoff. Pond would be designed to be wet only during storm events to minimize potential as a bird attractant.
Hazardous Materials, Wastes, IRP Sites, and Stored Fuels		
Hazardous/Toxic Materials	No change in current use on Willow Grove NAS JRB	No change in current use on Willow Grove NAS JRB from construction. Minor Impact from small quantities of cleaners, solvents, and lubricants associated with operation of AFRC and AMSA.
IRP	No Change from Baseline Conditions	Potential benefit from additional soil remediation at Site 10 could occur. Soil borings would be collected during the demolition of the fuel farm ASTs to determine if any contamination associated with the former USTs is still present. Further actions would be based on results of the soil borings.
Indirect and Cumulative Impacts	No Change from Baseline Conditions	No Impact

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10.0 Abbreviations and Acronyms

$\mu g/m^3$	Microgram per cubic meter
ADT	Average Daily Traffic

AFRC	Armed Forces Reserve Center
AMSA	Area Maintenance Support Activity
ANG	Air National Guard
APE	Area of Potential Effect
ARs	Army Regulations
BMP	Best Management Practice
BRAC	Base Closure and Realignment
CAA	Clean Air Act
CCRG	Commonwealth Cultural Resources Group, Inc.
CEQ	President's Council on Environmental Quality
CFR	Code of Federal Regulations
CO	Carbon Monoxide
Commission	Base Closure and Realignment Commission
dBA	A-weighted Decibel Scale
EA	Environmental Assessment
EIFS	Economic Impact Forecast System
EIS	Environmental Impact Statement
EO	Executive Order
FNSI	Finding of No Significant Impact
ft^2	Square Foot
JRB	Joint Reserve Base
mgd	Million Gallons per Day
NAAQS	National Ambient Air Quality Standards
NAS	Naval Air Station
NEPA	National Environmental Policy Act of 1969
NH_3	Ammonia
NHPA	National Historic Preservation Act
NNSR	Nonattainment New Source Review
NOI	Notice of Intent
NOx	Nitrogen Oxide
OMS	Organizational Maintenance Shop
NPDES	National Pollutant Discharge Elimination System
PADEP	Pennsylvania Department of Environmental Protection
PCB	Polychlorinated biphenyls
PECO	Philadelphia Electric Company
PM	Particulate Matter
PPM	Parts per Million
PSD	Prevention of Significant Deterioration
RCRA	Resource Conservation and Recovery Act
ROI	Region of Influence
RSC	Regional Support Command
RTVs	Rational Threshold Values
SHPO	State Historic Preservation Office
TSP	Total Suspended Particulate
USACE	United States Army Corps of Engineers
USAR	United States Army Reserve
USARC	United States Army Reserve Center

USFWS	United States Fish and Wildlife Service
VOC	Volatile Organic Compound
yd^2	Square Yard