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Department of the Army
US Army Garrison Fort Belvoir

in accordance with
Army Regulation 200-2

pursuant to
National Environmental
Policy Act Section 102(2)(C)



Environmental Assessment

Relocation of the Defense Threat Reduction Agency to Fort Belvoir, Virginia

September 2001

Abstract

This Environmental Assessment (EA) identifies and evaluates the potential effects of: relocating approximately 840 Defense Threat Reduction Agency (DTRA) personnel from the City of Alexandria, VA, and from Franconia, VA, to the McNamara Headquarters Complex on Fort Belvoir, VA; and building an addition to the existing McNamara Building, a 1,000 to 1,100 - car parking garage, and a temporary parking lot to be used during construction. The purpose and need for the proposed action is to complete DTRA's consolidation at a secure site in the National Capital Region. A No Action Alternative was also considered. No significant adverse impacts are anticipated as a result of the proposed action.

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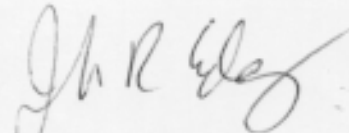
US Army Garrison Fort Belvoir
Directorate of Installation Support
9430 Jackson Loop, Suite 107
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ENVIRONMENTAL ASSESSMENT

U.S. ARMY GARRISON FORT BELVOIR RELOCATION OF DEFENSE THREAT REDUCTION AGENCY TO FORT BELVOIR, VIRGINIA

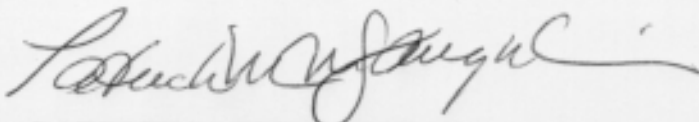
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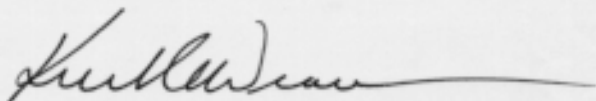
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Finding of No Significant Impact

U.S. Army Garrison Fort Belvoir
Directorate of Installation Support
Relocation of the Defense Threat Reduction Agency (DTRA)
to Fort Belvoir, Virginia

- 1.0 Description of Proposed Action:** Approximately 840 DTRA personnel would relocate from Alexandria and Franconia, Virginia to the Andrew T. McNamara Headquarters Complex (HQC) on Fort Belvoir. To accommodate DTRA on the McNamara HQC, a 306,530-gross-square-foot (28,477-gross-square-meter) addition to the McNamara Building and a parking structure for 1,000 to 1,100 vehicles would be built. A temporary gravel parking lot to be used during construction for 800 cars would be built on nearby McCutchen Road. This action would constitute the second and final step of DTRA's relocation to and consolidation at Fort Belvoir, begun in 2000.
- 2.0 Alternatives:** The No Action Alternative was the only alternative evaluated.
- 3.0 Environmental Consequences:** The Environmental Assessment (EA) identified potential impacts of the Proposed Action and mitigation measures to reduce effects on human health and the environment as summarized below:
- **Land Use:** The Proposed Action would not alter land use patterns significantly. The new permanent facilities would be built on the McNamara HQC which is already developed for office uses. The temporary gravel parking lot on McCutchen Road would mainly replace paved or graveled parking lots used for storing vehicles, equipment, and supplies with the exception that a 1.45 ac (0.58 ha) pine woodlot would be cleared. Development of the sites is in keeping with the installation's master plan.
 - **Socioeconomics:** The Proposed Action would have little impact on demographics, community facilities, housing, or taxes and other revenues. It is not anticipated that many DTRA personnel would relocate their homes because the change in commuting distance would be small. While there would be some traffic, noise, and air quality impacts on a nearby residential area that qualifies as an environmental justice community during the construction period, the impacts would be temporary and would largely be mitigated through controls on dust, hours of construction, and routing of traffic, so that the impacts would not be significant.
 - **Transportation & Traffic:** The Proposed Action would increase the vehicle miles traveled by DTRA personnel commuting to work by 2.4 percent, or about 0.5 mile for an average one-way commute. Many DTRA personnel live in the same areas where other Fort Belvoir commuters live, so travel patterns should not change significantly. Analysis of intersection impacts on intersections for both

alternatives indicated that neither alternative would not have an adverse impact on traffic.

- **Air Quality:** The Proposed Action would have a negligible impact on air quality in the region and the locality of Fort Belvoir. Construction activities would generate some dust which could be partially mitigated by spraying water and covering exposed soil with grass.
- **Noise:** The Proposed Action is not expected to significantly affect long-term noise levels near the new facilities or on nearby roads. Construction activities would generate short-term increases in noise levels nearby although control of truck routes and construction hours would partially mitigate these impacts.
- **Natural Resources:** Because both the McNamara HQC and McCutchen Road sites are largely developed, impacts on natural resources would be minimal. There would be no increase in impervious surfaces at the McNamara HQC, so the capacity of existing stormwater facilities would be sufficient. A new stormwater best management practice facility would be constructed for the temporary parking lot. The proposed temporary parking lot would displace 1.45 acre (0.61 hectare) of loblolly pine plantation, have a minor impact on wildlife habitat, and might reduce foraging opportunities for the state-threatened wood turtle, if any exist nearby (a survey will be conducted to determine if they are using the area). The trees cut down would be replaced elsewhere on Fort Belvoir.

4.0 Conclusions: On reviewing the environmental assessment and other project information, the Commander of the U.S. Army Garrison Fort Belvoir has concluded that the effects of the proposed action are not significant and will not adversely effect the quality of the environment. Fort Belvoir will ensure that the necessary mitigation measures are implemented. An Environmental Impact Statement will not be prepared.

Notice of Availability: The Environmental Assessment is available for public review at the Directorate of Installation Support, Fort Belvoir, Virginia and at John Marshall, Lorton, and Sherwood Hall branches of the Fairfax County Public Libraries. A copy of this notice and the Environmental Assessment can be viewed on the World Wide Web at www.belvoir.army.mil.

Interested parties are invited to submit written comments for consideration on or before 30 days after publication of this notice to **Commander, U.S. Army Garrison Fort Belvoir, 9430 Jackson Loop, Suite 107, ATTN: ANFB-ELE, Fort Belvoir, VA 22060-5130**. E-mail comments will be accepted at environmental@belvoir.army.mil. The proposed action will not be implemented before this date. For more information, contact Mr. Patrick M. McLaughlin at (703) 806-4007.

EXECUTIVE SUMMARY

S.1 Proposed Action

US Army Garrison Fort Belvoir is proposing to accommodate the permanent relocation and consolidation of the Defense Threat Reduction Agency (DTRA) to Fort Belvoir. Approximately 840 DTRA personnel would relocate from offices in Alexandria and Franconia, Virginia, and join the approximately 1,000 DTRA personnel who have been relocating to Fort Belvoir in the last year under a prior action. To accommodate the increase in personnel, two permanent structures and one temporary facility would be built: a 306,530-gross-square-foot (28,477-gross-square-meter) addition to the Andrew T. McNamara Building on the secure Andrew T. McNamara Headquarters Complex (HQC); a three-level parking garage for 1,000 to 1,100 vehicles on the HQC; and a temporary gravel parking lot for approximately 800 cars on nearby McCutchen Road to be used during construction. Following construction, the temporary modular building located on the McNamara HQC parking lot would be removed. Building construction and personnel relocation are scheduled to be completed in 2005.

This Environmental Assessment (EA) addresses the impacts of the relocation of DTRA personnel to and consolidation of DTRA at Fort Belvoir, and as a result of that action, the construction of new facilities to accommodate them. US Army Garrison has prepared this EA in accordance with the National Environmental Policy Act (NEPA) of 1969 as implemented through the President's Council on Environmental Quality (CEQ) regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508), and Army Regulation (AR) 200-2, *Environmental Effects of Army Actions*.

S.2 Purpose and Need for the Proposed Action

DTRA was formed in late 1998 through the combination of several DoD security agencies with a mission of reducing the threat to the United States and its allies from nuclear, chemical, biological, special, and conventional weapons, and providing technical support on weapons of mass destruction matters to Department of Defense (DoD) components. Until Spring 2000, DTRA operated from five separate facilities in the National Capital Region. The Department of Defense (DoD) and Congress raised concerns about DTRA's force protection vulnerabilities as well as its ability to fulfill its mission with units spread around the region, with most personnel in vulnerable leased space.

After a year of study, the Deputy Secretary of Defense approved the relocation of DTRA to Fort Belvoir in Program Budget Decision 703, dated December 16, 1999. Specifically, DoD planned to move DTRA to temporary quarters at Fort Belvoir in fiscal year 2000 and to program a

military construction project for fiscal year 2002 to create a permanent facility for DTRA at the secure McNamara HQC.

An EA and FNSI for the *Temporary Relocation of the Defense Threat Reduction Agency to Fort Belvoir, Virginia* was published by Fort Belvoir in March 2000, covering the relocation of approximately 1,000 DTRA personnel from leased space at Dulles Airport to Fort Belvoir. Following acceptance of the FNSI, approximately 1,000 DTRA personnel began to relocate to the McNamara HQC, a move that will extend into the spring of 2002. The proposed action under consideration here represents the second and final step in the DTRA relocation and consolidation process.

S.3 Alternatives to the Proposed Action

In addition to the Proposed Action, this EA evaluates a No Action Alternative. Under this alternative, no further DTRA personnel would relocate to the McNamara HQC at Fort Belvoir, no new facilities would be built, and the consolidation of DTRA on a secure site would remain incomplete.

S.4 Environmental Consequences

The Proposed Action Alternative would have no significant adverse impacts on the environment. The relocation of about 840 DTRA personnel and the construction of new facilities is anticipated to have little impact on local or regional land use, master plans, socioeconomics, community facilities, traffic, air quality, noise levels, or cultural resources.

Accotink Village, a residential community of about 400 located near the site of the temporary parking lot, qualifies as an environmental justice community. The location for the temporary lot has been used for decades as a motor pool facility and yard to store vehicles, equipment, and materials, and is the only site available for use as a parking lot within thousands of feet of the McNamara HQC. Traffic, noise, and air quality impacts arising from construction activities and operation of the temporary parking lot would be short-term in nature (approximately two years) and could largely be mitigated. Therefore, the adverse impacts on the Accotink Village community would be insignificant.

The temporary parking lot on McCutchen Road has been carefully sited to avoid impinging on the delineated Chesapeake Bay Resource Protection Area and wetlands along Mason Run, just east of the proposed site. The proposed gravel parking lot would require clearing 1.45 ac (0.58 ha) of a loblolly pine plantation woodlot with consequent loss of wildlife habitat. A stormwater best management practice (BMP) facility would be constructed to minimize water quality impacts on Mason Run. Fort Belvoir will undertake a survey to determine whether the state-

listed threatened wood turtle (*Clemmys insculpta*) occurs on or near the proposed construction site. If this species is found to be present, Fort Belvoir would coordinate with the Virginia Department of Conservation and Recreation and the Virginia Department of Game and Inland Fisheries on management and mitigation strategies.

The proposed addition and parking structure would be built on the highly-developed McNamara HQC. As a result, there would be no impact on natural resources, including wetlands, floodplains, or threatened and endangered species. The amount of impervious surface would be the same following construction as it is at present, so no increases in stormwater flows are projected. New stormwater facilities would connect to the existing BMP system that drains into the existing stormwater detention basin on site. The portion of the McNamara HQC parking lot now covered by the temporary modular building would be restored to its original use as a parking lot. A Virginia Pollution Discharge Elimination System permit will be required for this project because approximately 16 acres of land (much of it already covered by structures) would be disturbed by construction.

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1 PURPOSE AND NEED

US Army Garrison Fort Belvoir is proposing to:

- Accommodate the permanent relocation and consolidation of the Defense Threat Reduction Agency (DTRA) to Fort Belvoir, including the relocation of about 840 DTRA personnel from the City of Alexandria and Franconia, Fairfax County, Virginia.
- Build a 306,530-gross-square-foot (GSF) (28,477-gross-square-meter [GSM]) addition to the existing Andrew T. McNamara Building (formerly the Defense Logistics Agency [DLA] Headquarters Building), located within the Andrew T. McNamara Headquarters Complex (formerly the Defense Logistics Agency Headquarters Complex [DLA HQC] and hereafter in this EA, the McNamara HQC). The new building would be called the Defense Threat Reduction Center (DTRC).
- Build a three-level parking garage for 1,000 to 1,100 vehicles in the southeastern portion of the McNamara HQC parking lot, near the proposed DTRC.
- Build a temporary gravel parking lot for approximately 800 cars along McCutchen Road, about 500 feet (ft; 152 meters [m]) south of the McNamara HQC, to compensate for the temporary loss of parking spaces at the HQC during construction of new facilities.

Upon completion of the proposed building addition, approximately 840 DTRA personnel would relocate to the McNamara HQC from their current work places in Franconia and Alexandria, joining the approximately 1,000 DTRA personnel who have been relocating to the HQC in the last year (this move was covered by an earlier EA, described in [Subchapter 1.1.1](#)). Building construction and personnel relocation are scheduled to be completed in 2005.

Fort Belvoir is located in southeastern Fairfax County, Virginia, about 10 miles (mi) (16 kilometers [km]) south of the Pentagon and about 12 mi (19 km) south of Washington, DC along the Potomac River ([Figure 1-1](#), Location of Fort Belvoir, and [Figure 1-2](#), Fort Belvoir). The McNamara HQC encompasses 72 acres [ac] (29 hectares [ha]) of developed land bordered by the Fairfax County Parkway (Route 7100), John J. Kingman Road, and Beulah Street (Route 613).

This environmental assessment (EA) evaluates the impacts of the relocation of approximately 840 DTRA personnel to the McNamara HQC and the construction of the DTRC and related facilities. It has been prepared pursuant to the National Environmental Policy Act (NEPA) of

1969, the Council on Environmental Quality (CEQ) regulations in 40 Code of Federal Regulations (CFR) Parts 1500-1508, and Army Regulation (AR) 200-2, “Environmental Effects of Army Actions” at 32 CFR Part 651.

1.1 Purpose and Need for the Proposed Action

1.1.1 Background and Mission of DTRA

DTRA is a Joint Service Agency established on October 1, 1998 with the mission of reducing the threat to the United States and its allies from nuclear, chemical, biological, special, and conventional weapons and providing technical support on weapons of mass destruction matters to Department of Defense (DoD) components. DTRA performs on-site inspections and other matters involving compliance with treaties and agreements, cooperative threat reduction, technology security, and support for the nuclear deterrent. The DTRA mission requires that facilities where DTRA is located be secure and protected.

DTRA was formed through the combination of several DoD security agencies: the On-Site Inspection Agency, the Defense Technology Security Administration, the Defense Special Weapons Agency, and several other offices of the Secretary of Defense. The new agency consists of over 2,000 military and civilian personnel. Until Spring 2000, DTRA operated from five separate facilities in the National Capital Region: two leased buildings at Dulles Airport, Loudoun County, Virginia; a government-owned building on Telegraph Road in Franconia, Fairfax County, Virginia; leased space within a building on Eisenhower Avenue, City of Alexandria, Virginia; leased space on Army Navy Drive in Arlington County, Virginia; and space at the Pentagon.

Even before DTRA was established, concerns were raised within both DoD and Congress about:

- The ability of the new organization to meet its obligations with units spread out in five different locations in the National Capital Region.
- The force protection vulnerabilities of this emerging DoD organization responsible for providing expertise to others on force protection and weapons of mass destruction effects.

Defense Reform Initiative Number 35 – “Location of the DTRA Headquarters and Support Offices,” dated May 5, 1998 called for the consolidation, at or near Dulles International Airport, of all DTRA activities within the National Capital Region. However, an analysis of the facilities at Dulles concluded that DTRA’s long-term physical security and force protection needs would not be met. Consequently, on May 10, 1999, DoD informed Congress that it had deferred plans for consolidation of DTRA at the Dulles International Airport site because of

Location of Fort Belvoir

This map illustrates the location of Fort Belvoir in the Washington, D.C. metropolitan area. The map shows the Potomac River forming the border between Maryland to the north and Virginia to the south. Fort Belvoir is situated on the Virginia side, just south of the river. Major urban areas, including Washington D.C., Baltimore, and Richmond, are shaded in gray. The map also displays various state and county boundaries, as well as major highways. A legend at the bottom left identifies the symbols for Fort Belvoir, Urban Area, State Boundary, and County / Municipal Boundary. A scale bar at the bottom center provides distances in both miles and kilometers, and a north arrow is located at the bottom right.

Legend:

- Fort Belvoir
- Urban Area
- State Boundary
- County / Municipal Boundary

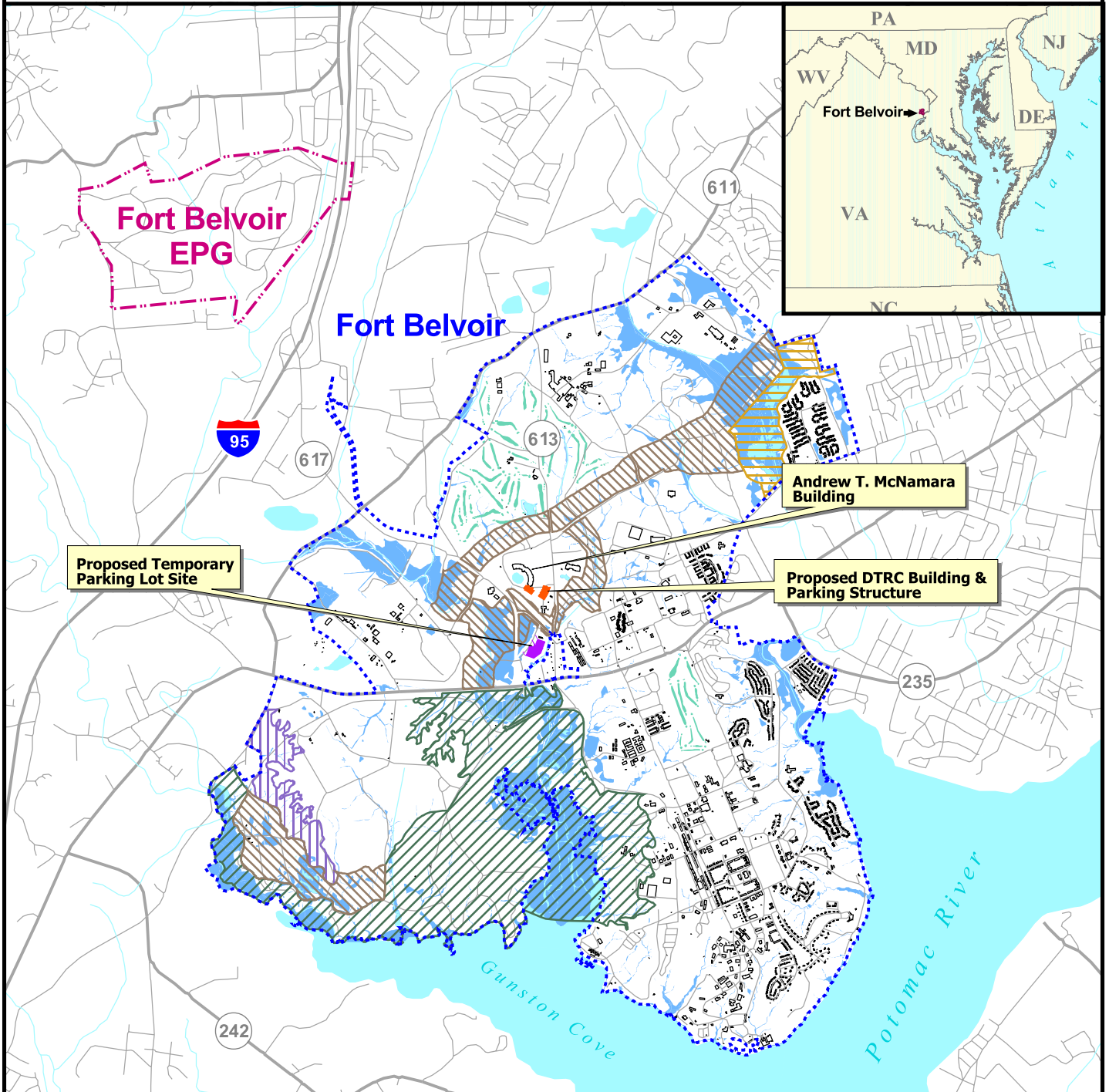
Scale:

- Scale in Miles: 0 to 20
- Scale in Kilometers: 0 to 30

Figure 1-1

Figure 1-1

Fort Belvoir



-  Wildlife Refuge
-  Jackson Miles Abbott Wetland Refuge
-  Forest and Wildlife Corridor
-  Accotink Bay Wildlife Refuge
-  Golf Course
-  Wetland
-  Waterbody

-  Fort Belvoir Main Post Boundary
-  Fort Belvoir Engineer Proving Ground

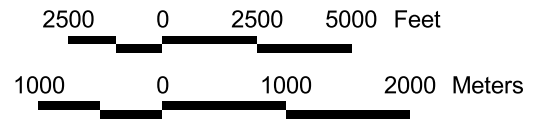


Figure 1-2

insufficient space and inadequate force protection and security, and that a range of other options was being reviewed. DoD indicated that after such review it would report back to Congress.

After a year of study in which DoD agencies in the National Capital Region were queried on their ability to accommodate DTRA, the Deputy Secretary of Defense approved the relocation of DTRA to Fort Belvoir in Program Budget Decision 703, dated December 16, 1999. Secretary of Defense William Cohen sent a report to the leadership of Congress on January 7, 2000 informing them of DoD's plans to move the DTRA headquarters to Fort Belvoir because "this...would substantially increase force protection for this portion of the DTRA work force." Specifically, DoD planned to move DTRA to temporary quarters at Fort Belvoir in fiscal year 2000 and program a Military Construction (MILCON) project for fiscal year 2002 to accommodate a permanent facility for DTRA elements at the secure McNamara HQC (then the DLA HQC) on Fort Belvoir.

An EA and FNSI for the *Temporary Relocation of the Defense Threat Reduction Agency to Fort Belvoir, Virginia* was published by Fort Belvoir in March 2000 that covered the relocation of approximately 1,000 DTRA personnel to Fort Belvoir from two leased buildings at Dulles Airport. Following acceptance of the FNSI, approximately 1,000 DTRA personnel began to relocate to the McNamara HQC, a move that will extend into the spring of 2002. About 500 of these employees will occupy space in the main building and about 500 will occupy a temporary modular building erected in June 2000 on a portion of the HQC's parking lot. The proposed action under consideration here represents the second and final step in the DTRA relocation and consolidation process.

1.1.2 Security Considerations

The immediate need for a secure location for DTRA has been driving the proposal for the relocation of DTRA Headquarters and personnel to the McNamara HQC. A physical security analysis performed before DTRA's temporary, partial move to Fort Belvoir identified DTRA's consolidation into one agency located in one place as creating an inviting target for terrorist organizations. Serious force protection vulnerabilities at several of their National Capital Region locations were cited. DTRA facilities located outside Fort Belvoir are considered vulnerable because some buildings lack fencing or physical barriers to prevent physical assaults and sufficient stand-off distance between public roads and the facilities to provide protection from explosives and other hostile actions. In addition for the facilities outside Fort Belvoir, DTRA does not have the ability to control or influence the use of the space around the buildings it leases.

The McNamara HQC is a secure, protected site that is fenced, guarded, located on an Army installation , and has buildings set back from the surrounding public roads. For these reasons, the

relocation of the remainder of DTRA's personnel to the McNamara HQC and the construction of the DTRC Building, to become DTRA's headquarters, is proposed.

1.2 The NEPA Process

NEPA provides for the consideration of environmental issues in federal agency planning and decision making. Under NEPA, federal agencies must prepare an Environmental Impact Statement (EIS) or EA for any federal action, except those actions that are determined to be "categorically excluded." An EIS is prepared for those federal actions that may significantly affect the quality of the human environment. An EA is a concise public document that serves to provide sufficient evidence and analysis for determining whether to prepare an EIS. The EA should include brief discussions of the following:

- The need for the proposal.
- The alternatives (as required under Section 102[2][E] of NEPA).
- The environmental impacts of the proposed action and alternatives.
- A listing of agencies and persons consulted.

The EA results in either a finding of no significant impact (FNSI) or a decision to prepare an EIS. If the Army were to determine that the proposed action would have a significant impact on the quality of the human environment, then an EIS would be prepared.

2 DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter describes the two alternatives considered in this EA: the No Action Alternative and the Proposed Action Alternative. Because the proposed action represents the second stage of the congressionally-mandated and partially-executed consolidation of DTRA to the secure McNamara HQC at Fort Belvoir, no alternatives that looked at locations outside the McNamara HQC were considered reasonable. Within the McNamara HQC, siting alternatives for the proposed buildings are described in [Subchapter 2.3](#). [Subchapter 2.4](#) explains how the site of the temporary parking lot was selected.

2.1 No Action Alternative

Under the No Action Alternative, no further DTRA personnel would relocate to the McNamara HQC at Fort Belvoir. The consolidation of DTRA would be incomplete; DTRA personnel and functions would remain scattered around the region. Defense Reform Initiative Directive Number 35, which directed that elements of DTRA in the National Capital Region be consolidated, and DoD Program Budget Decision 703, which approved the relocation of DTRA to Fort Belvoir, would not be fully implemented. In these circumstances, some DTRA personnel would remain at insecure sites exposed to greater terrorism risks than if they had moved to the McNamara HQC.

Taking no action would mean that the proposed DTRC building, parking garage, and temporary parking lot on McCutchen Road would not be built. This would present a problem for permanently housing the 500 DTRA personnel now occupying a temporary modular building erected on the McNamara parking lot. The temporary building is being leased by DoD, lease rates are high, and the space is sub-standard for permanent use. When the term of the lease expires, the modular building will be removed, and personnel will require office space elsewhere.

Taking no action is not a reasonable alternative. However, in accordance with NEPA regulations, it will be considered in this EA because it provides baseline conditions against which the impacts of the proposed action can be assessed.

2.2 Proposed Action Alternative

The proposed action is the permanent relocation of approximately 840 DTRA personnel to the fenced, guarded McNamara HQC at Fort Belvoir, and the construction of a building and parking garage to accommodate the agency's personnel. A temporary parking lot would be built along nearby McCutchen Road to make up for the parking spaces lost at McNamara HQC during construction of the permanent building and parking garage. [Figure 2-1](#) (Proposed Construction Sites) shows the location of the proposed building and parking facility. Following construction of the DTRC Building, the temporary modular building now located on the McNamara HQC parking lot along with utility connections and supporting columns would be removed and the surface restored to parking lot.

This proposed action follows the move to Fort Belvoir of approximately 1,000 DTRA personnel that began in the summer of 2000, after construction of a temporary modular building on the McNamara HQC parking lot. DTRA personnel who have already relocated to the McNamara HQC now occupy space in the temporary modular building as well as in the McNamara Building itself. This action is documented in an EA published last year (US Army Garrison Fort Belvoir, March 2000). That move followed a year-long study of the suitability and availability of other military facilities in the region to accommodate DTRA.

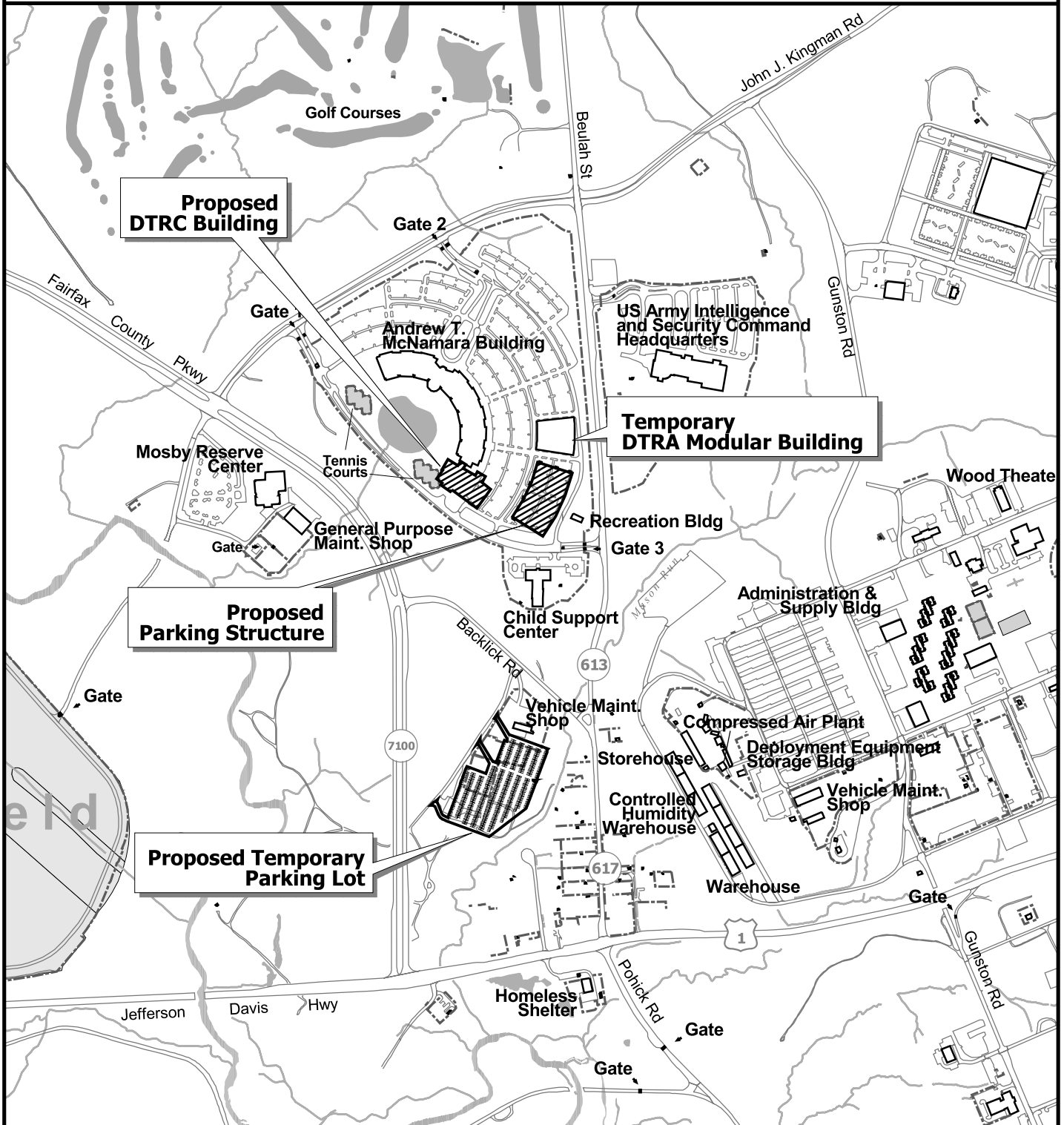
The specific components of the proposed action documented in this EA are described at greater length in the following sections.

2.2.1 Permanent Relocation of DTRA Personnel to and Agency Consolidation at Fort Belvoir

Under the proposed action, approximately 840 DTRA personnel would join the approximately 1,000 DTRA personnel who began moving to the McNamara HQC at Fort Belvoir in the summer of 2000. Relocation of personnel, and hence consolidation of the agency in a secure facility as mandated by Congress and DoD, would be completed in 2005 with occupation of the proposed DTRC building. When relocation is complete, approximately 500 DTRA personnel would be housed in the existing McNamara Building, and the remaining 1,340 DTRA personnel would occupy the new DTRC Building.

The 840 DTRA personnel who would relocate under this proposed action are now working out of two locations: a government-owned, DoD-assigned building on Telegraph Road, in Franconia, Fairfax County, about six mi (9.6 km) north of Fort Belvoir; and leased space in a privately-owned building on Eisenhower Avenue, in Alexandria City, about ten mi (16 km) north of Fort Belvoir. About 550 DTRA personnel would move from the Telegraph Road building and about 290 would move from the Eisenhower Avenue building.

Proposed Construction Sites



-  Proposed DTRC Building & Parking Structure
-  Proposed Temporary Parking Lot
-  Existing Building
-  Airfield
-  Waterbody
-  Fence

1000 0 1000 Feet

250 0 250 Meters



Figure 2-1

2.2.2 Construction of the Defense Threat Reduction Center Building

Unless otherwise specified, all information describing the DTRC Building and associated parking structure derives from the Draft Concept Design (30%) Report (RTKL Associates, Inc., August 15, 2001). The proposed DTRC Building would be a 306,530-GSF (28,477-GSM) addition to the 806,000-square-foot (sq-ft) (74,900-square-meter [sq-m]) McNamara Building. This addition, four stories above ground and two below ground, would be connected to the south end of the McNamara Building, where a loading dock is now located. The addition would replace the existing loading dock, an access drive, emergency generators, and parking spaces. [Photo 2-1](#) shows the southern half of the semi-circular McNamara Building. The DTRC Building would connect to the building on the right side of the photo. [Photo 2-2](#) shows the southern end of the existing building and the loading dock that would be displaced by the proposed addition. The orientation, footprint, and landscaping plan for the DTRC may be seen in [Figure 2-2](#) (Proposed DTRC Building and Parking Structure Sites) and [Figure 2-3](#) (Proposed DTRC Site and Landscaping Plan). [Figures 2-4a & 2-4b](#) (Elevations of DTRC Building) show the proposed façade designs.

In keeping with the Fort Belvoir Master Plan principles for this area of the post, the overall design concept for the DTRC Building is to accommodate DTRA's programmatic and security needs while responding to the McNamara HQC and the surrounding area in an environmentally-sensitive manner. The general design reflects the desire to provide a rectangular office floor plate to allow maximum flexibility for space planning and with optimum core-to-window dimensions. The proposed addition, at right angles to the McNamara Building, was conceived to be compatible with, but not identical to, the existing structure. The design of the façade would share building materials, color, and design elements with the McNamara Building, tying the two together. Façade materials would include face brick, architectural pre-cast concrete, metal panels, glazed curtain wall, and punched opening windows. Overall, the addition is an aesthetic "cousin" to the McNamara Building rather than an exact replica (as may be seen by comparing [Figures 2-4a and 2-4b](#) with [Photos 2-1 and 2-2](#)).

The structural design incorporates auger-cast grout piling foundations, reinforced cast-in-place concrete basement walls, and a one-way cast-in-place concrete wide-module joint system, supported by concrete girders on column lines. The structural design takes account of wind, seismic forces, and force protection measures. Because of DTRA's mission and the risk of being the target of terrorism, features to deter and resist damage from terrorist activity are integral to the design of the DTRC Building. The design conforms to the December 1999 Department of Defense Interim Antiterrorism/Force Protection Construction Standards.

The DTRC primarily would be an office environment but with some special spaces: network and telecommunications; system administration area; data center; information systems training room; centralized agency conference center; reprographics center; centralized mail facility; and secured compartmented information facility area. The DTRA Director wishes to foster a more collaborative, open environment and operational culture than was possible in the more

compartmentalized buildings DTRA is leaving. Therefore, the interior of the facility is being designed to foster informal communication within a secure environment in order to enhance the effectiveness of research and further the mission of the agency.

The building would be heated using natural gas, as is the McNamara Building. The main sanitary sewer would be routed through the building to a six-inch sewer connecting with the HQC sewer outside the footprint of the DTRC building. Water would be supplied through an eight-inch water line serving the domestic and fire protection demands of the DTRC Building only. Normal electrical power service is provided to the McNamara HQC by overhead lines to an existing 34.5 KV substation. Electrical service would be extended from the existing underground concrete ductbank system that runs along the McNamara Building to the DTRC Building.

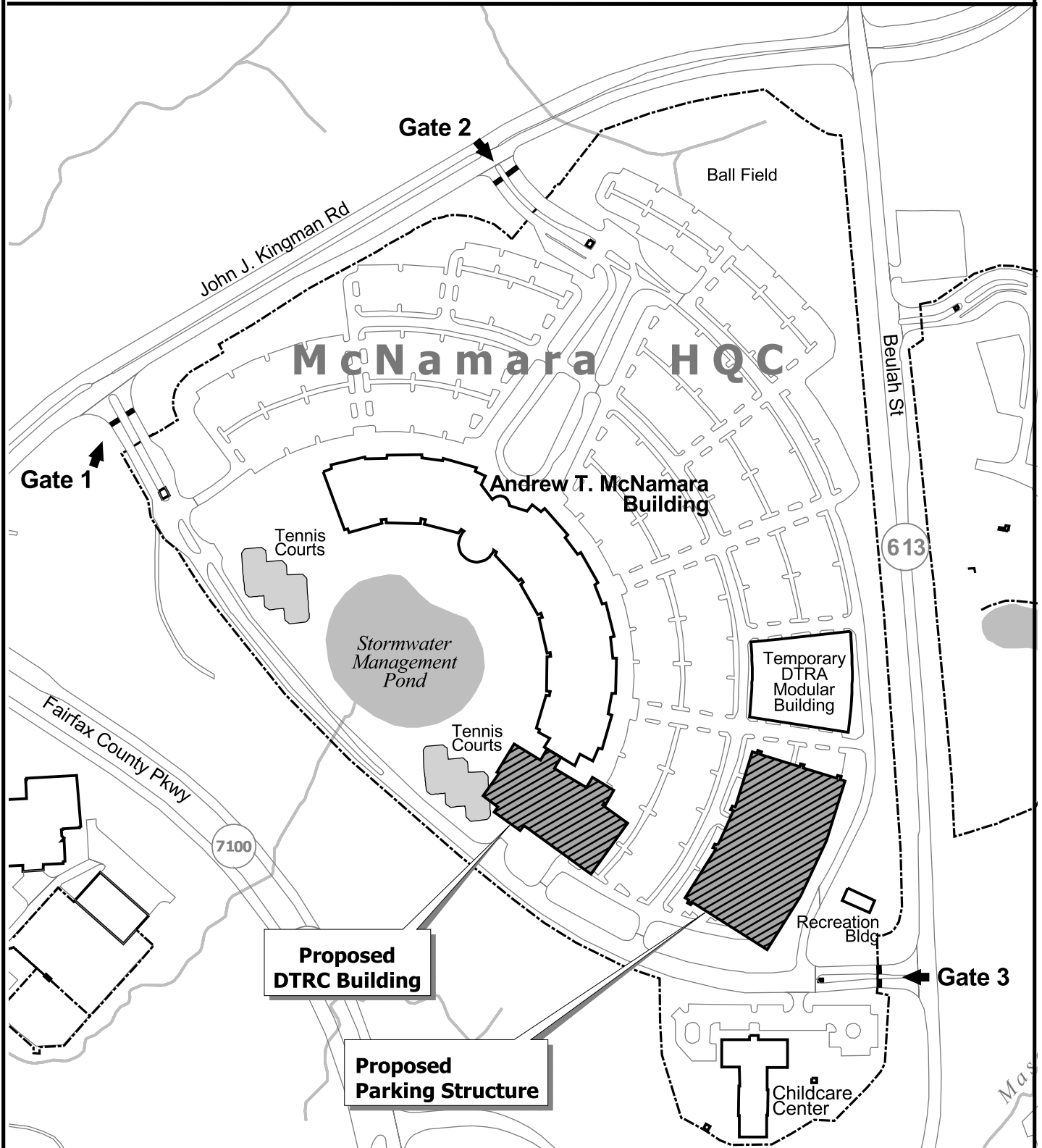
Emergency power is presently provided to the McNamara Building by four 800 KW generators located at the southern end of the building. These would be displaced by the DTRC Building and relocated next to the proposed loading dock on the south side of the DTRC Building. A pad for a fifth possible generator would also be installed. Relocation of the generators would be phased to enable the emergency power requirements for the McNamara Building to be available at all times during construction. A temporary 800 KW generator would be used to provide for the additional loads required for the new facility until all of the permanent generators could be moved to their new location.

Construction of the DTRC Building would require a significant amount of site preparation, construction of new utility service lines to the building, modifications to surface parking, pedestrian paving, and landscaping. The landscaping planned in the immediate vicinity of the DTRC Building is illustrated in [Figure 2-3](#). The part of the McNamara HQC parking lot now covered by the temporary modular building would be restored as parking lot after the modular structure and supporting pilings are removed following construction of the DTRC Building. On the McNamara HQC site, a total of 10.4715 ac (4.2 ha) would be disturbed by construction (Fermin, August 16, 2001). The amount of impervious (paved or built upon) surfaces at the McNamara HQC would remain almost exactly the same as it is now (Fermin, August 16, 2001).

2.2.3 Construction of a Parking Garage

A parking structure would be built about 230 ft (70 m) southeast of the proposed DTRC Building, within the fence line of the McNamara HQC, to accommodate between 1,000 and 1,100 vehicles. Part of the exiting parking lot would be demolished to accommodate the structure. Additional parking capacity would be required at the McNamara HQC to support the addition of DTRA personnel, especially since construction of the DTRC Building would result in the loss of existing spaces. Twenty of the new parking spaces would serve handicapped accessibility requirements.

Proposed DTRC Building and Parking Structure Sites



Proposed DTRC Building and
Parking Structure Sites



Fence



Existing Building



Waterbody



N



Figure 2-2



Photo 2-1 Shows the southern half of the Andrew T. McNamara Building, facing the east side. The DTRC building would connect to the southern end of the McNamara building on the right side of the photo.



Photo 2-2 Shows where the DTRC building would connect with the southern end of the existing McNamara Building. The existing loading dock would be replaced by loading docks built into the DTRC building.

Proposed DTRC Site and Landscaping Plan



Figure 2-3

Source: RTKL Associates, Inc.

Elevations of DTRC Building

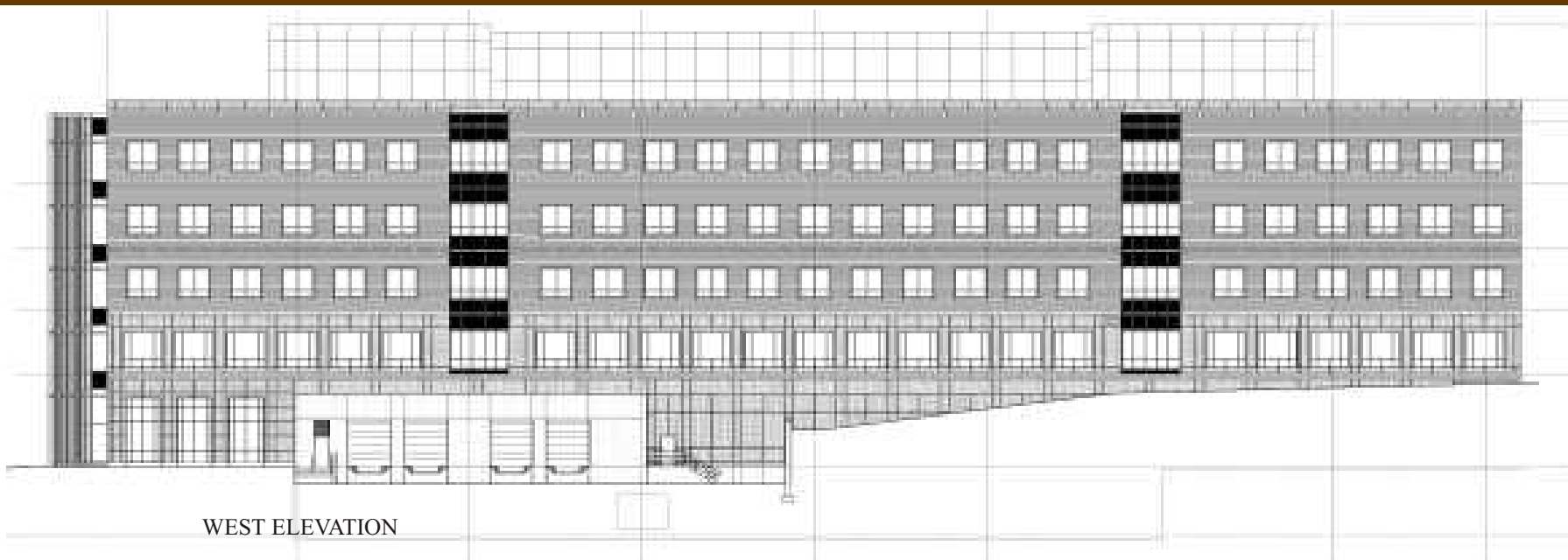


Figure 2-4a

Elevations of DTRC Building



NORTH ELEVATION



WEST ELEVATION

Figure 2-4b

The garage would be a three-level facility with flat parking decks and a sloped interior ramp system. The lowest level of the structure would be on grade, with two levels of elevated framing above. Most of the lowest level would be below the finished grade. The structural shape approximates a three-section segmented structure. The segmented design was selected to provide sufficient structural curvature to respect the existing curved and segmented design of the McNamara Building and parking lots.

Each floor of the garage would be 110,400 sq ft (10,256 sq m) in area. Three vehicular access points would be provided. Pre-cast concrete T-section beams and pre-cast concrete spandrels with brick would be used in the construction. The garage would be supplied with water for fire protection, and electricity for lighting and the ventilating system required for the lowest garage level. Discussion is ongoing about including a covered walkway from the garage to the DTRC Building.

In addition to the parking garage, new surface parking would add 146 more parking spaces to the site. Nine of these spaces would serve handicapped accessibility requirements. The portion of the McNamara HQC parking lot now covered by the temporary modular building would be restored to parking following removal of the structure and the supporting pilings and site utility lines, which would add about 200 additional parking spaces.

2.2.4 Construction of a Temporary Parking Lot

A temporary 5.8 ac (2.4 ha) gravel parking lot with 0.29 ac (0.07 ha) of gravel access roads would be built along McCutchen Road to accommodate approximately 800 cars during construction of the DTRC Building and associated parking structure. The site is about 500 ft (150 m) south of the McNamara HQC. The lot would compensate for parking spaces temporarily lost at the McNamara HQC after the DTRC Building and parking structure sites have been cleared for construction and before the parking structure is operational. The layout of the proposed lot is shown in [Figure 2-5](#) (Proposed Temporary Parking Lot).

Improvements would include lighting (some exists at the site already) and two bus shelters, each 30 ft (9.1 m) by 17 ft (5.2 m), surrounded by a raised sidewalk area with curbing. Wooden bumpers would be added to each parking place.

Shuttle buses would carry commuters between the parking lot and the McNamara HQC via the Fairfax County Parkway and John J. Kingman Road. The duration of a normal round trip (including pickup and drop-off time) is expected to be about 20 minutes. Schedule, frequency, and the type of buses that would be used have not yet been determined. Future decisions on these matters will aim to optimize efficiency and minimize any negative effects the operation of the temporary lot might have on the neighboring community.

Much of the proposed parking lot site has been used for equipment and vehicle storage and vehicle maintenance for decades. The exception is a loblolly pine plantation community that now covers 1.45 ac (0.58 ha) of the proposed site. The southwestern part of the proposed site has been a storage yard for installation support equipment, vehicles, and materials. The northern part of the site has been part of the National Guard's motor pool and vehicle storage area. As a result, with the exception of the loblolly pine plantation woodlot, the soil is compacted and the surface covered with grass, weeds, and remnants of pavement. To build the lot, the surface would be leveled, compacted, and covered with gravel.

2.3 Alternative DTRC Site Plans Considered

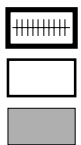
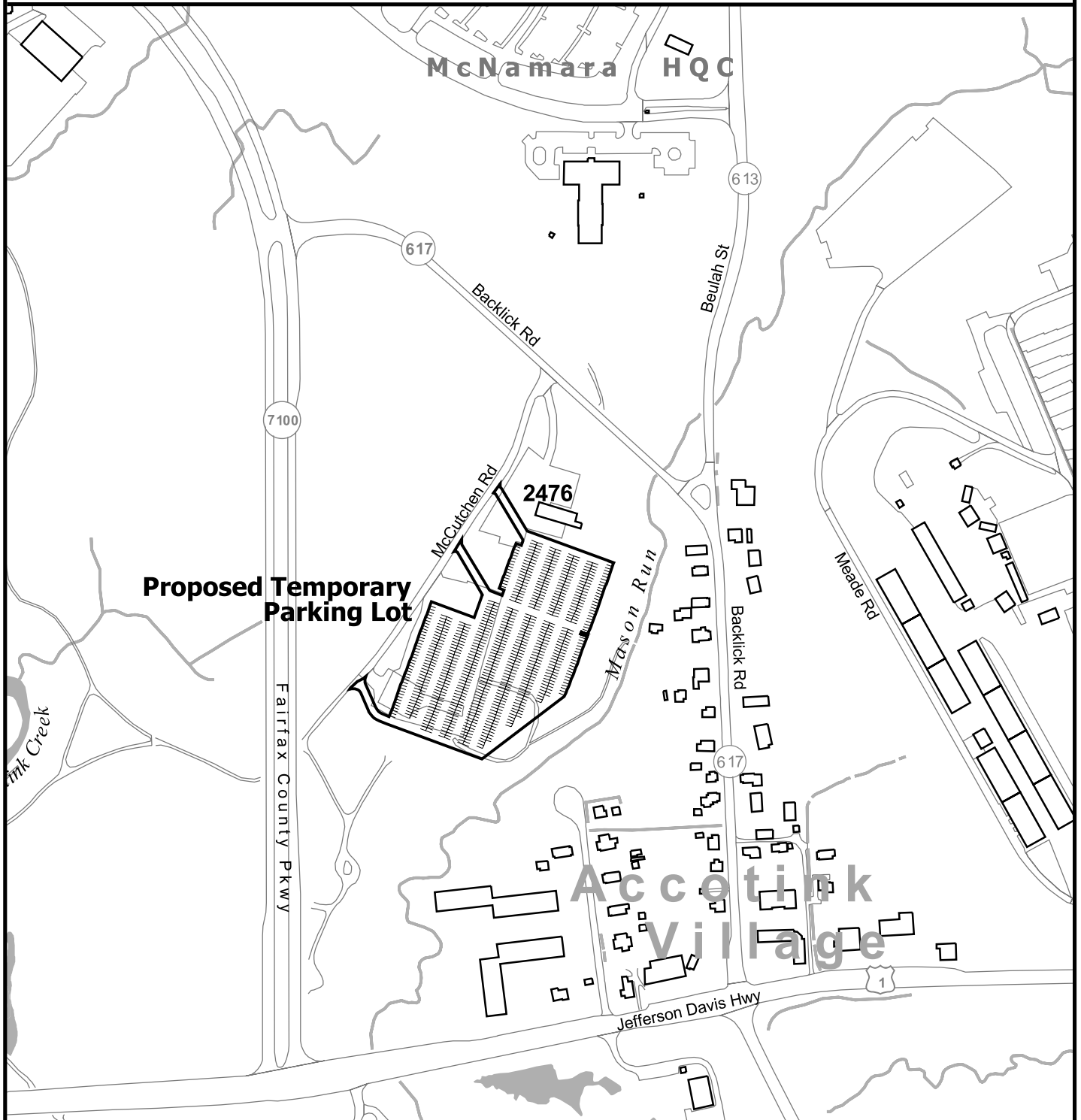
Five alternative site plans for the facilities needed to accommodate the permanent consolidation of DTRA to the McNamara HQC were developed and evaluated in a July 2000 *Feasibility Study, Defense Threat Reduction Center, Fort Belvoir, VA*, prepared by Parsons, Harland Bartholomew & Associates, Inc. (DTRA & COE, July 2000). The main characteristics of each alternative are summarized in [Table 2-1](#). Alternative 5 was selected because it best met the evaluation criteria, as summarized in [Table 2-2](#), and it was carried forward into the 30% design phase.

Table 2-1

Characteristics of Alternative Site Plans

Alternative	Main Building	Parking Garage
1	Five-story stand alone building about 150 ft southeast of existing building.	One 400-space garage about 300 ft north of existing building and one 2,000-space garage about 300 ft northeast of existing building.
2	Stepped two- and three-story stand-alone building about 800 ft northeast of existing building.	One 1,500-space garage about 300 ft east of existing building (would require opening Gate 3).
3	Four-story stand-alone building about 75 ft west of existing building.	One 2,300-space garage about 100 ft west of new DTRA building.
4	Four-story stand-alone building about 400 ft northeast of existing building.	One 2,100-space garage just south of new DTRA building (would require opening Gate 3).
5	Five-story addition to existing building (southern end).	One 1,100-space garage east of existing building.

Proposed Temporary Parking Lot



Proposed Temporary Parking Lot Site

Existing Building

Waterbody



Figure 2-5

Table 2-2

Alternative Sites: Evaluation Criteria and Ranking

Evaluation Criteria	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5 (Preferred)
Force Protection/Threat Reduction: Alternative must meet criteria established in the <i>Interim Department of Defense Antiterrorism/Force Protection Construction Standards</i> for a facility such as the DTRA Headquarters	2	1	3	2	1
Site Layout and Configuration: Alternative must provide a balanced transportation system and locate related activities in proximity to each other	1	1	3	2	3
Joint Use facilities: Alternative must encourage utilization of joint use facilities and emphasize pedestrian linkage throughout the entire campus	3	1	3	2	3
Vehicle and Pedestrian Access: Alternative must optimize site accessibility	3	1	2	2	2
Parking: New parking spaces included in Alternative must be well distributed in relation to entry points to the site	1	3	1	1	3
Aesthetics: Alternative must contribute positively to the overall visual image and attractiveness of the site	2	3	1	2	3
Utilities: Alternative must allow cost-efficient connections to and efficient use of existing systems:					
Electrical	2	1	3	2	1
Gas	2	2	1	3	3
Water	1	3	1	1	1
Sewer	2	2	3	2	2
Communications	1	3	3	3	3
Environment 1: Stormwater: Alternative must be consistent with existing stormwater management structures	1	2	2	2	2
Environment 2: Geotechnical issues: Alternative must be adapted to existing conditions	1	2	1	1	1
Disruption to Existing Operations: Alternative must disrupt existing operations as little as possible	2	2	2	1	2
Capital Costs: Must be as low as possible	1	3	1	1	1
Operating Costs: Must be as low as possible	2	2	1	1	3
Total Score	27	32	31	28	34
1: Alternative ranked low for this criterion 2: Alternative ranked medium for this criterion 3: Alternative ranked high for this criterion Source: Based on <i>Table 10-1: DTRC Feasibility Study Analysis Matrix</i> in DTRA & COE, July 2000.					

2.4 Selection of the Temporary Parking Lot Site

The site for the temporary parking lot on McCutchen Road was selected for several reasons:

1. **The Proposed Site is Close to the McNamara HQC.** This proximity would minimize shuttle bus trip length and hence the number of shuttle bus trips required to and from the McNamara HQC. The close relationship of the McNamara HQC to the temporary lot site would minimize disruption to commuting patterns and minimize the extra miles driven for those who normally drive to the HQC.
2. **Disruption of Environmentally Sensitive Areas would be Minimized.** The past and existing use of the site is for vehicle, equipment, and material storage with much of the site already paved or graveled. Disruption to natural areas would be restricted to clearing 1.45 ac (0.58 ha) of young loblolly pine forest plantation. An access road into the area already exists. The Fort Belvoir designated and protected Forest and Wildlife Corridor (see [Figure 1-2](#)) that connects the Jackson Miles Abbott Wetland Refuge and the Accotink Bay Wildlife Refuge restricts development in all undeveloped areas surrounding the McNamara HQC.
3. **Other Developed Sites are in Active Use.** Those developed areas not restricted for redevelopment because they lie in the Forest and Wildlife Corridor are actively being used, and no unused space suitable for a temporary parking lot exists. To the east of the McNamara HQC is located the US Army Intelligence and Security Command Headquarters, which requires security setbacks from public roads and is surrounded on three sides by the Forest and Wildlife Corridor. To the north of the Forest and Wildlife Corridor lies a well-used golf course. To the west of the McNamara HQC lies the Mosby Reserve Center with the Forest and Wildlife Corridor surrounding it on three sides. To the south lies the Accotink Village residential community, an enclave of privately-owned land. To the southeast lies an administration and supply area that has no road access to Beulah Street or the McNamara HQC. Construction of the parking lot in this area (if space were available) would require either construction of a new road across Mason Run, or a much longer shuttle bus ride that would include using congested US Route 1 for part of the trip.

For these reasons, no other site could be considered a reasonable alternative to the McCutchen Road site for placement of the temporary parking lot.

3 AFFECTED ENVIRONMENT

The CEQ's regulations implementing NEPA (40 CFR Part 1500) require documentation succinctly describing the environment of the area(s) to be affected by the alternatives under consideration, as well as a discussion of the impacts in proportion to their significance. Under the proposed action and alternative, the principal affected environment at Fort Belvoir would be the McNamara HQC and its immediate surroundings, including the area along McCutchen Road where the proposed temporary parking lot would be built. Socioeconomic, transportation, and air quality impacts would have both local and regional effects.

3.1 Land Use, Plans, and Coastal Zone Management

3.1.1 Land Use

3.1.1.1 Fort Belvoir

Fort Belvoir, which consists of two areas, the Main Post and the Engineer Proving Ground (EPG), is situated along the western shore of the Potomac River, about 85 mi (137 km) upstream of the Chesapeake Bay. The Main Post lies east of Interstate 95, north of Pohick Bay and Gunston Cove, west of the Potomac River and Dogue Creek, and south of Telegraph Road. US Route 1 bisects the Main Post, dividing it into the North Post and the South Post. Fort Belvoir functions as an administrative and logistics center for the Military District of Washington.

Local land uses outside of the post are predominantly residential, although commercial and industrial developments, such as the Newington Industrial Park and a number of retail malls, occur along US Route 1 and near Interstate 95. Locally there are a number of sizable tracts in public ownership, including Huntley Meadows County Park, Pohick Bay Regional Park, Washington Grist Mill, Mount Vernon Estate and Mount Vernon Parkway, Gunston Hall Plantation, Potomac River National Wildlife Refuge HQC, and Mason Neck State Park. Many of these tracts occur along the Potomac River, resulting in a fairly continuous band of natural riparian habitat along the river and its tributaries.

Table 3-1 summarizes land uses at Fort Belvoir. Figure 3-1 (Existing Land Use) shows land use features near the project sites. Uses throughout the post vary, but include administrative, research and development, medical, community facilities, housing (troop and family), service and storage, recreation, and training. The post also includes considerable areas of wetland, forest, and riparian forest, much of which has been preserved as wildlife corridors and refuges. Fort Belvoir also has nearly 11 mi (18 km) of mostly undeveloped shoreline. Environmentally sensitive areas are used for compatible forms of recreation.

Table 3-1
Land Uses at Fort Belvoir

Land Use Type	Approximate Area (ac)	Approximate Area (ha)
Training Range	1,838	744
Administrative/Education	1,102	446
Recreation	1,006	407
Troop and Family Housing	641	259
Community Facilities	451	183
Airfield	388	157
Research and Development	340	138
Service and Storage	314	127
Industrial	129	52
Medical Services	103	42
Environmentally Sensitive Areas	3,335	1,350
Source: US Army Garrison Fort Belvoir, March 2001		

3.1.1.2 McNamara HQC

The McNamara HQC has a surface area of 72 ac (29 ha) (see [Figure 2-2](#)). The land use of the site is administrative/education. It includes the 806,000 sq-ft (74,900 sq-m) McNamara Building, several supporting facilities (including a Child Development Center and guardhouses), and a paved parking lot accommodating approximately 720 cars. It is entirely enclosed by a perimeter security fence. Temporary modular buildings have recently been erected on part of the parking lot to house approximately 500 relocated DTRA personnel. The HQC has three gates, two of which are functioning and staffed by security personnel. Gate 3, opening onto Beulah Street in the southern portion of the Complex, is closed. Open areas within the HQC consist of peripheral landscaping, a ball field located in the northeast corner of the HQC, a recreation pavilion on the southeast corner, tennis courts, and a stormwater detention pond on the southwest side of the building. All are located within the compound's security fence. The HQC is separated from the Fairfax County Parkway by a grade change and a wooded area that provides a visual screen between the HQC and motorists.

Existing Land Use

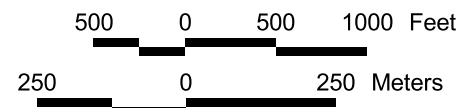
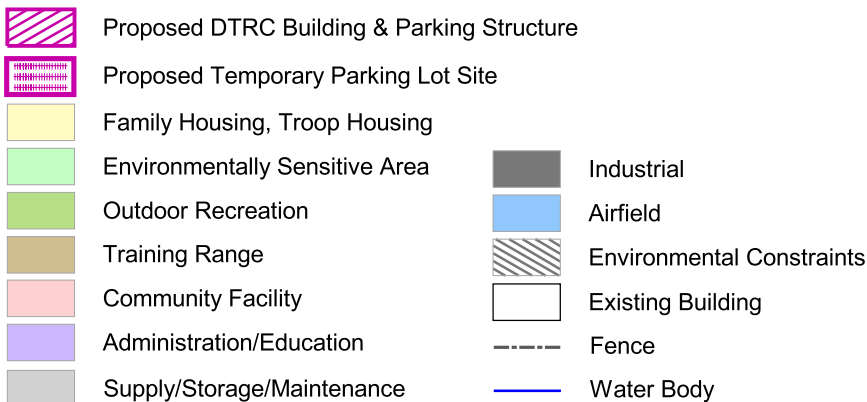
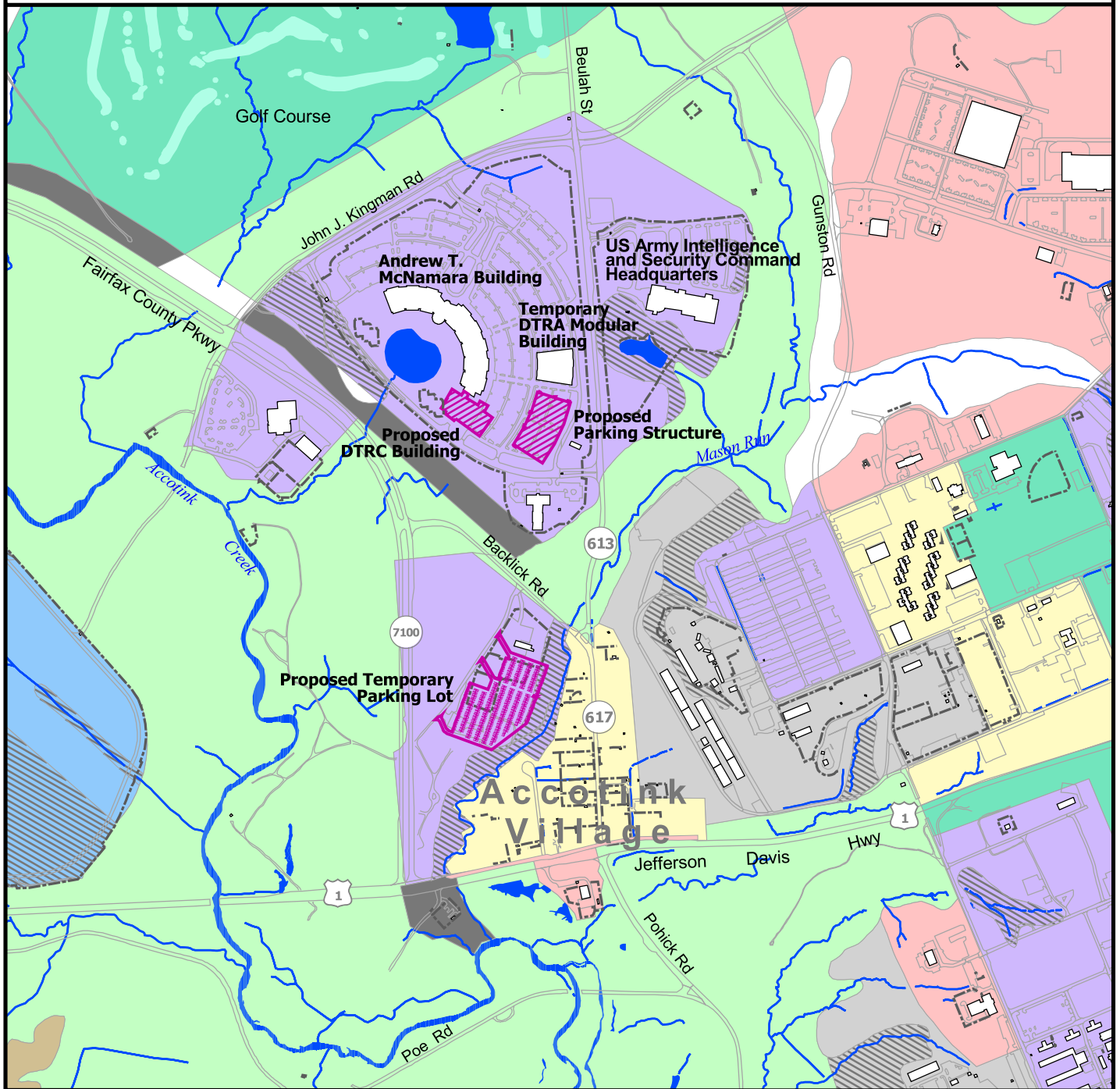


Figure 3-1

3.1.1.3 Temporary Parking Lot Site

The land use of the proposed parking lot site on McCutchen Road is designated as “administrative/education” on [Figure 3-1](#), generated from the post’s geographic information system (GIS), but in fact, the use of the site has been for “service and storage.” The southwestern part of the site has been used as a material, vehicle, and equipment storage yard for base operations for decades. A fenced vehicle storage yard and motor pool yard and building (Bldg 2746) used by National Guard units lies just to the north of the proposed parking lot site. The site is now covered with weeds, grass, remnants of concrete paving, and 1.5 ac (0.6 ha) of loblolly pine plantation forest.

Accotink Village, an unincorporated area of Fairfax County, is wholly enclosed by Fort Belvoir, but is not part of the post. The portion of Accotink Village along Backlick Road to the east and southeast of the proposed parking lot site is primarily residential, with commercial and retail land uses farther south along US Route 1. Accotink Village is separated from the proposed parking lot site by Mason Run and the wetlands and forest strip along it.

3.1.1.4 DTRA Sites in Alexandria and Franconia

Approximately 290 of the DTRA personnel slated for relocation under the proposed action currently occupy space in an office building located on Eisenhower Avenue, City of Alexandria, VA, in a medium-size, modern office park that is home to several high-tech companies. A large business hotel is adjacent to the park, which otherwise is surrounded on the west, south, and east by vacant land and wide, multi-lane roadways. To the north of the site, across Eisenhower Avenue, medium-density residential neighborhoods have recently been built.

The remainder of the 840 relocating personnel are currently working out of a location on Telegraph Road, in Franconia, Fairfax County, a few miles south of Eisenhower Avenue. The building they occupy is part of a small government-owned office park located in the midst of low-density residential neighborhoods. A large golf course lies across Telegraph Road from the site. Just south of the site is a small shopping center. Businesses there include a pizza delivery chain store, a tanning salon, two insurance companies, a dry cleaner, a dentist’s office, a martial arts school, a small Chinese restaurant, a convenience store, and a gas station.

3.1.2 Plans

3.1.2.1 Fort Belvoir Master Plan

The *Real Property Master Plan, Fort Belvoir Long-Range Component*, divides the installation into six planning districts (US Army Garrison Fort Belvoir, 1993):

- South Post.
- South Post Core Area.
- Southwest Area.
- Lower North Post.
- Upper North Post.
- Davison Army Airfield.

The McNamara HQC and the site of the proposed temporary parking lot are located within the Upper North Post Planning District. Land uses in this district include administrative, research and development, recreation, and supply/storage functions. The district also encompasses environmentally sensitive areas. According to the plan, new development in this planning district was intended for tenant administration functions such as DoD headquarters facilities and regional functions. The desired character of development in this planning district was clusters of high-density development separated by natural areas in order to preserve environmentally sensitive land and open space. Development within the clusters could include structured parking to allow for maximum development potential while preserving open areas. Lot coverage was limited to an average of 20 percent to preserve sensitive areas and significant amounts of open space.

The 1993 Master Plan included an appendix to the Post's 1988 Installation Design Guide that specified guidelines and recommendations for increasing density at Fort Belvoir. Fort Belvoir was divided into three non-contiguous density zones: Low-Rise, Medium-Rise, and High-Rise. Each was divided into several sub-zones with their own characteristics and design recommendations. The McNamara HQC is located within sub-zone 10 of the High-Rise zone. This area is described as one that "offers an excellent location for high-rise, high-density construction. Easy vehicular access, no historic restrictions, major environmental constraints, and distance from the remainder of the Post will allow for schemes composed of structured parking garages and buildings that are no more than 12 stories tall. Lot coverage for buildings and associated parking in the area could average 20 percent" (US Army Garrison Fort Belvoir, 1993). Additionally, because of the proximity of the Davison Army Airfield, there is a height restriction for the McNamara site at absolute elevation 216 ft (65.8 m).

3.1.2.2 National Capital Planning Commission

The National Capital Planning Commission (NCPC) is the central planning agency for the federal government in the National Capital Region (namely, the District of Columbia and the following surrounding jurisdictions: in Maryland, Montgomery and Prince George's Counties; in Virginia, the City of Alexandria, and Arlington, Fairfax, Prince William, and Loudoun Counties). NCPC prepares the Federal Elements of the Comprehensive Plan for the National Capital (CPNC), which establishes goals and planning policies for the growth and development of the National Capital Region; and provides a framework for policy decisions pertaining to development in this area. NCPC reviews plans and programs proposed by state, regional, and local agencies for their impact on the federal interest. The federal goals for the National Capital Region defined in the CPNC include:

- To foster a capital worthy of a great nation.
- To provide for the efficient and effective operation of the federal establishment while contributing to the general order and beauty of the National Capital.
- To deploy the federal workforce in a manner that enhances the productivity of federal agencies, strengthens economic development, and expands employment opportunities in the National Capital Region.
- To facilitate the efficient exercise of diplomatic functions in harmony with the planned development of the National Capital.
- To preserve the important features of the National Capital while permitting new development which is respectful of these features.
- To preserve the natural features and resources of the National Capital.
- To enhance the quality of the environment and conserve energy resources.
- To promote adequate systems for the transportation of residents, employees, visitors, and goods to, from, and within the National Capital Region.
- To accommodate visitors to the National Capital in an efficient, attractive, and informative manner.
- To promote intergovernmental cooperation and public participation in federal planning in the National Capital.

The Commission reviews every federal development project in the region for location, design, and whether they adhere to NCPC's regional goals and facility master plan goals. Proposed projects are submitted for review to NCPC along with a narrative description of the project, environmental documentation, historical determinations, site plans, landscape and grading plans, stormwater management/erosion control plans, floor plans, elevations of all sides, and a roof plan.

3.1.3 Coastal Zone Management

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended) provides assistance to states, in cooperation with federal and local agencies, for developing land and water use programs in coastal zones. Section 307 of the CZMA stipulates that federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be

consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management plan.

The Commonwealth of Virginia has developed and implemented a federally approved Coastal Resources Management Program (CRMP) describing current coastal legislation and enforceable policies. Virginia's enforceable policies subject to federal consistency include: commercial fishing; recreational fishing in freshwater tidal rivers; encroachments on subaqueous lands; encroachments on wetlands; encroachments on primary sand dunes; land-disturbing activities needing erosion and sediment control; actual or potential wastewater discharges; control of septic and other on-site domestic waste systems; coastal land management; and air pollution control.

3.2 Socioeconomics

3.2.1 Demographics

Fort Belvoir is host to approximately 100 tenant and satellite organizations with more than 21,000 direct military and civilian employees, and 4,800 military personnel and dependents living on-post (US Army Garrison Fort Belvoir Website, August 2001). It is located in southern Fairfax County, Virginia (see [Figure 1-1](#)). Of the approximately 840 DTRA personnel who are to relocate under the proposed action, approximately 550 currently work in a government-owned building assigned to DoD on Telegraph Road, in Franconia, Fairfax County, Virginia, located about six mi (9.6 km) from the McNamara HQC. Approximately 290 currently work in a leased building on Eisenhower Avenue, City of Alexandria, Virginia, located about ten mi (16 km) from the McNamara HQC. The residence zip codes of 451 (54 percent) of these personnel were available for analysis. A breakdown by county/city is presented in [Table 3-2](#).

Based on analysis of the zip code data summarized in [Table 3-2](#), the current average one-way commuting distance to work for relocating DTRA personnel is approximately 22.2 mi (35.7 km) (the length of these trips was estimated by calculating for each DTRA employee residing within a given zip code the distance between the center of that zip code area and the employee's workplace). After relocation to the McNamara HQC, the average one-way commuting distance of these same employees would become 22.7 mi (36.5 km), an average 2.2 percent increase in one-way trip length. While this modest increase does not include changes in trip time because the route may change to one more or less congested, many relocating personnel now live in the same areas where existing Fort Belvoir personnel live. This suggests that the proposed personnel relocation is likely to add very little to the commuting distance and time of most DTRA employees. Consequently, very few of them, if any, are likely to move their residence because of the planned relocation.

Table 3-2

Jurisdiction of Residence of those Relocating DTRA Personnel
Whose Zip Codes of Residence are Known

Jurisdiction of Residence	Number of Personnel	Percent ¹	Cumulative Percent ¹
Fairfax County, VA	170	37.7	37.7
Prince William County, VA	90	19.9	57.6
City of Alexandria, VA	36	8	65.6
Stafford County, VA	27	6	71.6
Prince George's County, MD	24	5.3	76.9
Arlington County, VA	16	3.5	80.4
District of Columbia	15	3.3	83.7
Montgomery County, MD	14	3.1	86.8
Loudoun County, VA	11	2.4	89.2
Charles County, MD	10	2.2	91.4
Anne Arundel County, MD	6	1.3	92.7
Howard County, MD	6	1.3	94
Fauquier County, VA	5	1.1	95.1
Calvert County, MD	2	0.4	95.5
Harford County, MD	2	0.4	95.9
Frederick County, MD	4	0.8	96.7
Frederick County, VA	4	0.8	97.5
Spotsylvania County, VA	2	0.4	97.9
Orange County, VA	1	0.2	98.1
Page County, VA	1	0.2	98.3
Accomack County, VA	1	0.2	98.5
New Kent County, VA	1	0.2	98.7
Sussex County, DE	1	0.2	98.9
City of Virginia Beach, VA	1	0.2	99.1
Baltimore City, MD	1	0.2	99.3
1. Does not add up to exactly 100 percent due to rounding			

However, 226 of the DTRA personnel who are to relocate are military personnel and about half of the approximately 1,840 personnel who will be working out of the new facility will be military. Military personnel typically rotate into DTRA on a three-year assignment with roughly a third rotating in/out each year. Military personnel newly assigned to DTRA could be arriving from anywhere in the US but are likely to take up residence within reasonable distance of their workplace, as are also any new civilian employees DTRA may hire in the future. Consequently, some basic demographic data for jurisdictions within 30 miles (48 kilometers) of Fort Belvoir are provided in [Table 3-3](#). In addition, since Fairfax County is likely to be where the greatest number

of DTRA personnel who move their residence to be close to their workplace will decide to settle, [Table 3-4](#) gives more detailed information on current demographic trends in that jurisdiction.

Table 3-3

Fort Belvoir Demographic Region

County/City	Population 2000	Population 1990	Percent Change since 1990	Housing Units 2000	Housing Units 1990	Percent Change since 1990
Fairfax, VA	969,749	818,584	18.5	359,411	307,966	16.7
Prince William, VA	280,813	215,686	30.2	98,052	74,759	31.2
Loudoun, VA	169,599	86,129	96.9	62,160	32,932	88.8
Stafford, VA	92,446	61,236	51	31,405	20,529	53
Fauquier, VA	55,139	48,741	13.1	21,046	17,716	18.8
King George, VA	16,803	13,527	24.2	6,820	5,280	29.2
Arlington, VA	189,453	170,936	10.8	90,426	84,847	6.6
Alexandria, VA	128,283	111,183	15.4	64,251	58,252	10.3
Montgomery, MD	873,341	757,027	15.4	334,632	295,723	13.2
Pr. George's, MD	801,515	729,268	9.9	302,378	270,090	12
Charles, MD	120,546	101,154	19.2	43,903	34,487	27.3
Washington, DC	572,059	606,900	- 5.7	274,845	278,489	- 1.3
Total	4,269,746	3,720,371	14.8	1,689,329	1,483,060	13.9
Source: Census Bureau Website, August 2001.						

Table 3-4

Fairfax County Demographic Overview

Year	Population		Households		Housing Units	
	Number	Percent Change ¹	Number	Percent Change ¹	Number	Percent Change ¹
1980	596,901	n/a	205,200	n/a	215,600	n/a
1990	818,584	37.1	292,345	42.5	307,966	40.3
2000	969,749	18.5	353,136	20.8	359,411	16.7
2005 ²	1,050,547	8.3	381,245	8	387,857	7.9
2010 ²	1,123,128	7	409,230	7.3	416,399	7.4
Note: 1. Percent change from previous row data. 2. Fairfax County Projections Source: Fairfax County Website, August 2001; Census Bureau Website, August 2001.						

As is evident in [Tables 3-3](#) and [3-4](#), Fort Belvoir is part of a large and growing metropolitan area with a 2000 population of over 4.2 million people. Fairfax County is the most populous of the jurisdictions in that area, accounting for almost 23 percent of its entire population. As shown in [Table 3-4](#), Fairfax County has experienced dramatic demographic growth over the last two decades. Growth is expected to continue in the coming years, but at a slower rate than previously, as lower costs of living draw more new residents to counties such as Prince William, Loudoun, or Stafford.

3.2.2 Housing

There are presently 2,062 military family housing units at Fort Belvoir. These are located mainly at the southern edge of the South Post, but also include Lewis Heights and Woodlawn Village at the eastern edge of North Post (Jones, February 15, 2000). In addition, there are barracks for 1,200 single enlisted personnel and 462 temporary quarters for visitors and new arrivals.

The 2000 census recorded 359,411 housing units in Fairfax County. As of August 2001, no information on the percentage of empty, owner-occupied, and renter-occupied units was available. In 1990, 95 percent of all recorded units were occupied. Of these, 67.1 percent were occupied by their owners, and 32.9 percent by renters (Census Bureau Website, August 2001). More recently, a January 2000 survey of rental complexes recorded a total of approximately 56,700 rental units in Fairfax County at large (only units located in rental complexes having five or more units were counted) and a vacancy rate of 1.6 percent. The average monthly rent ranged from \$819 for the Mount Vernon Planning District to \$1,224 for the McLean Planning District. In 2000, the median market value of owned housing was \$226,825 (Fairfax County Website, August 2001).

3.2.3 Employment and Income

In the third quarter of 2000, approximately 93,000 persons worked in Alexandria (up 6.4 percent from the previous year). Of these, 46.5 percent were employed by the service sector, and 17.5 percent were government workers, with the Department of Defense the largest public employer (City of Alexandria Website, August 2001). In June 2001, unemployment in Alexandria was two percent (Virginia Employment Commission Website, August 2001). The office space vacancy rate for the first quarter 2001 was 7.3 percent (7 percent in northern Virginia as a whole). Estimated 2000 median family income was \$78,849 (\$49,757 for Virginia as a whole); estimated median household income was \$67,312 (\$77,705 for northern Virginia; \$45,753 for Virginia as a whole). In 1997, an estimated 10.2 percent of all persons lived in poverty (City of Alexandria Website, August 2001).

In May 2001, employment in Fairfax County reached 580,800, up 5.6 percent from the previous year. Unemployment in June 2001 was two percent (Virginia Employment Commission Website, August 2001). In 1998, 50 percent of the people employed in Fairfax County worked for the private sector, and 15.2 percent for the federal government. Fairfax County median household income in 1997 (most recent available figures) was \$72,000 (Virginia: \$40,209), and median family income was \$84,000. In 1997, about 40 percent of all Fairfax County families earned incomes in excess of \$100,000; only 3.3 percent of all persons fell below the poverty level (Fairfax County Website, August 2001).

Thus, Fairfax County is a particularly prosperous community, even by the high standards set by Northern Virginia. The City of Alexandria, although overall somewhat less wealthy than Fairfax County, remains a richer-than-average jurisdiction region-wide.

3.2.4 Environmental Justice and the Protection of Children

Signed on February 11, 1994, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs all federal departments and agencies to incorporate environmental justice considerations in achieving their mission. Each federal department or agency is to accomplish this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, nor subject communities to discrimination under such actions because of their race, color, or national origin.

Because of the distance from the proposed construction projects to other residential areas – even those on post – Accotink Village is the only residential area at all likely to be affected by the proposed action in ways relevant to environmental justice concerns. Accotink Village is a residential enclave surrounded by Fort Belvoir on all sides but not associated with the installation. Recent information on the population of Accotink Village is available from the Bureau of the Census. Indeed, based on Census 2000 maps, Accotink Village coincides almost exactly with block group 2 of census tract 4220. In 2000, this block group had a total population of 390. It included 214 housing units, 199 of which were occupied. The housing appears to date from the later 1800s to mid-1900s. The ethnic make-up and age of the population of Accotink Village are presented in [Tables 3-5](#) and [3-6](#), along with similar information for census tract 4220, Fairfax County, and the state of Virginia as a whole for purposes of comparison.

According to CEQ guidance on EO 12898, “Minority populations should be identified where either: (a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis”(CEQ

Website, September 2001). As may be seen in [Table 3-5](#), Accotink Village qualifies under both criteria as an environmental justice community.

Table 3-5
2000 Race and Ethnicity (Percent)

Jurisdiction/Area	White	Black ¹	Other Non-White	Two or More Races	Total Non-White Population	Hispanic ²
Accotink Village ³	46.2	37.4	12.1	4.3	53.8	7.9
Census Tract 4220	59	22.8	13.4	4.8	41	10.7
Fairfax County	69.9	8.6	17.9	3.7	30.1	11
State of Virginia	72.3	19.6	6.1	2	27.7	4.7
Note: 1. Having origins in any of the black racial groups of Africa. 2. Hispanic origin, may be of any race. 3. Block group 2 of census tract 4220. Source: US Census Bureau Website, August 2001.						

CEQ regulations also direct that “low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census” (CEQ Website, September 2001). Census 2000 Block Group level information on poverty is not yet available. However, 1990 census data (summarized in [Table 3-6](#)) suggest that Accotink Village (which, based on 1990 Census maps, coincided almost exactly with Block group 1 of census tract 4220.85) may qualify as an environmental justice community on this account as well. In 1989, the median household income in Accotink Village was \$16,719, as opposed to \$45,114 for census tract 4220.85, \$59,284 for Fairfax County, and \$33,328 for Virginia as a whole. 1990 Census income data reflect the situation of Accotink Village in 1989 and may no longer be valid. However, no more recent information on income levels in Accotink Village is currently available.

Table 3-6

1990 Census: Persons Living in Poverty (Percent)

Jurisdiction/Area	Persons Living in Poverty
Accotink Village ¹	20.4
Census Tract 4220.85	4.7
Fairfax County	3.5
State of Virginia	10.2
Note 1. Block group 1 of census tract 4220.85. Total Population was 333. Source: US Census Bureau Website, August 2001.	

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was signed on April 21, 1997. Because the scientific community recognized that children may suffer disproportionately from environmental health and safety risks, each federal agency is directed to identify and assess such risks, and consequently to ensure that its policies, programs, activities, and standards address effects on children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.” Covered regulatory actions that are affected by this EO are those substantive actions that concern an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children. According to 2000 census data displayed in [Table 3-7](#), Accotink Village is home to a lower-than-average number of minors when compared to Fairfax County and the Commonwealth of Virginia.

Table 3-7

2000 Under-18 Population (Percent)

Jurisdiction/Area	Population under 18 (Percent)
Accotink Village ¹	20.3
Census Tract 4220	22.5
Fairfax County	25.4
State of Virginia	24.5
Note 1. Block group 2 of census tract 4220. Source: US Census Bureau Website, August 2001.	

3.3 Community Facilities and Services

3.3.1 Police, Fire & Rescue, and Medical Services

Safety and security issues at Fort Belvoir are handled by the Army's Military Police (MP) and Fire and Emergency Medical Services (EMS). The MP headquarters are on South Post at Pohick Road and 12th Street. There are three fire stations: No. 65 on South Post; No. 63 on North Post; and No. 66 at Davison Airfield. Five fire companies with a total staff of 66 firefighters serve the installation. At least 21 firefighters are on duty 24 hours a day. The fire department fields three engines and one ladder truck. Emergency Medical Service (EMS) personnel are trained at least to the level of emergency medical technician (EMT).

The Fairfax County Police Department provides public safety services throughout the county, with the exceptions of Fort Belvoir, several municipalities (*e.g.*, Herndon, Alexandria, and Vienna), and Dulles Airport. The department divides the county administratively into seven district stations that employ 1,050 officers supported by 400 civilians. The Fairfax County Fire and Rescue Department is a combined career and volunteer organization providing fire suppression, rescue, and EMS, among other functions. It employs 1,155 uniformed staff and 89 civilian staff, and includes 352 operational volunteers and 426 administrative volunteers. Services are provided from 34 county stations. The two City of Fairfax Fire & Rescue stations respond into the county as well. In 2000, the department responded to approximately 113,200 fire emergencies and 93,300 EMS emergencies. Those stations closest to Fort Belvoir are Woodlawn, Lorton, Gunston, and Kingstowne.

The medical needs of military personnel and their dependents (and, in an emergency, civilian personnel) at Fort Belvoir are served by De Witt Army Community Hospital, located on the South Post. This 60-bed facility provides a full array of medical services. The occupancy rate is about 50 percent. The hospital also has a family health center offering primary care. The Logan Dental Clinic is located near the De Witt Army Community Hospital. Three additional dispensaries are located at Fort Belvoir, two close to residential areas, and a third at Davison Army Airfield. Three additional Army Family Health Centers are located nearby in Northern Virginia at Woodbridge, Fort Myer, and Fairfax. These Army hospitals may only serve civilian DoD workers if they are injured on the job.

The Fairfax County Department of Health provides a wide range of public health programs, including 11 health care centers located throughout the county and three primary health care centers for low-income, uninsured county residents. A map generated by the Fairfax County GIS and Mapping Service shows 16 hospital urgent-care facilities in the county and five others in nearby Arlington and Alexandria. Beside De Witt Army Community Hospital at Fort Belvoir, the nearest hospital is Mount Vernon, a 232-bed facility about five miles to the northeast (US Army Garrison Fort Belvoir, May 2001).

3.3.2 Schools

The McNamara HQC includes a Child Development Center, located at the southeastern corner of the Complex, near Gate 3. The Center caters to the children of the people who work at the Complex. There is one public school on Fort Belvoir – the Fort Belvoir Elementary School (grades K-6), on the North Post, at Meeres Road. This 136,000-sq-ft (12,600-sq-m) facility enrolls over 1,300 students. It opened in 1998 and is operated by the Fairfax County Public School System (FCPS). Students from Fort Belvoir attend this elementary school, the county's Walt Whitman Middle School, and the county's Mount Vernon High School. These latter facilities are located off the post, closer to Alexandria.

There are 234 schools and centers organized in eight clusters in the FCPS, including 131 elementary schools (K-6), 21 middle schools (6-8 or 7-8), and 24 high schools (7-12 and 9-12). Total enrollment for 2000-2001 is approximately 161,000, with a total staff of 19,827 and an operating budget of \$1.4 billion (Fairfax County Website, April 2001). Enrollment is expected to grow progressively to about 174,570 students by 2005-2006. It is projected that in 2001-2002, FCPS elementary schools will provide approximately 591 fewer classrooms than needed, a deficit expected to grow by 26 percent between 2001 and 2005.

Overall middle school capacity will be about 2,900 students short in 2001-2002, and about 5,000 students short by 2005. High school capacity is expected to exceed enrollment in 2001-2002, but a deficit of about 423 students is projected for 2005. FCPS plans to mitigate this situation through the construction of new facilities or temporary and permanent additions to existing ones, program relocations, and boundary adjustments (US Army Garrison Fort Belvoir, May 2001).

3.3.3 Recreational Facilities

Fort Belvoir offers numerous opportunities for recreation. Recreational facilities occupy 1,006 ac (407 ha) of the installation in areas convenient to the population they serve. These facilities include:

- Clubs for officers and non-commissioned officers.
- A nine-hole golf course on South Post and a 36-hole course on Upper North Post.
- Tennis courts.
- Swimming pools.
- Athletic fields.
- An archery range.
- Three picnic areas.
- Several playgrounds.
- Six soccer fields.
- Two football fields.

- Several softball fields.
- Extensive walking and running areas.
- A youth services center with summer camp.
- The Sosa Community Center, with a variety of recreational amenities.

In addition, the Dogue Creek marina rents boats and offers 105 wet slips and 300 dry-storage facilities, rented on an annual basis. Additional facilities at the marina include two boat-launch ramps, pump-out stations, and electric and water hookups (US Army Garrison Fort Belvoir, March 2001). When completed, the Tompkins Basin Recreation Area, currently in design, will be the site of many new recreational facilities, including two baseball fields, two basketball fields, two tennis courts, a swimming pool, tent and RV camp sites, and rental cabins.

Some of Fort Belvoir's undeveloped areas are open to recreational use: fishing at Mulligan Pond and along Dogue Creek, Gunston Cove, Accotink Creek, and Pohick Creek; bow hunting in some designated areas; bird watching, hiking, nature photography, and environmental education along the 10 miles (16 km) or so of trails that run through the post's wildlife corridor and two wildlife refuges.

The Fairfax County Park Authority operates over 350 parks on more than 18,300 ac (7,400 ha). Facilities include a horticulture center, a working farm, an activities/equestrian center, eight indoor recreational centers, five nature and visitor centers, eight golf courses, two campgrounds, an ice-skating rink, and a water park. A wide variety of activities and programs are operated at the county parks and recreational centers (US Army Garrison Fort Belvoir, May 2001).

3.4 Transportation

3.4.1 Highway and Street Network

The proposed relocation site on Fort Belvoir – the McNamara HQC – is served by the northern Virginia regional freeway and arterial transportation network, many sections of which are congested during morning and afternoon commuting periods. This transportation system analysis addresses both the on-post transportation network and the connections between the post network and the regional transportation network.

Four principal roadways define the northern Virginia highway system in the vicinity of Fort Belvoir ([Figure 3-2](#), Fort Belvoir Area Roads). These roadways are primarily used as major commuter and longer distance non-commuter routes. They are:

- Interstate 95.
- US Route 1 (Jefferson Davis Highway).
- Fairfax County Parkway.

- Telegraph Road.

I-95 is a freeway that runs in a north-south direction approximately two mi (3.2 km) northwest of Fort Belvoir. Access to Fort Belvoir from I-95 is primarily via an interchange with the Fairfax County Parkway. Two additional interchanges on I-95 – at Lorton Road and Route 1 – also provide access to Fort Belvoir, predominantly from the south.

US Route 1 is classified as a principal arterial with a generally north-south regional orientation. However, Route 1 runs in an east-west direction across Fort Belvoir. Through the installation, Route 1 is primarily a four-lane undivided highway with exclusive turn lanes at the major intersections. Access to Fort Belvoir is provided via three gates on Route 1. In 1999, Route 1 carried approximately 37,000 vehicles per day within the installation's boundaries.

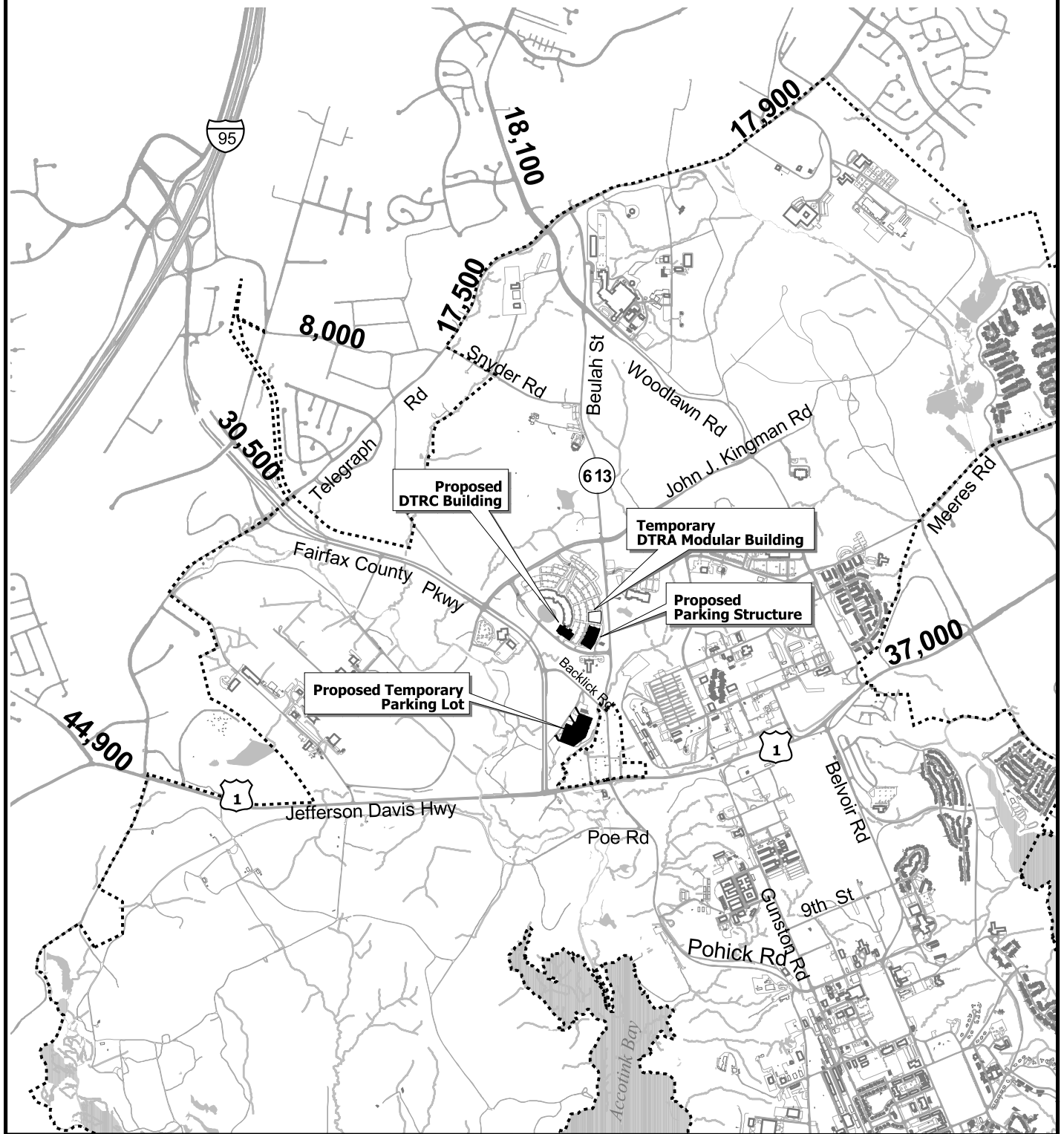
The Fairfax County Parkway is classified as a principal arterial. The roadway is a four-lane divided facility. It connects the post to I-95. A major access point to the North Post is via John J. Kingman Road and its intersection with the Parkway at a point north of Route 1. In 1999, the Fairfax County Parkway accommodated about 27,000 vehicles per day on the segment north of John J. Kingman Road.

Telegraph Road, classified as a minor arterial, traverses the northern boundary of Fort Belvoir. Telegraph Road is a two-lane facility, except at the interchange with the Fairfax County Parkway and at the intersection with Beulah Street, where it widens to four lanes. 1999 traffic volumes on Telegraph Road ranged approximately from 12,000 to 18,000 vehicles per day in the vicinity of Fort Belvoir.

3.4.2 Existing Traffic Conditions

All traffic data collection and the traffic analysis included in this EA were completed no later than mid August, 2001 and assume the normal traffic conditions prevailing in June and July, 2001. Fort Belvoir has been conducting periodic access control exercises to determine the most appropriate measures for increasing installation force security. These exercises are testing potential options for increasing access control through installation gates and on roads that pass through the post. The terrorist attack on September 11, 2001 interrupted the access control exercises, and requirements are stricter for the time being. Testing is on-going and no final decisions have been made about access control measures. Personnel from both the Virginia Department of Transportation (VDOT) and Fairfax County have been briefed on and involved in the on-going access control exercises.

Fort Belvoir Area Roads



36,500 Daily Traffic Volumes - 1999
 Fort Belvoir Main Post Boundary

2000 0 2000 4000 Feet
 500 0 500 1000 Meters



Source: TransCore, 2000.

Figure 3-2

3.4.2.1 Existing Traffic Volumes

Figure 3-2 shows existing daily traffic volumes on regional roadways leading to Fort Belvoir. Manual turning-movement traffic counts taken in December 1999 and January 2000 for a previous study were available at nine intersections. These counts were supplemented by two additional counts carried out in September 2000 at the intersections of Telegraph Road and Beulah Street, and Route 1 and Woodlawn Road. The counts were taken during the morning and evening peak periods. A summary of the peak-hour turning-movement counts at the studied intersections is included in Appendix C.

3.4.2.2 Traffic Analysis Methodology

Traffic operations are a function of traffic volume and available roadway capacity. The ratio between the volume and capacity is termed the volume-to-capacity (V/C) ratio. The standard industry procedure for determining the V/C ratio of a roadway facility is the 1997 *Highway Capacity Manual*. The *Highway Capacity Manual* contains planning-level procedures for assessing the adequacy of signalized intersections, two-way stop-controlled intersections, and four-way (or all-way) stop-controlled intersections. In each case, the procedures consider the number of vehicles turning or proceeding straight through the intersection, the number of lanes provided for each turning movement, and likely conflicts among turning vehicles.

For signalized intersections, the conflicts are summarized by a numerical value termed “critical lane volume.” The critical lane volume is divided by the intersection capacity to obtain a V/C ratio (Table 3-8).

Table 3-8

Level of Service (LOS) Criteria for Signalized Intersections

V/C Ratio	Assessment	Description
<0.85	Under Capacity	Stable flow, slight delays
0.85-0.95	Near Capacity	Approaching unstable flow, acceptable delays
0.95-1.00	At Capacity	Unstable flow, congested, unacceptable delays
>1.00	Over Capacity	Forced flow, oversaturation
Source: Transportation Research Board, 1997.		

For un-signalized intersections, the typical distance between vehicles arriving at the intersection is calculated based on peak-hour traffic volumes in order to determine the likelihood of available

gaps in major street traffic to allow turns to and from the minor street. The number of vehicles waiting on the minor street approaches and left turn bays on the major street is calculated using empirically-based formulas. Average delays for these yielding vehicles are estimated. A qualitative assessment of intersection operation is made based on the average delay per vehicle, as summarized in [Table 3-9](#). Level of Service (LOS) A reflects essentially free-flow conditions and LOS F reflects the maximum amount of wait time at a stop sign acceptable to most motorists.

Table 3-9

Level of Service (LOS) Criteria for Un-Signalized Intersections

Average Total Delay	Level of Service
< 10 seconds	A
10-15 seconds	B
15-25 seconds	C
25-35 seconds	D
35-50 seconds	E
> 50 seconds	F
Source: Transportation Research Board, 1997.	

3.4.2.3 Existing Levels of Service

A traffic capacity analysis was conducted for each of the intersections under study. Existing LOS for the signalized intersections are summarized in [Table 3-10](#), and in [Table 3-11](#) for the un-signalized intersections. The only intersection that is currently over capacity is US Route 1 and Backlick Road during the afternoon peak hour.

Table 3-10

Signalized Intersection LOS - Existing Conditions

Intersection	AM		PM	
	V/C Ratio	Capacity Status	V/C Ratio	Capacity Status
Telegraph Road/Beulah Street	0.66	Under Capacity	0.45	Under Capacity
Beulah Street/Woodlawn Road	0.30	Under Capacity	0.52	Under Capacity
Beulah Street/Kingman Road	0.23	Under Capacity	0.19	Under Capacity
Kingman Road/West McNamara Driveway	0.23	Under Capacity	0.33	Under Capacity
Kingman Road/East McNamara Driveway	0.30	Under Capacity	0.26	Under Capacity
Fairfax County Parkway/Kingman Road	0.39	Under Capacity	0.58	Under Capacity
US Route 1/Fairfax County Parkway	0.85	Near Capacity	0.79	Under Capacity
US Route 1/Backlick Road	0.77	Under Capacity	1.12	Over Capacity
US Route 1/Woodlawn Road	0.64	Under Capacity	0.80	Under Capacity
Source: TransCore, 2000.				

Table 3-11

Un-signalized Intersection LOS – Existing Conditions

Intersection	AM		PM	
	LOS	Delay (seconds)	LOS	Delay (seconds)
Beulah Street/South McNamara Driveway	C	16.9	B	11.1
Beulah Street/Backlick Road	B	10.8	B	13.0
Source: TransCore, 2000.				

3.4.3 Transit System

3.4.3.1 Transit Service to the McNamara HQC

Three Fairfax Connector bus routes (107, 202, and 304) and one Metrobus route (9A) currently serve the McNamara HQC. Service is provided as follows:

Fairfax Connector:

- Route 107 - This route provides peak-period-only service connecting the McNamara HQC to the Huntington Metrorail station (Yellow Line), primarily via Beulah Street and U.S. Route 1. Selected trips operate beyond Huntington to Old Town Alexandria. Service is provided every 30 minutes from 6:30 to 9:30 am and from 3:47 to 6:18 pm.
- Route 202 - This route connects the McNamara HQC to the Franconia-Springfield Transportation Center via Beulah Street and the Franconia-Springfield Parkway. At the Transportation Center connections can be made to Metrorail (Blue Line) and Virginia Rail Express (VRE) commuter trains. Service operates only during morning and afternoon peak periods, and on evenings, at approximately 30-minute and 45-minute intervals respectively. Beyond the Franconia-Springfield Transportation Center, service continues to the Van Dorn Metrorail station (Blue Line). South of the McNamara HQC, Route 202 enters the South Post, with service terminating at 16th Street and Belvoir Rd. (Building 1000). Morning service to the McNamara HQC is provided from 6:32 am to 9:21 am. Afternoon and evening service is provided from 3:15 pm to 9:15 pm.
- Route 304 - Route 304 also connects the McNamara HQC to the Franconia-Springfield Transportation Center. This route operates primarily via the Fairfax County Parkway and Backlick Road. Three morning trips, from 6:45 to 9:05, and three afternoon trips, from 4:05 to 6:10, are provided.

Metrobus

- Route 9A - In September 2000, selected trips on this route were extended to serve the McNamara HQC. The route connects the HQC with the Lorton VRE station to the south and with the Huntington Metrorail Station (Yellow Line) to the north. Beyond Huntington, the route continues to Old Town Alexandria, Crystal City, and the Pentagon. Between Lorton and the McNamara HQC, the route operates primarily via Lorton Station Road, Route 1, the Fairfax County Parkway, and Kingman Road. Between the site and Huntington, it operates primarily via Kingman Road, Fairfax County Parkway, and Route 1, serving the South Post (to 16th St. and Belvoir Rd.) along the way. Service is provided to the site in both directions at a 60-minute frequency all day from 6:30 am to 9:20 pm.

3.4.3.2 Transit Usage

Based on 1998 data provided by Fairfax Connector as well as more recent counts conducted by TransCore, it is estimated that approximately 40 to 60 people a day use the four public transportation routes described above to access the McNamara HQC. The most recent morning peak hour count conducted by TransCore in April 2001 observed 43 passengers arriving at the HQC on 22 trips:

- Route 9A – 2 passengers arrived on six trips
- Route 107 – 18 passengers arrived on seven trips
- Route 202 – 14 passengers arrived on six trips
- Route 304 – 9 passengers arrived on three trips.

It is difficult to ascertain, on the basis of the limited data available, whether a downward trend in transit ridership to the McNamara HQC is currently at work. However, anecdotal evidence obtained from Fairfax Connector personnel does suggest that the relocation of the stop from immediately in front of the building to the outer section of the parking lot has contributed to a decline in ridership.

Overall ridership on the three Fairfax Connector routes has increased by slightly more than five percent during the last fiscal year. On the basis of current ridership levels and growth rates, the routes are expected to have available capacity through the 2005 horizon year. Metrobus Route 9A has also experienced growth in ridership and, while adequate capacity is available in the Fort Belvoir area, standing loads are being experienced on some trips in the northern section of the route. The Washington Metropolitan Area Transit Authority (WMATA) has indicated that this route is being considered for additional service in fiscal year 2003 or 2004 to relieve the overcrowding.

3.4.4 Parking

In June 2001 the McNamara HQC had 3,026 parking spaces. A survey taken at 10 am, June 26, 2001 showed that 78 percent, or 2347 spaces, of the spaces were being used (handicap spaces were not counted), leaving 679 spaces available (Michael Baker Corporation, 2001). Approximately 200 additional parking spaces are covered by the temporary modular building that is now housing about 500 DTRA personnel. Following construction of the DTRC Building and parking structure, the temporary modular structure will be removed, along with columns and utility connections, and the 200 parking spaces will be restored to use.

Parking facilities at the McNamara HQC are required not only for personnel working in the McNamara Building, but also for visitors and government-owned vehicles. Conferences and meetings may swell parking needs by hundreds of spaces on some days of the year. In the spring

of 2001, a series of parking utilization surveys conducted by the Defense Logistics Agency indicated that even on days with large numbers of visitors, no fewer than 500 empty parking spaces could be found.

3.4.5 Traffic Analysis within the McNamara HQC

An analysis of existing traffic circulation on the road network within the McNamara HQC was conducted using external traffic data from the EA prepared for the *Temporary Relocation of the Defense Threat Reduction Agency to Fort Belvoir* (Fort Belvoir, 2001) that were distributed among the internal intersections (Michael Baker Corp., 2001). Using the traffic models Synchro and SimTraffic, it was determined that all nine intersections analyzed were operating at LOS A with acceptable delay times. Pedestrian movements were observed, and no major vehicle/pedestrian conflicts were identified.

3.5 Air Quality

3.5.1 National Ambient Air Quality Standards

The United States Environmental Protection Agency (USEPA), under the requirements of the 1970 Clean Air Act (CAA) as amended in 1977 and 1990, has established National Ambient Air Quality Standards (NAAQS) for six contaminants, referred to as criteria pollutants (40 CFR 50). These are ozone (O₃), carbon monoxide (CO), nitrogen dioxide (NO₂), particulate matter (PM), lead (Pb), and sulfur dioxide (SO₂). The NAAQS include primary and secondary standards. The primary standards ([Table 3-12](#)) were established at levels sufficient to protect public health with an adequate margin of safety. The secondary standards were established to protect the public welfare from the adverse effects associated with pollutants in the ambient air. A description of the criteria pollutants and their effects on the public health and welfare is presented in [Table 3-13](#).

Table 3-12

National and Virginia Ambient Air Quality Standards

Pollutant and Averaging Time	Primary Standard		Secondary Standard	
	$\mu\text{g}/\text{m}^3$	ppm	$\mu\text{g}/\text{m}^3$	ppm
Carbon Monoxide 8-hour concentration 1-hour concentration	10,000 ¹ 40,000 ¹	9 ¹ 35 ¹	No secondary standard	
Nitrogen Dioxide Annual Arithmetic Mean	100	0.053	Same as primary	
Ozone 8-hour concentration 1-hour concentration	157 ² 235 ³	0.08 ² 0.12 ³	Same as primary	
Particulate Matter <u>PM2.5:</u> Annual Arithmetic Mean 24-hour Maximum <u>PM10:</u> Annual Arithmetic Mean 24-hour concentration	15 ⁴ 65 ⁵ 50 ⁴ 150 ⁶	- - - -	Same as primary	
Lead Quarterly Arithmetic Mean	1.5	-	Same as primary	
Sulfur Dioxide Annual Arithmetic Mean 24-hour concentration 3-hour concentration	80 365 ¹ -	0.03 0.14 ¹ -	- - 1300 ¹	- - 0.50 ¹
Notes: ¹ Not to be exceeded more than once per year. ² 3-year average of the 4th highest 8-hour concentration may not exceed 0.08 ppm. ³ Areas not attaining the 1-hour standard must meet that standard before demonstrating attainment with the 8-hour standard. ⁴ Based on 3-year average of annual averages. ⁵ Based on 3-year average of annual 98th percentile values. ⁶ Based on a 3-year average of annual 99th percentile values. Source: 40 CFR 50; USEPA Fact Sheets, July 1997. <i>Virginia Ambient Air Monitoring 2000 Data Report</i> , VDEQ.				

Table 3-13

Criteria Pollutants - Their Sources and Effects

Pollutants and Their Sources	Health and Welfare Effects
Ozone (O₃): O ₃ is not emitted directly into the atmosphere. It is formed in the atmosphere by a series of complex chemical reactions primarily involving nitrogen dioxides and volatile organic compounds in the presence of heat and sunlight. These reactions are time-dependent and usually take place far downwind from the site where these ozone precursors were originally emitted. Typical sources of these precursors are motor vehicle exhaust and industrial processes using solvents.	Health: O ₃ is a highly reactive gas that irritates the mucous membranes and other lung tissues, causing respiratory impairment. O ₃ has been found to affect those with respiratory problems, such as asthma, as well as healthy adults and children. Effects include breathing difficulty while exercising and reduced resistance to respiratory infections. Acute exposures cause bronchial constriction, lung edema, and abnormal lung development. Welfare: Toxic to plants, causing leaf damage and decrease in growth. Weakens materials such as rubber and fabrics.
Carbon Monoxide (CO): The major source of CO is the incomplete combustion of fuels used to power engines, etc. Motor vehicles are the principal source of urban CO emissions. CO is a site-specific pollutant with high levels found near the source, such as at heavily-congested intersections. Other sources include power plants, industrial processes, and space heating.	Health: CO enters the bloodstream by combining with hemoglobin, which reduces the amount of oxygen carried to organs and tissue. The health threat is most severe for those with cardiovascular disease. Healthy individuals are affected at higher concentrations (>30 ppm). Symptoms include shortness of breath, chest pain, headaches, confusion, and loss of coordination. Welfare: No known effect on materials or vegetation.
Sulfur Dioxide (SO₂): SO ₂ results largely from the combustion of sulfur-bearing fuels such as coal and oil combustion in heat and power generation facilities. Other sources include pulp and paper mills, refineries, and nonferrous smelters. The combustion of gasoline and diesel fuels in motor vehicles accounts for a very small percentage of the total sulfur dioxides emitted.	Health: SO ₂ combines with water vapor to form acidic aerosols which irritate the respiratory tract. It aggravates symptoms associated with chronic lung diseases such as asthma and bronchitis. Welfare: SO ₂ is a primary contributor to acid deposition, which causes acidification of lakes and streams. Acid deposition also damages materials (corrodes metals, degrades rubber and fabrics), injures vegetation, and causes visibility degradation.
Nitrogen Dioxide (NO₂): NO ₂ is formed in the atmosphere from the oxidation of nitric oxide (NO). The major sources of NO is fuel combustion in boilers and engines associated with power plants, motor vehicles, industrial furnaces and space heating.	Health: NO ₂ can cause irritation to the lungs, lower resistance to respiratory infections, and aggravate symptoms associated with asthma and bronchitis. Welfare: NO ₂ decreases visibility by causing a reddish-brown haze. It is a contributor to acid deposition, which causes acidification of lakes and streams, as well as plant injury and damage to materials (metals, rubber, fabric).
Particulate Matter (PM₁₀): PM, which occurs as a result of incomplete combustion, consists of tiny airborne particles or aerosols combined with dust, dirt, smoke, and liquid droplets. PM ₁₀ is PM with an aerodynamic diameter of 10 microns or less. Sources of PM are factories, power plants, motor vehicles, construction activities, and fires. More particulates are contributed to the atmosphere by diesel fuel than gasoline.	Health: PM ₁₀ particles, because of their small size, are able to be inhaled and reach the thoracic region of the respiratory system. The health effects are often not immediately noticed. The particulates can accumulate in the lungs after long-term exposure and affect breathing and respiratory symptoms. The lung's natural cleansing and defense mechanisms are impaired. Welfare: Causes soiling and corrosion to materials. Decreases visibility by forming atmospheric haze.
Lead (Pb): The primary source for airborne Pb used to be motor vehicles, but the use of unleaded gas has dramatically reduced Pb emissions.	Health: Causes mental retardation and brain damage, especially in children. Causes liver disease; may be a factor in high blood pressure. Also damages the nervous system. Welfare: No direct impact on vegetation.

On July 17, 1997, the USEPA issued a new PM_{2.5} (particle diameter of less than or equal to 2.5 micrometers) standard for particulate matter. The standard was set at an annual limit of 15 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$), with a 24-hour limit of 65 $\mu\text{g}/\text{m}^3$. Because the new standard would regulate fine particulates for the first time, the USEPA allowed five years to build a nationwide monitoring network and to collect and analyze the data needed to designate areas and develop implementation plans. Therefore, this standard cannot yet be implemented.

A new standard for O₃ was issued by the USEPA on September 16, 1997 to update the current standard of 0.12 parts per million (ppm) of O₃ measured over one hour to 0.08 ppm measured over eight hours, with the average fourth-highest concentration over a three-year period determining whether an area is in compliance. The CAA provided up to three years for state governors to recommend, and the USEPA to designate, areas for attainment or non-attainment of the O₃ standard according to their most recent air quality data. In addition, states had up to three years from designation to develop and submit State Implementation Plans (SIPs) for attaining the new standard.

Litigation over the new standards resulted in the Supreme Court upholding the standards, but details regarding implementation must be determined by the Court of Appeals before the USEPA can establish regulatory policies and procedures for implementing these standards. Therefore, neither the PM_{2.5} nor the new O₃ standard has yet been implemented.

3.5.2 National Ambient Air Quality Standard Attainment Status

Areas that meet the NAAQS for a criteria pollutant are designated as being “in attainment;” areas where a criteria pollutant level exceeds the NAAQS are designated as being “in non-attainment.” O₃ non-attainment areas are categorized based on the severity of their pollution problem – marginal, moderate, serious, severe, or extreme. CO and PM₁₀ non-attainment areas are categorized as moderate or serious non-attainment areas. Where insufficient data exist to determine an area’s attainment status, it is designated unclassifiable (or in attainment).

Fort Belvoir is located along the western shore of the Potomac River, in Fairfax County, Virginia, an area currently designated as being in:

- Serious non-attainment for O₃.
 - Attainment for all other criteria pollutants.
-

3.5.3 State Implementation Plan (SIP)

The CAA as amended in 1990 (CAAA) mandates that state agencies adopt SIPs that target the elimination or reduction of the severity and number of violations of the NAAQS. SIPs set forth

plans to expeditiously achieve and maintain attainment of the NAAQS. The SIP applicable to the Fort Belvoir area is described in the *Final State Implementation Plan Revision, Phase I Attainment Plan* (Metropolitan Washington Council of Governments [MWCOG], October 1997) and *State Implementation Plan Revision, Phase II Attainment Plan for the Washington DC-MD-VA Nonattainment Area* (MWCOG, February 3, 2000).

The SIP targeted a 15 percent reduction in emissions contributing to the formation of O₃ from 1990 to 1996, and then a three percent reduction per year until the area meets the NAAQS. The attainment date for the Washington Metropolitan area was anticipated to be 1999, implying a 24 percent total reduction in emissions. However, modeling results show that even with the local measures required to meet the 24 percent rate of progress requirement, air quality in the region will only meet the O₃ NAAQS if the overwhelming transport of pollutants into the region from other areas is reduced. The Metropolitan Washington Air Quality Committee (MWAQC) anticipates that the Washington metropolitan area will attain the O₃ standard in 2003-2005, based upon data from the ozone seasons.

3.5.4 Local Ambient Air Quality

Air quality data for Virginia are collected by the Virginia Department of Environmental Quality (VDEQ) at representative sites throughout the state. The most recent available data (for the year 2000) from nearby monitoring stations are used to describe the existing ambient air quality at Fort Belvoir (Table 3-14). The measured ambient air concentrations were well below the corresponding NAAQS except for O₃. O₃ exceedence was expected since the region within which Fort Belvoir and the O₃ monitoring sites are located has been designated an O₃ non-attainment area.

3.5.5 Mobile Sources

CO, nitrous oxides (NO_x, precursors of O₃), and volatile organic compounds (VOC, precursors of O₃) are the primary automobile-related or mobile-source air pollutants. Lead emissions from automobiles have declined in recent years through the increased use of unleaded gasoline and are not significant. Potential emissions of particulates and sulfur dioxide from indirect mobile sources such as automobiles are insignificant in comparison with those from direct, non-mobile sources such as power plants and industrial facilities. Therefore, only vehicular CO, NO_x, and VOC emissions are considered in this study.

Table 3-14
Local Ambient Air Quality

Pollutant and Averaging Time	Monitored Data	Primary Standard	Secondary Standard	Monitoring Site Location
Carbon Monoxide 8-hour maximum (ppm) 1-hour maximum (ppm)	2.4 3.1	9 35	- -	Franconia, Lee District Park
Nitrogen Dioxide Annual Arithmetic Mean (ppm)	0.009	0.053	0.053	Long Park, Prince William County
Ozone 8-hour maximum (ppm) 1-hour maximum (ppm)	0.101 0.125	0.08 0.12	0.08 0.12	2675 Sherwood Hall Lane
Particulate Matter (PM _{2.5}) Annual Arithmetic Mean (µg/m ³) 24-hour Maximum (µg/m ³)	14.1 37.5	15 65	15 65	Lee District Park
Particulate Matter (PM ₁₀) Annual Arithmetic Mean (µg/m ³) 24-hour Maximum (µg/m ³)	23 54	50 150	50 150	Manassas Health Department, Prince William County
Sulfur Dioxide Annual Arithmetic Mean (ppm) 24-hour Maximum (ppm) 3-hour Maximum (ppm)	0.011 0.037 0.057	0.030 0.140 -	- - 0.500	1437 Balls Hills Road
Lead Quarterly Maximum (µg/m ³)	0.102	1.5	1.5	Manassas Health Department, Prince William County
Source: Virginia Ambient Air Monitoring 2000 Data Report, VDEQ.				

Air quality impacts from traffic (including traffic associated with development projects) are generally evaluated on two levels or scales:

- Micro-scale: CO, which is emitted predominantly by motor vehicles, is a site-specific pollutant with higher concentrations found next to roadways. As a result, it is usually of concern on a local or micro-scale level. CO air quality impacts are typically evaluated through a micro-scale analysis of traffic-related emission impacts at specific intersections.
- Meso-scale: NO_x and VOC, precursors of O₃, are of regional concern due to Northern Virginia's non-attainment status for this pollutant. Potential emission increases from additional vehicle miles traveled (VMT) may affect regional ozone levels and may require a meso-scale impact analysis.

Existing VOC and NO_x mobile emissions are not site-specific and are considered only on a regional basis (meso-scale), which is beyond the scope of this analysis. However, VOC and NO_x emissions induced by the proposed action and alternative will be addressed with respect to Clean Air Act Conformity (see [Subchapter 3.5.7](#)). A micro-scale analysis of existing localized CO concentrations has been performed based on existing traffic conditions as discussed in [Chapter 3.4](#).

The CO micro-scale air quality analysis was based on procedures outlined in the following documents:

- A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections (USEPA, 1995).
- Mobile5b User's Guide (USEPA, 1997).
- MWCOG-provided Mobile5b input parameters (Tangirala, January 11, 2000).

CO traffic effects are determined through a two-step process: 1) vehicle exhaust emission factors are calculated using the USEPA Mobile5b computer model; 2) these emission factors are subsequently used as input for the USEPA CAL3QHC dispersion model in order to calculate CO concentrations. The models used are as follows:

- Mobile5b generates vehicular emission factors based on locality-specific vehicle fleet characteristics, including vehicle age, operating mode (hot/cold starts), and percentage of oxygenated fuel used. Additionally, Mobile5b can incorporate adopted emission control strategies such as anti-tampering programs and inspection and maintenance programs.
- CAL3QHC (Version 2) predicts the level of CO or other pollutant concentrations from motor vehicles traveling near roadway intersections. The model incorporates inputs such as roadway geometry, traffic volumes, vehicular emission rates, and meteorological conditions.

Worst-case CO emissions were estimated for receptor locations at two intersections during the weekday morning and afternoon peak periods. These two intersections are: US Route 1 and Backlick Road; and John J. Kingman Road and the Fairfax County Parkway. These intersections were selected for modeling because of their maximum potential for increase in traffic and CO impacts.

Locality-specific composite emission factors were estimated using the Mobile5b model and MWCOG-provided area-specific input parameters. Idle emission rates were determined in accordance with USEPA guidance. The micro-scale CO analysis model incorporated the emission factors, current traffic volumes and intersection phasing data, and worst-case meteorological conditions. These data were used to determine the maximum air quality impacts generated by existing roadway conditions.

Total ambient CO concentrations near intersections consist of two components: local source contributions (i.e., vehicular emissions near intersections); and background contribution from other, non-vehicular nearby sources. Background CO levels in the Fairfax County area were obtained from the VDEQ (Ballou, February 4, 2000). The one-hour background CO concentration is 6 ppm, and the eight-hour background CO concentration is 3 ppm.

A persistence factor of 0.70 was used to convert the one-hour CO concentrations calculated by CAL3QHC to eight-hour concentrations. The persistence factor represents a combination of the variability in both traffic and meteorological conditions.

Estimated worst-case CO emissions under existing conditions are presented in [Table 3-15](#). The worst-case CO emissions occurred during the afternoon peak period. The modeling results indicate no existing violations of the one-hour CO standard of 35 ppm or of the eight-hour CO standard of 9 ppm at the modeled intersections.

Table 3-15

Existing Carbon Monoxide Levels

Intersection	One-Hour Concentration (ppm)	Eight-Hour Concentration (ppm)
US Route 1/Backlick Road	9.5	5.5
John J. Kingman Road/Fairfax County Parkway	8.1	4.5
Notes: CO levels include background concentrations of 6 ppm (one-hour) and 3 ppm (eight-hour). Values are for the weekday afternoon peak period.		

3.5.6 Stationary Sources

Stationary sources at Fort Belvoir include 37 boilers, 31 generators, 2 incinerators, 9 regulated underground storage tanks (UST), a Firefighting Training Facility, and over 225 insignificant sources of emissions. The insignificant sources include closed sanitary landfills, above ground storage tanks (AST), spray painting operations, welding operations, asphalt paving activities, degreasers, oil-water separators, woodworking activities, printing operations, pesticide application activities, residential and other smaller No. 2 fuel oil and natural gas boilers, and emergency generators (Werner, April 24, 2001).

Based on the type of pollutants emitted (criteria pollutants or hazardous air pollutants [HAPs]), the CAAA sets forth permit rules and emission standards for sources of certain sizes. The New Source Performance Standards (NSPS) apply to sources of criteria pollutants, while the National Emission Standards for Hazardous Air Pollutants (NESHAPs) apply to sources of HAPs. The USEPA

oversees programs for stationary source operating permits (Title V) and for new or modified major stationary source construction and operation (New Source Review).

Title V major source thresholds (based on the facility's Potential to Emit) applicable to Fort Belvoir are:

- 50 tons per year (tpy) VOC or NO_x.
- 100 tpy other criteria pollutants.
- 25 tpy total HAP or 10 tpy any HAP.

Fort Belvoir is a major source of NO_x and SO₂. A Title V permit application was submitted for the facility in March 1998. The application was determined to be complete by VDEQ. The technical review of the application was completed and a draft permit was issued in September 2000. Responses to comments on the draft permit were submitted to VDEQ in January 2001 and a final Title V Permit for the facility is expected in early 2002 (Werner, April 24 and September 24, 2001).

3.5.7 Clean Air Act Conformity

The Clean Air Act Amendments (CAAA) of 1990 expand the scope and content of the act's conformity provisions in terms of their relationship to a SIP. Under Section 176(c) of CAAA, a project is in "conformity" if it corresponds to a SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. Conformity further requires that such activities do not:

- (1) Cause or contribute to any new violations of any standards in any area;
- (2) Increase the frequency or severity of any existing violation of any standards in any area; or
- (3) Delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

The USEPA published final rules on general conformity (40 CFR Parts 51 and 93 in the *Federal Register* on November 30, 1993) that apply to federal actions in areas designated in non-attainment for any of the criteria pollutants under the CAAA. The proposed rules specify *de minimis* emission levels by pollutant to determine the applicability of conformity requirements for a project. In this case, the project area is located in a serious non-attainment region for O₃. For a serious O₃ non-attainment area, the *de minimis* criterion is 50 tons per year (tpy) for both NO_x and VOC. An applicability analysis of the proposed action under the general conformity rule is presented in [Subchapter 4.5](#).

3.6 Noise

Some noise is unavoidably caused by activities essential to the health, safety, and welfare of any community, for instance the noise caused by emergency vehicle sirens, garbage collection operations, or construction and maintenance equipment. Noise also arises from the movement of people and goods, and generally from activities that are essential to the viability of a community or region as a place to live and do business. Examples are traffic noise and aircraft noise. Although such noise is an integral part of modern life in most places, it may at times detract from the quality of the environment.

Existing noise levels in the vicinity of Fort Belvoir are typical of those normally associated with nearby land uses and the overall level of development in the area, which can be classified as suburban. The primary source of noise near the site is vehicular traffic. For a typical suburban area with associated traffic conditions, noise levels are normally about 50 decibels (dBA) of background noise and about 70 dBA near sidewalks adjacent to traffic routes. [Table 3-16](#) presents general noise levels for some common sources and receptor locations.

Table 3-16

Common Sources of Noise

Noise Source	Level (dBA)
Air Raid Siren at 50 Feet	120
On Platform by Passing Subway	100
On Sidewalk by Passing Heavy Truck or Bus	90
On Sidewalk by Typical Highway	80
On Sidewalk by Passing Autos with Mufflers	70
Typical Urban Area Background/Busy Office	60
Typical Suburban Area Background	50
Quiet Suburban Area at Night	40
Typical Rural Area at Night	30
Source: City of New York Environmental Quality Review Technical Manual. December 1993.	

Fairfax County's Comprehensive Plan's noise policy minimizes the potential for noise and land use conflicts by using noise-compatible planning strategies. Fort Belvoir, while not subject to the Fairfax County noise policies or ordinances, has no activities that conflict with the local or federal standards and guidelines affecting human health and safety.

Day-night average sound level (DNL) contours have been developed to model the noise generated by aircraft and ground activities at Fort Belvoir's Davison Army Airfield. The Federal Interagency Committee on Noise (FICON) has identified the 65 dB DNL as an appropriate threshold for assessing aircraft and other noise impacts on residential land uses (FICON, 1992). At present, the DNL from an average "busy day" aircraft operations at Davison Airfield does not exceed 65 dB outside the airfield's or Fort Belvoir's boundaries (Rachami, February 18, 2000).

3.7 Infrastructure

The proposed transfer of personnel and construction of new buildings would generate additional demand for utilities such as potable water, wastewater collection and treatment, and electricity. The new structures also may generate additional stormwater runoff requiring treatment.

3.7.1 Water Supply

Potable water is supplied to Fort Belvoir by the Fairfax County Water Authority (FCWA). The installation owns, operates, and maintains the entire on-post distribution system. This includes about 78 mi (126 km) of more-than-6-in (15-cm) water main pipes, three pumping stations, five storage tanks (four elevated, one ground-level) providing about 2.6 million gallons (gal) (9.8 million liters [l]) of storage capacity, and a chlorination unit. A total of 2.2 million gallons per day (MGD) (8.3 million liters per day [MLD]) are provided through two points of entry (two FCWA meter vaults/pump stations on Pole Road and Telegraph Road). Fort Belvoir also has five groundwater wells, used for irrigation only. Fort Belvoir's water system will be fully privatized in the near term. The distribution system will be reduced to two pumping stations and four storage tanks (three elevated and one ground-level, providing together about 2.3 million gal of storage).

Water supply service at the McNamara HQC is available from a 12-in (30-cm) main at the southeastern corner of the property at Beulah Street, and from a 10-in (25-cm) main at the northern end of the property at Kingman Road. These two feeds reduce in size and are tied together by an 8-in (20-cm) line that runs concentrically through the parking lot about halfway between the property line and the McNamara building. The building is connected to this line by an 8-in (20-cm) service feeder. A second 8-in (20-cm) concentric line runs behind the building and feeds several fire hydrants.

3.7.2 Sanitary Sewer

Fort Belvoir owns and maintains the on-post sanitary sewer system, including 37 sewage pumping/lift stations and two main pumping stations. As of 2000, the installation discharged

about 7.8 MGD (29.5 MLD) of wastewater to the system, which itself ultimately discharges to Fairfax County's Noman J. Cole, Jr. Pollution Control Plant (formerly the Lower Potomac Pollution Control Plant). There is a 6,300-gal (23,800-l) septic tank at the Golf Course Maintenance Facility on Telegraph Road. This tank does not have a septic field. Like the water system, Fort Belvoir's sewer system will be privatized in the near future.

The McNamara HQC has a system of sanitary sewer lines serving all buildings. Two 12-in (30-cm) mains serving the McNamara building exit from the back at the north and south ends. Both lines merge into a 15-in (38-cm) main near the stormwater outfall structure. The picnic pavilion, Gate 3 guardhouse, and Child Development Center connect to an 8-in (20-cm) line that runs along the service road on the south and west sides of the property and joins the 12-in (30-cm) main off the south end of the main building. An 8-in (20-cm) line serves the Gate 2 guardhouse. It connects to the 12-in (30-cm) line off the north end of the main building, as does the 8-in (20-cm) line that serves the Gate 1 guardhouse.

3.7.3 Electricity

Electrical power at Fort Belvoir is provided by Dominion Virginia Power (DVP) from a substation near the Humphreys Engineer Center. Fort Belvoir owns the entire on-post electrical systems and its appurtenances. Power is transferred from the DVP substation to a Fort Belvoir-owned switching station and distributed to the post at 34.5 kilovolts (kV) through about 78 mi (126 km) of overhead lines, and 83 mi (134 km) of underground lines. As of 2000, several overhead feeders were used to serve the various areas of the post. A total of ten substations are located throughout the installation to transform power to lower voltage. Fort Belvoir also uses one combination substation and switching station, and three switching stations. Auxiliary generators are used as back-up for critical functions. Fort Belvoir's electrical system will be privatized in the near future. The privatization agreement will determine the future of a seven-phase upgrade of the power system initiated in 1988 and aiming to remove most of the existing substations while adding new ones only where needed.

The McNamara HQC receives electrical power from two points. An underground high voltage line connected to an above-ground line at Kingman Road supplies the main building. This service feeder has two separate circuits connecting to a 35.5 kV switchgear outside the north end of the building next to the loading dock. The current load on the main switchgear is about 40 amps per phase. Construction of the new building would require an additional 45-50 amps per phase, which is within the capacity of the main system if it is decided to obtain pre-metered electrical service for the McNamara Building.

The emergency system at the McNamara HQC consists of four 800 kW-diesel generators connected to paralleling switchgear. According to McNamara Building (formerly the DLA HQC)

personnel, during an outage, the system uses two of the generators and part of the third (DTRA & COE, July 2000).

3.7.4 Natural Gas

Fort Belvoir's natural gas system is owned and operated by Washington Gas. As of 2000, gas was distributed to the post through 25 mi (40 km) of main gas line and 11 mi (18 km) of service lines, mostly servicing the family housing areas. Fort Belvoir has been upgrading its natural gas supply system since 1993 and will continue to do so over the next few years. Improvements include the conversion of facilities from Number 2 and Number 6 fuel oil to natural gas, replacement of old piping, and placement of new lines and meters.

Fort Belvoir has nine multiple-building heat plants – five high-pressure steam plants and four hot water plants. The McNamara building has its own heating system, consisting of two natural gas-fired boilers sized to service 800,000 sq ft (74,320 sq m). This capacity is sufficient only to heat and cool the existing building.

3.7.5 Solid Waste

Fort Belvoir generates about 10,460 tons (9,490 metric tons) of solid waste per year that are disposed of off-post by a contract hauler, and about 3,135 tons (2,843 metric tons) that are recycled (US Army Garrison Fort Belvoir, March 2000).

Fort Belvoir has a 10-year Integrated Solid Waste Management Plan, last updated in 1999. The goal of the plan is to reduce materials that must be disposed of by incineration or landfilling. In general, the planning goal is to use integrated solid waste management planning to reduce solid waste management costs and potential environmental impacts. Fort Belvoir has met the plan goals, and now recycles more than 50 percent of its solid waste.

3.7.6 Communications

Telecommunication and information services on Fort Belvoir consist of a copper and fiber-optic data-distribution network. The network backbone is Asynchronous Transfer Mode (ATM) and the telephone switch is Integrated Services Digital Network (ISDN)-capable. The installation owns the entire system, including copper and fiber-optic cables, utility poles, and computerized switchboard systems associated with inter-base and DoD applications. As of 1997, the main telephone switch handled 18,000 telephone lines. It could be upgraded to handle up to 45,000 lines (US Army Garrison Fort Belvoir, March 2000).

3.7.7 Stormwater

Fort Belvoir's stormwater system consists mostly of open channels that receive sheet flow and point source flow from within the post's 58 subwatersheds. All storm water is ultimately discharged to the installation's watercourses through approximately 118,360 linear ft (36 km) of paved drainage ditch and 315,800 ft (96,300 m) of storm drain. Additional stormwater structures include detention ponds and oil/water separators at the motor pools and the airfield. Fort Belvoir owns the entire stormwater system.

The McNamara HQC is located within a 72-ac (30-ha) drainage area that is 85 percent developed. Stormwater is collected by a culvert system that discharges into a stormwater management pond located in the southwestern portion of the site. This pond is designed to control peak flows from two- and ten-year storms (DTRA & COE, July 2000).

Stormwater at the proposed temporary parking lot site on McCutchen Road discharges at the southeastern end of the site. The stormwater is then collected by a 14- to 16-inch (35.6- to 40.6-cm) steel pipe, which discharges at the top of a ravine that flows into Mason Run (Bolton, January 14, 2000).

Section 402 of the Clean Water Act of 1977 established requirements for discharges of stormwater associated with industrial activity under the National Pollutant Discharge Elimination System (NPDES) permit program. Within the Commonwealth of Virginia, VDEQ administers the stormwater permitting program under the Virginia Pollutant Discharge Elimination System (VPDES) permit program. The VPDES permit program governs any construction activity including clearing, grading, and excavation activities, except for operations that result in disturbance of less than five acres (two hectares) of total land area that is not part of a larger common plan of development or sale. Fort Belvoir has a general VPDES stormwater permit for installation activities.

3.8 Cultural Resources

Federal agency actions must comply with the National Historic Preservation Act (NHPA) of 1966, as amended. The intent of the NHPA is to integrate consideration of historic preservation issues into the early stages of project planning by a federal agency. Accordingly, under Section 106 of the NHPA, the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking is required – before the expenditure of any federal funds on that undertaking – to account for its effects on any district, site, building, structure, or object that is included or eligible for inclusion in the National Register of Historic Places.

Section 110, as amended, of the NHPA directs federal agencies to establish a program to locate, inventory, and nominate to the Secretary of the Interior all properties under their ownership or control that appear to qualify for inclusion in the National Register of Historic Places. To this end, the cultural resources of Fort Belvoir have been surveyed utilizing the National Register Criteria for Evaluation (36 CFR 60.4). In February 2001, the installation completed the *Integrated Cultural Resources Management Plan (ICRMP) of US Army Garrison Fort Belvoir* (US Army Garrison Fort Belvoir, February 2001), which identifies the post's cultural resources and provides guidelines for the management of these resources.

3.8.1 McNamara HQC

No cultural resources occur at the McNamara HQC (US Army Garrison Fort Belvoir, February 2001). The soil has been disturbed for construction of the buildings and parking lot, as well as for earlier buildings that once were on the site. Parking lots and buildings now cover much of the site. No structures predating the main building remain.

3.8.2 Temporary Parking Lot Site

No historic or pre-historic cultural resources have been identified on the proposed parking lot site. Fort Belvoir's archaeological resources have been extensively surveyed and evaluated. Archaeological sites in the vicinity of the McCutchen Road site have been determined to be non-eligible for listing on the National Register (US Army Garrison Fort Belvoir, March 2000).

3.9 Natural Resources

Fort Belvoir is located within the metropolitan Washington, DC region, an area that is rapidly experiencing conversion of undeveloped natural areas to developed land uses. Within this urbanizing area, Fort Belvoir represents a significant tract of native vegetation, particularly in terms of its size, diversity, and location in relation to other relatively undisturbed tracts of vegetation (Fairfax County's Huntley Meadows Park and the US Fish and Wildlife Service [USFWS] Mason's Neck National Wildlife Refuge, for example). To preserve its ecological significance, Fort Belvoir has conserved two areas on the installation as wildlife refuges, and established a Forest and Wildlife Corridor connecting these and other habitats.

Fort Belvoir has developed an Integrated Natural Resources Management Plan (INRMP) that embodies the principles of ecosystem management to preserve native biodiversity. Through the INRMP, Fort Belvoir aims neither to manage for single species nor to increase the number of species or communities on-post. Rather, it embraces biodiversity conservation through an ecosystem-based natural resources management plan. The INRMP implements the requirements

of the Sikes Act (16 USC 670a et seq.) as amended in the Sikes Act Improvement Act of 1997; DoD Instruction 4715.3, *Environmental Conservation Program*; and Army Regulation (AR) 200-3, *Natural Resources – Land, Forest and Wildlife Management* (US Army Garrison Fort Belvoir, March 2001).

3.9.1 Topography and Geology

Fairfax County lies within the Coastal Plain and Piedmont Physiographic Provinces. The fall line separating these provinces trends northeast to southeast, and is roughly parallel to Interstate 95 in the vicinity of Fort Belvoir. Fort Belvoir's Main Post lies within the Coastal Plain Physiographic Province.

The Coastal Plain Physiographic Province consists of unconsolidated sand, silt, and clay underlain by residual soil and weathered crystalline rocks. Most of the Coastal Plain Physiographic Province deposits in the Fort Belvoir area consist of a sequence of unconsolidated Cretaceous sediments that belong to the Potomac Group (Larson and Froelich, 1977, as cited in US Army Garrison Fort Belvoir, March 2001). These sediments consist of predominantly lenticular deposits of sand, silt, clay, and gravel of non-marine origin (Force, 1975, as cited in US Army Garrison Fort Belvoir, March 2001). The Potomac Group is about 600 ft (183 m) thick beneath most of the installation (Law and Froelich, 1977, as cited in US Army Garrison Fort Belvoir, March 2001).

The topography of Fort Belvoir consists of two nearly level plateaus that run south-southeast towards the Potomac River, and slope steeply to lowlands that are primarily associated with the floodplains of Accotink and Dogue Creeks (US Geological Survey [USGS], 1989). Steep slopes, ravines, and stream valleys surround the two plateaus on the east, south, and west sides. The installation ranges in elevation from approximately mean sea level (msl) along the Potomac River to 230 ft (70 m) above msl at the intersection of Beulah and Woodlawn Roads. Uplands and plateaus make up about 40 percent of the Main Post's land area, lowlands make up another 40 percent, and steep slopes make up 20 percent.

The McNamara HQC slopes gradually from an elevation of 145 ft (44 m) above msl near Kingman Road and Beulah Street to 129 ft (39 m) above msl at the building, to 90 ft (27 m) above msl at Route 617 on the southwest side (Figure 3-3, Topography of McNamara HQC) (DTRA & COE, July 2000). The present loading dock area at the south end of the McNamara Building, where the DTRC Building would connect, is at elevation 105 ft (32 m) above msl. The top of the grassy slope just to the east is at elevation 130 ft (40 m), or 25 ft (8 m) above the loading dock area (RTLK, 2001).

The proposed parking structure site is fairly level with the northeast corner at elevation 135 ft above msl and the southwest corner at elevation 129 ft above msl. This represents about a 1.2 percent slope in 526 ft (RTKL, 2001).

The McCutchen Road temporary parking lot site consists of a level area at 50 ft (17m) above msl sloping gradually to 40 ft (12m) above msl on the west, and to 25 ft (8m) above msl at Mason Run on the east ([Figure 3-4](#), Topography of Temporary Parking Lot).

3.9.2 Floodplains

Floodplains are significant as a physical feature of the landscape, as a master planning designation for conservation of certain resource values and flood insurance planning, and as a regulatory designation for EO 11988 (Floodplain Management) and Chesapeake Bay Local Assistance Department (CBLAD) regulations.

From a planning perspective, EO 11988 sets forth the responsibilities of federal agencies in reducing the risk of flood loss or damage to personal property, minimizing the impact of flood loss, and restoring the natural and beneficial functions of floodplains. Flood insurance maps, approximately depicting the 100-year floodways and 100- and 500- year floodplains, have been prepared by the Federal Emergency Management Agency (FEMA) and are used to determine design requirements for new projects that would encroach on designated areas.

More site-specific delineations of the 100-year floodplain are used to determine the boundaries of Resource Protection Areas (RPAs) and associated CBLAD requirements for specific projects (CBLAD requirements are addressed in [Subchapter 3.9.7](#)). Floodplains are considered environmentally sensitive areas and a moderate constraint for planning and development purposes.

According to FEMA maps, no 100-year floodplains occur within the McNamara HQC or the McCutchen Road temporary parking lot site.

3.9.3 Soils

The USDA Natural Resources Conservation Service (NRCS – formerly the Soil Conservation Service, or SCS) identified and mapped Fort Belvoir’s soils in 1982 (USDA SCS, unpublished). Soils maps showing the distribution of the installation’s 22 soils series are available from the Fort Belvoir Directorate of Installation Support, as well as the installation’s GIS.

Topography of McNamara HQC

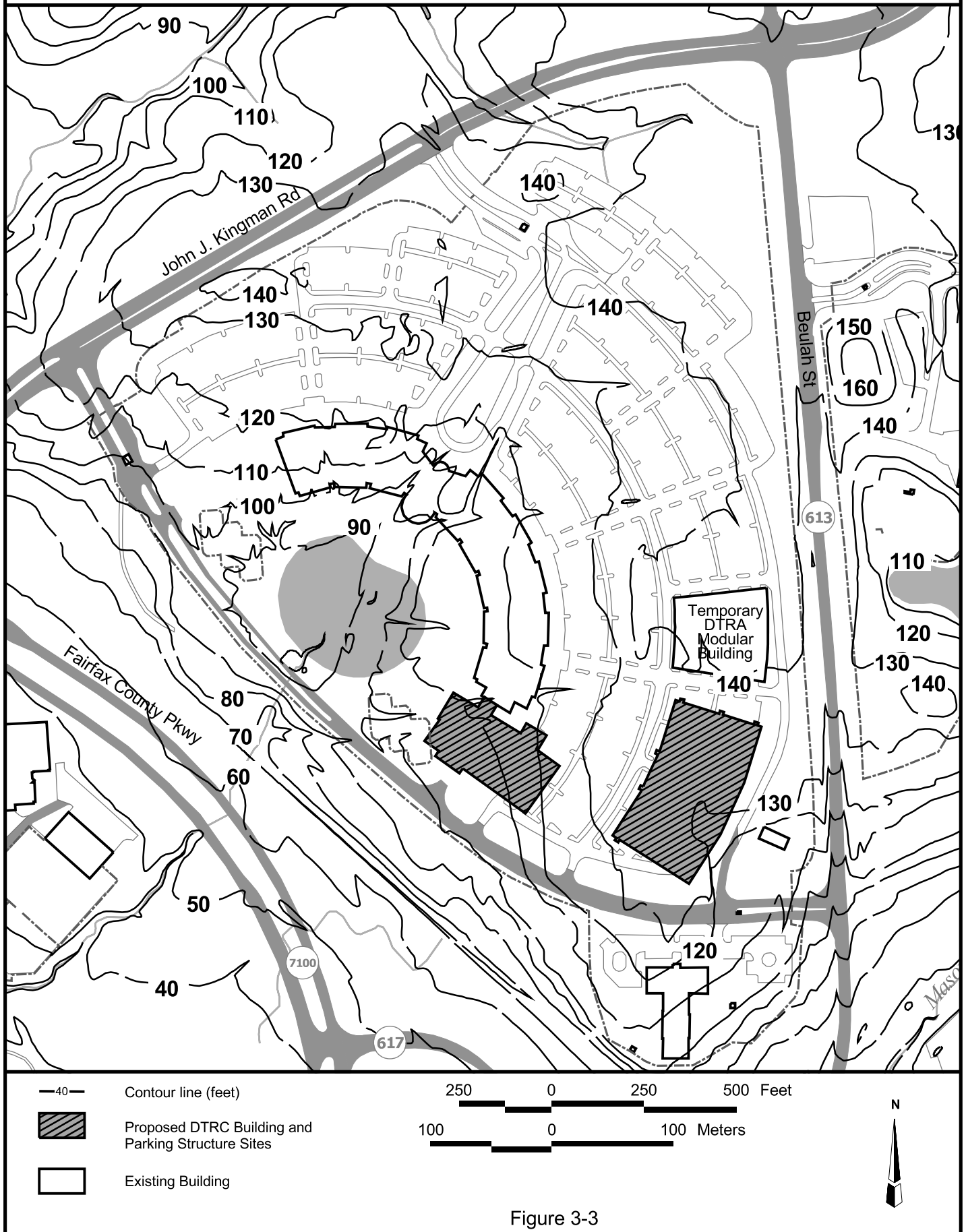
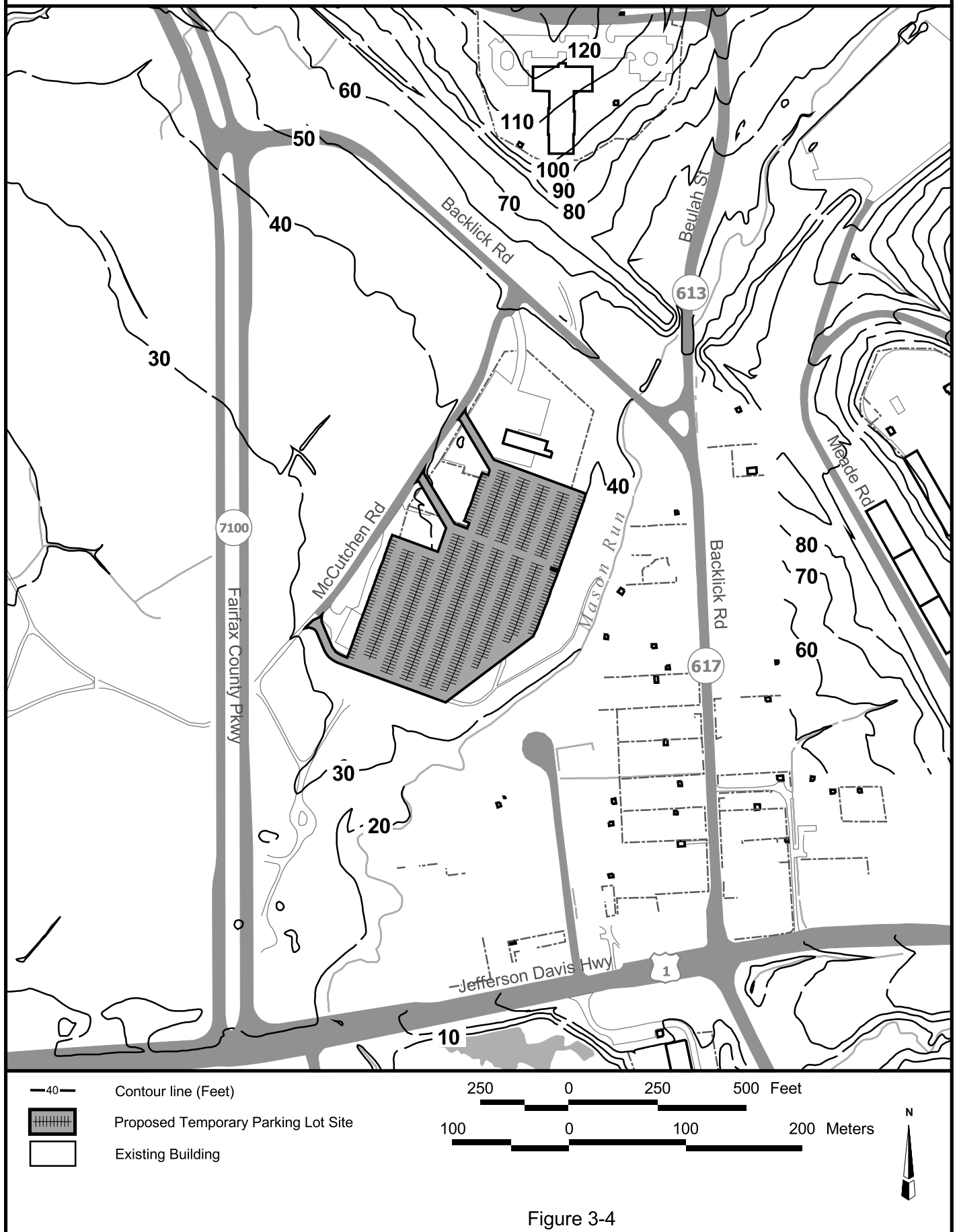


Figure 3-3

Topography of Temporary Parking Lot Site



The soils series range from well drained to very poorly drained, depending on their topographic position and texture. Textures range from coarse sandy loams to silt loams, but are mostly fine sandy loams and silt loams.

Soil types mapped at the McNamara HQC generally are the non-series units “Cut and Fill” and “Urban Land.” Cut and Fill consists generally of soils of unknown origin that have been brought into construction sites. Urban Land is generally composed of native soils on ridge tops or other flat areas where development has occurred. These soils have generally been altered to some degree by construction and landscape management.

At the proposed parking structure site, the soil stratigraphy is variable from one end of the site to the other. In general, surficial soils are terrace deposits consisting of sandy clays, clayey and silty sands, with some silty gravels. Below the terrace deposits are Cretaceous sandy clays with some interbedded layers of clayey sands and silty sands (RTKL, 2001).

Soil types mapped at the McCutchen Road site are Urban Land and Keyport Silt Loam. The Keyport Silt Loam series is a member of the clayey, mixed, mesic family of Aquic Hapludults. Keyport soils are nearly level to gently sloping, with a slow runoff rate and slight erosion hazard. This non-hydric series is characterized as moderately well drained with a perched seasonal high-water table at a depth of 1.5 to 4 ft (0.46 to 1.22 m) during the winter and spring months (USDA SCS, unpublished).

3.9.4 Groundwater

Fort Belvoir is located in the central and eastern portions of the Virginia Coastal Plain and is characterized by sedimentary features known as the Potomac Formation. Groundwater in the southeastern portion of Fairfax County is typically drawn from deep layers of coarse-grained strata located between thinner layers of fine-grained sand and gravel. Groundwater yields in the coastal plain can reach up to 100 gallons per minute (379 liters per minute). Aquifer recharge areas can be vulnerable to contamination. Groundwater resources in the Coastal Plain Physiographic Province may be used as a water supply source, but Fort Belvoir withdraws groundwater primarily for irrigation purposes only. Potable water for public use is supplied to Fort Belvoir by the Fairfax County Water Authority.

Borings taken at the parking structure site encountered groundwater between elevations 76.9 ft (23.4 m) and 100.8 ft (30.7 m) above msl. with one hole encountering groundwater at 102 ft (31.1 m) (or a minimum of 27 ft [8.2 m] below the present surface). Thirteen of the 34 holes drilled for the building did not encounter groundwater. Several observation wells were installed and the highest recorded water level in one well was 106 ft (32.3 m). In three other wells, the highest water levels were between elevations 71 ft (21.6 m) and 86 ft (26.2 m). The groundwater

levels encountered, below the existing surface, are thought to be perched water zones and that the permanent groundwater regime was not encountered in the exploration (RTLK, 2001).

3.9.5 Surface Water

The Fort Belvoir Main Post is bounded by Dogue Creek to the east, the Potomac River and Gunston Cove to the south, and Pohick and Accotink Bays to the west ([Figure 1-2](#)). Surface waters on the Main Post include: Pohick, Dogue, and Accotink Creeks; a number of unnamed tributaries; groundwater seeps; and three manmade ponds.

Mason Run, a tributary of Accotink Creek, flows by the eastern side of the proposed temporary parking lot site on McCutchen Road. Studies of the quality of habitat in Mason Run done in 1999 and 2000 indicate that the stream has average conditions relative to other streams on Fort Belvoir for habitat markers of: channel modification, instream habitat, bank vegetation, shading, and width of riparian zone (EA Engineering, in US Army Garrison Fort Belvoir, March 2001).

There are two surface water features on the McNamara HQC. The first consists of a narrow, 200-ft- (61-m-) long grassed swale at the north end of the parking area that conveys stormwater runoff from the newly constructed ballfield to the west. The second is a stormwater management pond located in the southwestern portion of the site that receives stormwater from the McNamara building parking area. This pond drains into an unnamed stream that flows southwest into Accotink Creek.

3.9.6 Vegetation

An installation-wide vegetation study of Fort Belvoir (Paciulli-Simmons, 1998) identified 16 community types, included in the broader categories of mixed hardwood forests, pine forests, floodplain hardwood forests, wetlands, old field grasslands, and urban land. [Figure 3-5](#) (Vegetation Cover Types) shows the forest types in the vicinity of the proposed construction sites.

The McNamara HQC, which includes improved and semi-improved grounds such as buildings and landscaped areas, is mapped as urban land. Dominant vegetation at this site includes mixed turf grasses and landscape trees and shrubs along the site periphery, in parking lot islands, and in association with the existing buildings.

The proposed temporary parking lot site includes remnants of a paved vehicle storage yard, driveway, and former building site, mapped as urban land (URB). In addition, four vegetation community types have been mapped in the vicinity of the proposed site: loblolly pine forest

Vegetation Cover Types

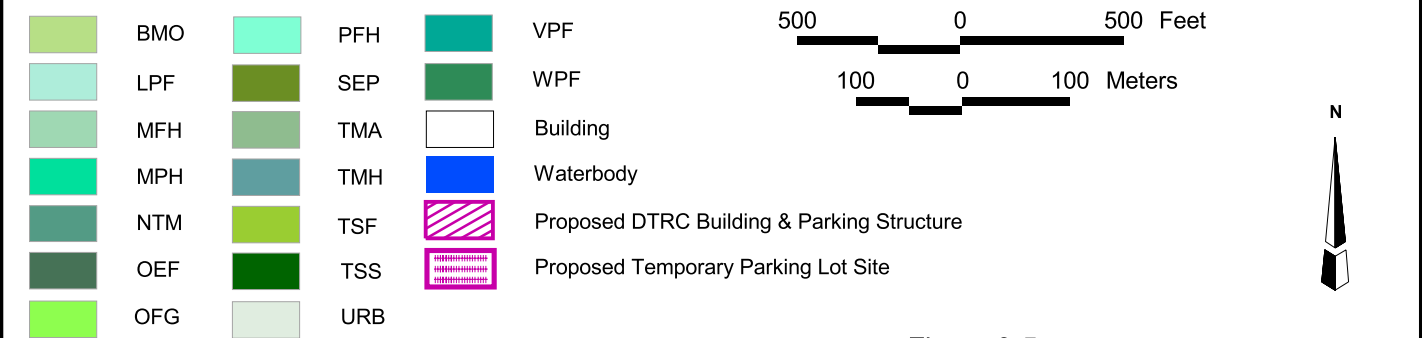


Figure 3-5

(LPF), mixed pine hardwood forest (MPH), old field grasslands (OFG), and moderately well drained floodplain hardwood forest (MFH).

The LPF community is dominated by planted loblolly pine (*Pinus taeda*) in the overstory and sweetgum (*Liquidambar styraciflua*) and an occasional Eastern red cedar (*Juniperus virginiana*) in the shrub/sapling layer. Herbaceous vegetation is sparse. Vines consist of Japanese honeysuckle (*Lonicera japonica*) and common greenbrier (*Smilax rotundifolia*). A 1.5-ac (0.61-ha) loblolly pine forest community is located on the site proposed for construction of the parking lot. All but 0.05 ac (0.019 ha) of the 1.5-ac (0.61-ha) woodlot would be cleared for construction. Another area of loblolly pine forest occurs northwest of the site on the other side of McCutchen Road. This area is approximately 4 ac (1.62 ha) in size and is entirely outside of the proposed parking lot site.

The second community type is the moderately well drained floodplain hardwood forest (MFH). This vegetation community consists of yellow poplar (*Liriodendron tulipifera*) and sweetgum in the overstory, with ironwood (*Carpinus caroliniana*) and red maple (*Acer rubrum*) in the understory. The MFH community type follows the west side of Mason Run, covering 13 ac (5 ha) between Backlick Road and the Fairfax County Parkway.

A 0.92-ac (0.04-ha) plot of MPH community, or mixed pine hardwood forest, is located immediately southwest of the proposed parking lot. This is a transitional forest between early successional pine and climax hardwood types. Neither pine nor hardwood is more than 70 percent dominant in this community. Virginia pine (*Pinus virginiana*) is generally the dominant pine in these stands, but loblolly pine is also present. Dominant hardwoods vary based on topography and species composition of adjacent hardwoods. Part of this woodland has been delineated as wetland (see [Figure 3-6](#), Environmental Protection Areas).

A 0.19-ac (0.08-ha) area of old field grasslands is almost surrounded by the mixed pine hardwood forest southwest of the proposed parking lot site. These communities are unimproved open fields or areas that are infrequently mowed. Dominant species include a variable mix of grasses and wildflowers, such as broomsedge (*Andropogon virginicus*), tall fescue (*Festuca elatior*), and bushclover (*Lespedeza cuneata*).

3.9.7 Wetlands and Chesapeake Bay Preservation Areas

3.9.7.1 Wetlands

Fort Belvoir completed baseline surveys of wetlands on the Main Post in 1997 (Paciulli-Simmons, 1997). The survey consisted of aerial photo interpretation combined with groundtruthing, following methods outlined in the 1987 *Corps of Engineers Wetland Delineation*

Manual. About 1,250 ac (506 ha), or 11 percent, of the Main Post land area is wetland (see [Figure 3-6](#)). Wetland types found:

- The predominant type of wetland is classified as palustrine forested (Cowardin, 1979), and occurs in association with riparian areas of Accotink, Dogue, and Pohick Creeks.
- Freshwater tidal marsh wetlands occur along Accotink and Pohick Bays.
- Ephemeral wetlands are scattered throughout the forested portions of the installation.
- Seepage swamp wetlands associated with slope areas.
- Beaver swamp wetlands within installation riparian areas.

The McNamara HQC includes a stormwater management pond at the western edge of the area. The pond is approximately 250 ft (76 m) west of the proposed building site.

A narrow band of palustrine forested wetland adjacent to Mason Run was recently delineated (Paciulli-Simmons, 2000) (see [Figure 3-6](#)). A second area of forested wetland was delineated during this same survey immediately southwest of the proposed parking lot.

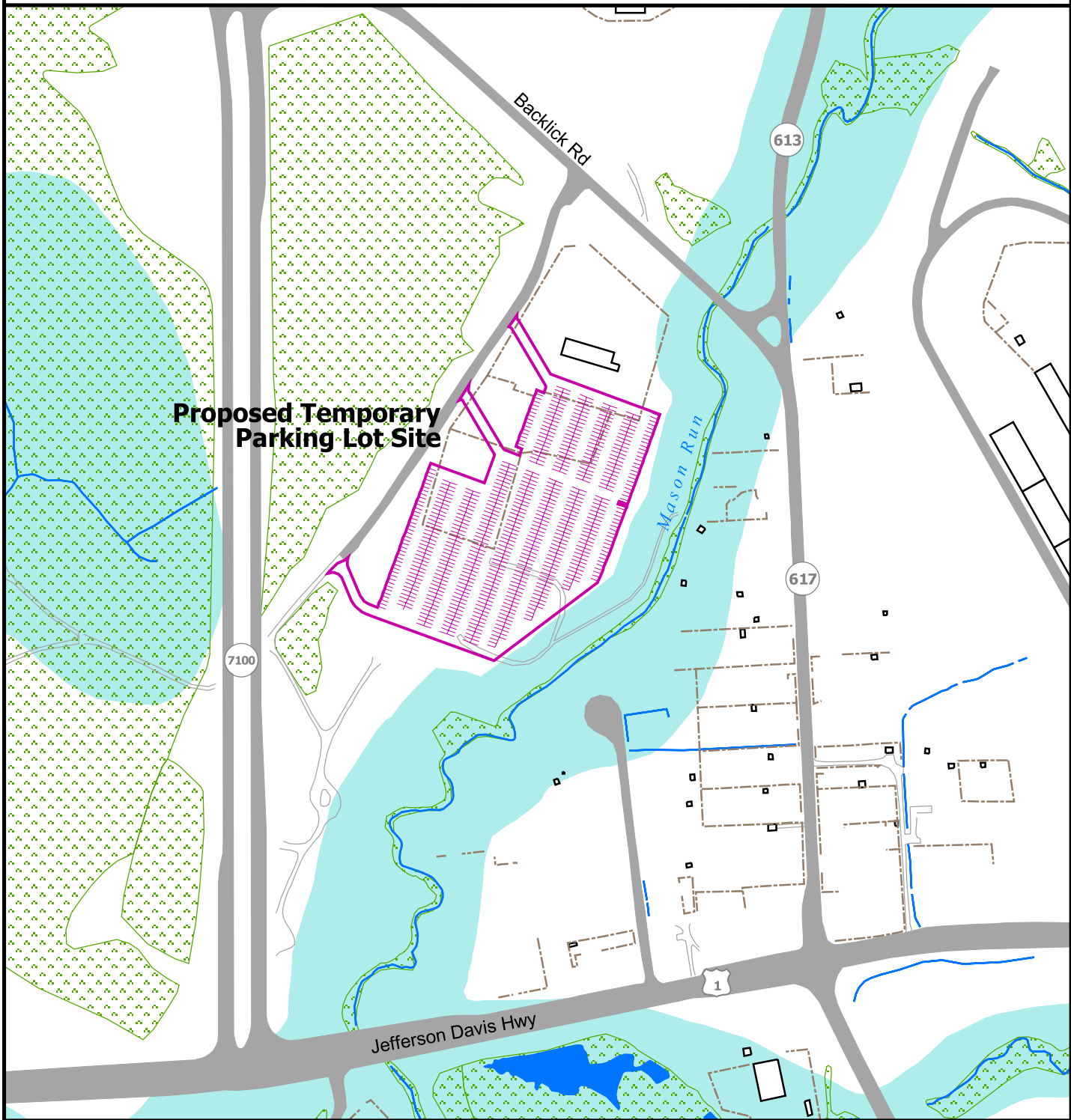
3.9.7.2 Chesapeake Bay Preservation Areas

Under the Federal Facilities Strategy and Federal Work Plan of 1998, and the 1990 Memorandum of Agreement (MOA) between the USEPA and Department of Defense, Fort Belvoir has agreed in principle to cooperate with state and local government regulations of the Chesapeake Bay Preservation Act (CBPA) as part of the 1987 Chesapeake Bay Cooperation Agreement.

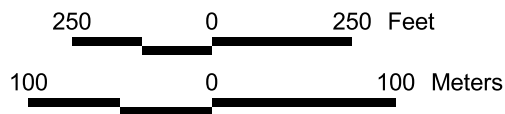
Under this cooperative agreement, Fort Belvoir is consistent to the extent practicable with the Fairfax County Chesapeake Bay Preservation Ordinance (CBPO). The CBPO was enacted pursuant to the CBPA, Sections 10.1-2100, et seq., of the Code of Virginia. The Fairfax County CBPO divides the county into Resource Protection Areas (RPAs) and Resource Management Areas (RMAs) designed to protect water quality in the Chesapeake Bay and its tributaries (see [Figure 3-6](#)). RPAs are buffers comprised of a major floodplain or an area within 100 ft (30.5 m) and including one or more of the following:

- Tidal wetlands.
- Tidal shores.
- Perennial streams.
- Non-tidal wetlands connected or contiguous to tidal wetland or perennial streams.

Environmental Protection Areas



-  Proposed Temporary Parking Lot Site
-  Chesapeake Bay Resource Protection Area
-  Wetland
-  Waterbody
-  Fence



Source: Paciulli, Simmons & Associates, Ltd., 2000, Wetland and RPA Delineation, Michael Baker Corporation, 2001, Parking Lot Design.

Figure 3-6

In Fairfax County, all land outside of an RPA is classified as an RMA. According to Fairfax County RPA maps, there are no RPAs at the McNamara HQC. In 2000, an RPA boundary was delineated along Mason Run that lies immediately east of the proposed temporary parking lot site on McCutchen Road but does not overlap the site (Paciulli-Simmons, 2000) (see [Figure 3-6](#)).

3.9.8 Wildlife

Fort Belvoir has set aside 2,524 ac (1,021 ha) of land for wildlife, including the Accotink Bay Wildlife Refuge, the Jackson Miles Abbott Wetland Refuge, and a Forest and Wildlife Corridor. These and other undeveloped areas of Fort Belvoir, such as stream valleys and slopes, are home to numerous wildlife species. Based on information from installation-wide surveys that were conducted for the preparation of the Fort Belvoir *Integrated Natural Resources Management Plan* (INRMP) (Ernst and Miller, 1997; Ernst and Belfit, 1997 in US Army Garrison Fort Belvoir, March 2001), the installation contains potential habitat for any one of 42 species of mammals, 260 species of birds, 32 species of reptiles, and 27 species of amphibians.

Potential wildlife habitat at the McNamara HQC is limited because the site is almost completely developed. The only species that can be expected to occur there are those that are highly tolerant of human disturbance, thrive on lawns, and do not require extensive woody vegetation for shelter. Such species include:

- Field mice (*Peromyscus* species) and voles (*Microtus pennsylvanicus*).
- Northern short-tailed shrew (*Blarina brevicauda*).
- Chipmunk (*Tamias striatus*).
- Eastern gray squirrel (*Sciurus carolinensis*).
- Eastern cottontail rabbit (*Sylvilagus floridanus*).
- Woodchuck (*Marmota momax*).
- Northern black racer snake (*Coluber constrictor*).
- Eastern garter snake (*Thamnophis sirtalis*).
- American crow (*Corvus brachyrhynchos*).
- American robin (*Turdus migratorius*).
- European starling (*Sturnus vulgaris*).
- House sparrow (*Passer domesticus*).
- Blue jay (*Cyanocitta cristata*).

Many of the above species are likely to occur on the McCutchen Road temporary parking lot site, but a number of other species also might occur there because of the nearby presence of Mason Run, and a variety of habitat types, including loblolly pine forest, floodplain hardwood forest, forested wetlands, and areas with grasses and forbs. The lack of fencing also facilitates the movement of larger species. The post's wildlife corridor, connecting the Jackson Miles Abbott Wetland Refuge with the Accotink Bay Wildlife Refuge, occurs on the other side of McCutchen

Road, also increasing the likelihood of a broad range of wildlife species at least occasionally using the McCutchen Road site. In addition to the above list, species likely to occur on the McCutchen Road site include:

- Raccoon (*Procyon lotor*).
- Striped skunk (*Mephitis mephitis*).
- Opossum (*Didelphis virginiana*).
- Red fox (*Vulpes vulpes*).
- Gray fox (*Urocyon cinereoargenteus*).
- Whitetail deer (*Odocoileus virginianus*).
- A wider variety of reptile species, including turtles and amphibians.
- A wide variety of common woodland passerine birds.
- Raptors.

3.9.9 Threatened and Endangered Species

The Endangered Species Act (ESA) of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants and the habitats in which they are found. The Department of the Army ensures that consultations are conducted as required under Section 7 of the ESA for any action that “may affect” a federally listed threatened or endangered species according to guidance in Army Regulation (AR) 200-3. The Army also complies to the extent practicable with state threatened and endangered species lists.

The US Fish and Wildlife Service (USFWS) and two state agencies – the Virginia Department of Conservation and Recreation (VDCR) and the Virginia Department of Game and Inland Fisheries (VDGIF) – were consulted for reviews of potential occurrences of federal or state endangered or threatened species on the proposed action sites. These agencies found no documented occurrences of federally threatened or endangered species on the project sites (see correspondence in [Appendix D](#)).

In 1994 and 1995, the Virginia Department of Conservation and Recreation, Division of Natural Heritage (VDCR/DNH) conducted a field survey for endangered, threatened, and state rare species at Fort Belvoir (Hobson, 1996 in US Army Garrison Fort Belvoir, March 2001). One species listed as both federally and state-threatened and one state-listed threatened species were identified. The first of these, the bald eagle (*Haliaeetus leucocephalus*), has since been proposed for de-listing by the federal government, but is still considered threatened. The shorelines of major creeks, rivers, and lacustrine areas on Fort Belvoir provide valuable nesting, foraging, and loafing habitat for resident and migratory bald eagles.

The other state-listed threatened species found at Fort Belvoir is the wood turtle (*Clemmys insculpta*). The wood turtle inhabits forested floodplains and nearby fields, wet meadows, and

farmlands. Because this species over-winters on the bottoms of creeks and streams, a primary habitat requirement is the presence of water (Terwilliger and Tate, 1995). There is an established population of these turtles at Huntley Meadows Park, northeast of the Jackson Miles Abbott Wildlife Refuge. There have been three wood-turtle sightings within Fort Belvoir in the last three years, indicating that this species has likely become established on the installation:

- Along the shoreline of Dogue Creek in 1998 near the Jackson Miles Abbott Wildlife Refuge.
- Along the shoreline of Accotink Creek near US Route 1 in 1998.
- About 75 ft (30 m) north of the Accotink Bay Wildlife Refuge, at the Poe Road bridge in 1999.

In letters dated August 15, 2001 and August 31, 2001, respectively, VDCR and VDGIF confirmed that their records show a documented occurrence of the state-threatened wood turtle within one mile of the McCutchen Road site in Accotink Creek, and that the turtle could occur at the site if the appropriate habitat exists ([Appendix D](#)). Appropriate habitat – deciduous forested wetland and a perennial stream community – is present along Mason Run adjacent to the McCutchen Road site. Although the proposed site is not prime habitat for the wood turtle, they are known to frequent farm fields, so it is possible that they could live along Mason Run and be found on the proposed McCutchen Road site at times, foraging for insects, earthworms, and newborn mice (Terwilliger and Tate, 1995).

3.10 Hazardous Substances

The management of hazardous waste at Fort Belvoir is conducted in compliance with the Resource Conservation and Recovery Act (RCRA). Fort Belvoir has both a Hazardous Waste Management Plan and a Hazardous Waste Minimization Plan.

Fort Belvoir has two RCRA Part B permits from VDEQ for storage of hazardous wastes. All current and former hazardous waste permitted facilities present potential constraints to future development, in that closure of such sites is required prior to reuse. Such closures are subject to regulatory approvals.

Fort Belvoir has about 160 underground storage tanks (USTs), of which 19 are regulated. These tanks contain substances such as heating oil, diesel fuel, motor gasoline, JP-8, lubricants, used oils, and hazardous waste (fuel-contaminated water). Fort Belvoir has completed a program of tightness testing, removal, replacement, and upgrading for the regulated tanks. All replacements are with double-walled, state-of-the-art USTs.

A preliminary assessment/site inspection conducted in 1982 for the Installation Restoration Program (IRP) indicated that there were no sites on Fort Belvoir eligible for an IRP under the Superfund Amendments and Reauthorization Act (SARA) of 1986. There are no Comprehensive Response, Compensation, and Liability Act (CERCLA) sites on Fort Belvoir (Engelberger, January 14, 2000).

The Fort Belvoir RCRA Solid Waste Management Study (US Army Garrison Fort Belvoir, 1992) identified 238 solid waste management units (SWMUs) on the installation. Two of these occur near the proposed temporary parking lot on McCutchen Road in the vicinity of Building 2476, used to store Army National Guard vehicles. Both SWMUs are associated with Building 2476, located to the north of the proposed temporary parking lot site. One is a storage cabinet for petroleum, oil, and lubricants; the other is a series of seven trench drains. Action plans have been completed for both SWMUs (Engelberger, January 14, 2000).

The McNamara HQC was redeveloped within the last decade. All site contamination problems were addressed during the redevelopment process.

4 IMPACTS OF THE PROPOSED ACTION AND ALTERNATIVES

This chapter provides an assessment of the potential environmental impacts that would result from the No Action and Proposed Action Alternatives. Chapter 4 is organized similarly to Chapter 3. Subchapters 4.1 to 4.10 address the impacts on specific resources. Subchapter 4.11 addresses cumulative impacts. Subchapters 4.12 to 4.14 address other NEPA requirements.

4.1 Land Use, Plans, and Coastal Zone Management Impacts

4.1.1 Land Use

4.1.1.1 No Action Alternative

Under the No Action Alternative, no new construction would take place at the McNamara HQC, no DTRA personnel would relocate from their current work places to the McNamara Building, and no temporary parking lot would be built along McCutchen Road. In the short term, current land use patterns would remain unchanged.

However, as indicated in [Subchapter 2.1](#), long-term use of the temporary modular building set up on the HQC parking lot in 2000 is not an option for DTRA, both because of the high rental cost and because of the less-than-ideal work environment the building provides. Consequently, even if the No Action course were selected, DTRA still would eventually need to relocate the approximately 500 personnel currently working in the modular building to a permanent facility. After personnel relocation, the modular building would be dismantled and the section of the HQC parking lot on which it stands would be returned to its original use. When looking for an appropriate location for that new permanent facility, DTRA would take land use compatibility into consideration and strive to minimize land use impacts.

4.1.1.2 Proposed Action

The proposed action would not change the existing land use designation of the McNamara HQC, which is, and would remain, administrative/educational. The proposed addition would not be a mere replica of the McNamara Building's existing components, or "pods." Instead, it would be a rectangular structure placed at right angles to the current building, which would effectively terminate the semi-circular geometry characteristic of the McNamara HQC. However, the addition would be aesthetically compatible with the main building and would not diminish the campus-like look and atmosphere of the HQC.

Most of the site for the proposed temporary parking lot along McCutchen Road has been used as a material, vehicle, and equipment storage yard for base operations for many years. The northeast part of the proposed site is being used for a National Guard motor pool vehicle maintenance and storage area, and the southwest part as a storage yard. Much of the area is covered by gravel or paving. Use as a parking lot would not represent a change in function for this area although the land use is officially designated as “administrati land use maps rather than “supply/storage/maintenance,” which more accurately reflects current use of this specific area. Because the gravel parking lot would represent only a temporary use of this mostly developed area, the proposed action would have no lasting impact on land use at the McCutchen site with the exception that 1.45 ac (0.58 ha) of pine plantation forest would be converted from forest to parking lot.

Land uses around the two buildings that DTRA personnel would move from on Eisenhower Avenue in Alexandria and Telegraph Road in Franconia are unlikely to be affected by the personnel moves. The area around both facilities is fully-developed. The land use of the facilities they are vacating will remain as administrative/office.

4.1.2 Plans

4.1.2.1 No Action Alternative

The No Action Alternative would have no impact on master plans.

4.1.2.2 Proposed Action

Fort Belvoir

The Fort Belvoir Master Plan for the Upper North Post Planning District allows administrative uses, such as DoD headquarters facilities and regional functions. The relocation of DTRA to the McNamara HQC is compatible with this objective. The proposed addition to the McNamara Building would be in keeping with the desired character of clustering high-density development to preserve environmentally-sensitive land and open space. Construction of the proposed parking garage would be consistent with recommendations regarding structured parking.

Overall, the proposed action is consistent with the recommendations contained in the Fort Belvoir Installation Design Guide Appendix for sub-zone 10, with one exception. The goal of not exceeding covering 20 percent of a lot with pavement and structures on average for lots in this district appears to have already been exceeded on the McNamara HQC. However, this project would not add impervious surface because it is being built on existing impervious surfaces. The planning district as a whole would remain less than 20 percent developed because of the

substantial amount of land set aside for the wildlife corridor, wetlands, and stream valleys in this area.

NCPC

The Pre-Concept (10 Percent) Design stage alternatives and the process used to develop them were presented to NCPC in an early coordination meeting on June 20, 2001. The presentation emphasized how the proposed designs met the following recommendations from the Fort Belvoir Installation Design Guide:

- Site Plan:
 - New buildings should be clustered to form defined open spaces.
 - All construction, including parking, would have a minimum setback of 150 ft from the curb line of the primary road. Buildings within 150 to 300 ft of the primary road would have a maximum height of four stories. Buildings more than 300 ft from the primary road would have a maximum height of eight stories.
 - Structured parking should be emphasized to avoid further parking lot construction.
- Building:
 - Simple rectangular forms that make combined massing forms
 - Articulate entrances to buildings
- Open Space/Landscaping:
 - Create distinctive, image-oriented open spaces for the front of the buildings that function as focal points in new development areas.
 - Open spaces will be defined by the buildings that surround them.
 - Screen all parking areas from public view. Locate parking areas at the rear of buildings rather than in front.
 - Plant shade trees in expansive parking lots.
 - Screen service and storage areas with appropriate fencing and plantings.
 - Upgrade and maintain all roads and recreation areas.

NCPC approved the planning and design process for the DTRC Building and parking structure. Few comments were received, but one comment regarded refining the landscaping plan for the corner of the parking lot closest to the main entrance to the DTRC Building. This remark was taken into consideration in developing the landscaping plan for the 30 percent Design Report. Consultation with NCPC is ongoing and will continue as the project progresses.

4.1.3 Coastal Zone Management

4.1.3.1 No Action Alternative

The No Action Alternative would generate no impact that would require a permit from the core Commonwealth of Virginia regulatory programs pertinent to the Coastal Resources Management Program (CRMP). It would have no effect on coastal zone resources.

4.1.3.2 Proposed Action

Relocation of about 840 DTRA personnel and construction of the DTRC, parking garage, and temporary parking lot would be consistent to the maximum extent practicable with the Commonwealth of Virginia's CRMP enforceable policies:

Encroachment on Subaqueous Lands. There would be no impact on subaqueous lands.

Encroachments on Wetlands. There would be no direct impact to wetlands.

Air Pollution Control. An air quality analysis, detailed in [Subchapter 4.5](#) and [Appendix A](#), indicates that emissions from fugitive dust and construction equipment would not exceed regional *de minimis* levels and there would be no significant impact on regional air quality. A Clean Air Act General Conformity Record of Non-Applicability is included in [Appendix B](#). The increase in air emissions from the proposed DTRC's heating system would be covered under the installation's current Point Source Discharge permit.

Primary Sand Dune Management Program. No primary sand dunes occur in the proposed construction areas.

Fisheries Management. The proposed action would not have direct effects on finfish and shellfish resources. No permanent increase in stormwater discharges that could affect stream quality and fish habitat is anticipated.

Land Disturbing Activities Needing Erosion and Sediment Control. A Virginia Pollutant Discharge Elimination System (VPDES) permit would be required for this project because construction activities would disturb more than 5 ac (2 ha) of land. At the McNamara HQC,

10.47 ac (4.24 ha) would be disturbed by construction and 6.1 ac (2.5 ha) would be disturbed for the McCutchen Road temporary parking lot. Control of temporary increases in discharge of sediment-laden runoff during construction would be included in construction plans and implemented during the construction process.

Point Source Pollution Control. The proposed action would discharge wastewater into the Fort Belvoir sewer system, which is connected to the Fairfax County wastewater system, and treated at the Noman J. Cole Jr. Pollution Control Plant.

Control of Septic and Other On-Site Domestic Waste Systems. The proposed action would not include the demolition or installation of septic tanks.

Coastal Lands Management. The proposed action would not affect the potential for development in the coastal zone. There would be no permanent increase in the amount of impervious surface at the McNamara HQC. There would be a temporary increase of about 6.1 ac (2.5 ha) (minus a substantial amount of paving to be removed) for a gravel parking lot in the Mason Run watershed during the several-year life of the temporary parking lot on McCutchen Road. Stormwater would be collected and discharged to the existing stormwater systems at the McNamara HQC and the McCutchen Road site that were designed using best management practices and that meet Fairfax County requirements for the Chesapeake Bay RMA. The proposed action would not disturb Chesapeake Bay RPAs.

4.2 Socioeconomic Impacts

4.2.1 Demographics

4.2.1.1 No Action Alternative

The No Action Alternative would require no relocation of personnel and, therefore, would not induce changes in place of residence. It would have no impact on area or regional demographics.

4.2.1.2 Proposed Action

Fairfax County and the Region

In order to estimate potential demographic impacts on Fairfax County and the National Capital Region, it is necessary first to estimate how many of the transferring personnel would relocate from their present residence in order to be closer to Fort Belvoir. As indicated in [Subchapter 3.2.1](#), on average, the one-way commuting distance of relocating DTRA personnel would increase by only 0.5 mi (0.8 km) because of the move to the McNamara HQC. Such a small change is unlikely to incite any significant number of people to incur the financial and personal

costs associated with moving one's residence. Further, analysis of the residence zip codes of those relocating indicating that many live in the same zip codes as personnel currently working on Fort Belvoir, suggesting they would gain little by moving.

The rotation of military personnel adds a dynamic element to the situation. Military personnel are subject to a three-year tour-of-duty, with a staggered rotation. By 2005, all 230 current relocating DTRA military personnel will have rotated. While some outgoing personnel will either elect to continue at DTRA for a second (or more) tour-of-duty or seek an assignment within the National Capital Region, some will move out of the region. Conversely, some of the military personnel who will rotate into DTRA between now and 2005 may already be working and living in the Washington, DC area. However, for the purposes of the present analysis, it will be conservatively assumed that the new military personnel will represent a net gain for the region. Assuming an average household size of 2.69 (Fairfax County Website, August 2001), the addition over several years of approximately 620 individuals to a regional population of over four million people is unlikely to be noticed. Even if they all settled in Fairfax County, this would represent a population increase of an insignificant 0.06 percent. Thus, the demographic impact of the proposed action on Fairfax County and the National Capital Region would be insignificant.

4.2.2 Housing

4.2.2.1 No Action Alternative

Implementation of the No Action Alternative would have no impact on housing demand or supply on Fort Belvoir or in Fairfax County or the surrounding region.

4.2.2.2 Proposed Action

Under the proposed action, approximately 230 military DTRA personnel eligible for housing at Fort Belvoir would move to the McNamara HQC. Waiting lists for housing at Fort Belvoir range from six months for grades E1-E6 to up to 30 months for field officers. If new military personnel apply for on-post housing, waiting periods may get somewhat longer since there are no present plans to add to the supply of military housing at Fort Belvoir. Thus, most new military personnel will likely continue to live off-post.

As indicated in [Subchapter 4.2.1](#), the proposed action would not cause a significant number of people to move their residence. Consequently, it would have no impact on the supply of, or demand for, housing.

4.2.3 Employment and Income

4.2.3.1 No Action Alternative

Implementation of the No Action Alternative would have no impact on employment levels or average incomes for Fort Belvoir and the surrounding area.

4.2.3.2 Proposed Action

The proposed action would add approximately 840 new personnel to Fort Belvoir's existing 21,000 military and civilian workers, which would represent an increase of about four percent. Of the relocated personnel, about 550 would be coming from a workplace about six miles away but still in Fairfax County, and about 290 from a location in the City of Alexandria, about 10 miles away from the McNamara HQC. From a regional perspective, the direct employment and earnings associated with the relocating DTRA personnel already exist and the proposed action would have no impact.

From a local perspective, DTRA's move out of its Eisenhower Avenue location would slightly increase the amount of available office space in the City of Alexandria. As indicated in [Subchapter 3.2.2](#), the City's office space vacancy rate is similar to that of all of Northern Virginia's (around seven percent). The office space market in Alexandria is active, and there are no vacant buildings near the building in which DTRA now leases space. The space that would be vacated by 290 DTRA personnel should be absorbed by the office rental market within a reasonable time. There are no businesses near the Eisenhower Avenue site that might indirectly suffer from the relocation and temporary lower number of daytime workers in the area.

A small shopping center (described in [Subchapter 3.1.1.4](#)) does lie next to the Telegraph Road site, however. Because it is possible that DTRA personnel patronize it during the day, at least some of the businesses there, for instance the Chinese restaurant or the dry cleaner, may be indirectly affected by the proposed action. However, the nature of many of these businesses (a pizza delivery store, a tanning salon, a martial arts school, etc.) strongly suggests that overall the center mostly serves the surrounding residential neighborhoods and depends only marginally on the patronage of DTRA personnel. Consequently, the relocation is unlikely to have any significant impacts on the center as a whole.

The proposed action would result in a net gain of about 290 jobs for Fairfax County, or 0.05 percent of all jobs in the county in May 2001. By losing these jobs, the City of Alexandria would lose approximately 0.3 percent of its total employment (based on figures for the third quarter of 2000). Such slight shifts are unlikely to be felt by either jurisdiction, especially since, as noted above, most if not all relocated personnel would not move their residences because of the Proposed action.

To relocate and consolidate DTRA at Fort Belvoir would include moving costs, design fees, and construction costs for construction services and building materials. A number of different types of goods and services would be purchased to complete the move and build the facilities, adding to the economic well being of the firms that supply these goods and services. The firms and their employees would, in turn, spend the money received on other goods and services, creating a “multiplier” effect which is usually greater than the amount of money spent for wages.

The proposed construction work at the McNamara HQC, the cost of which is estimated at about \$70 million, would generate temporary employment and income. Based on the Department of Commerce’s RIMS II Input/Output model for the Northern Virginia region in 2000, the proposed action would directly create the equivalent of approximately 400 temporary (for the life of the project) design- and construction-related jobs, with earnings amounting to \$19 million (assuming average annual wages of \$47,500). Indirectly, through the multiplier effect, it would create the equivalent of approximately 350 jobs, with earnings amounting to about \$11.1 million (assuming average annual wages of \$31,800).

4.2.4 Environmental Justice and the Protection of Children

As described in [Subchapter 3.2.4](#), Accotink Village – a residential enclave of 214 housing units that lies to the east and southeast of the proposed temporary parking lot on McCutchen Road – is home to about 400 residents, more than 50 percent of whom belong to a racial minority. This figures compares with minority population figures of 41 percent for the census tract of which Accotink Village is part, 30 percent in Fairfax County, and less than 28 percent in Virginia as a whole. Furthermore, in 1989, Accotink Village had a higher proportion of residents living in poverty (over 20 percent) than the census tract it is part of (less than 5 percent), Fairfax County (3.5 percent), and Virginia as a whole (a little over 10 percent). As shown in [Subchapter 3.2.4](#), the median household income in Accotink Village in 1989 was half that for Virginia as a whole, 28 percent of that for Fairfax County, and 37 percent of that for the census tract of which Accotink Village is part.

These income statistics are based on Census 1990 data because no more recent information is currently available at the block group level. These data may no longer be valid because communities can change substantially in the ten years between decennial censuses. Nonetheless, the 2000 racial makeup of Accotink Village alone designates it as an environmental justice community under CEQ’s EO 12898 guidelines, summarized in [Subchapter 3.2.4](#). As such, the impact analysis must establish that this community is not being unfairly discriminated against by the proposed action.

4.2.4.1 No Action Alternative

The No Action Alternative would have no impacts on environmental justice populations under EO 12898.

4.2.4.2 Proposed Action

Impacts generated by the construction phase as well as permanent changes resulting from the proposed action have the potential to affect Accotink Village residents. The decision process that resulted in the selection of the site for the temporary parking lot site on McCutchen Road, close to Accotink Village, is described in [Subchapter 2.4](#).

Construction Impacts

Activities at the McNamara HQC. Construction impacts are temporary in nature, but can range from annoying to detrimental for those living nearby. Residents of Accotink Village are not likely to be affected directly by construction activities at the McNamara HQC because the nearest household lies more than 1,500 ft (457 m), down a hill and past a railroad embankment from the construction sites. Indirectly, some increase in truck traffic and construction worker traffic might occur during the two-year construction period as trucks haul materials to the site and debris away. However, it is likely that most trucks would use the Fairfax County Parkway or Woodlawn Road to reach Gates 1 or 2 on John J. Kingman Road rather than the narrow, rather bumpy Backlick Road which has 25 mph speed restrictions through Accotink Village.

If construction trucks use Backlick Road to the point of annoying Accotink Village residents, this section of road could be restricted to exclude truck traffic, if the Virginia Department of Transportation (VDOT) and Fairfax County so agreed (this section of Backlick Road is designated as State Route 613). An increase in traffic caused by construction workers could be mitigated by installing speed bumps to encourage the use of other streets (again, with the concurrence of VDOT and Fairfax County). Alternately, construction workers and truckers could be instructed not to use this section of Backlick Road, and this restriction could be written into DTRC construction contracts.

Activities at the McCutchen Road Temporary Parking Lot Site. Accotink Village home sites extend down towards Mason Run, although all houses in the vicinity of the proposed parking lot are located along Backlick Road. The wooded stream valley of Mason Run separates the residential area from the existing National Guard Motor Pool and the post's storage yards. The proposed parking lot would be located more than 100 ft (30 m) west of Mason Run, so the closest houses would be about 200 ft (60 m) from the closest edge of the parking lot.

Construction of the temporary parking lot would consist of leveling and compacting the existing surface – most of which has been leveled and compacted before – hauling away remaining pavement, installing lighting, stormwater drainage features, two bus shelters and adjacent curbs,

wooden parking stops, and spreading gravel. The construction period would be relatively brief, taking only take a matter of a few months. While this construction area is close to Accotink Village, the noise, dust, and traffic generated by construction would be at least partially mitigated through construction plans. A VPDES soil and erosion control plan would be required because more than five acres would be disturbed. Adhering to the plan would minimize fugitive dust through such actions as spraying water or spreading grass seed on areas exposed for any length of time. Noise from construction equipment could be controlled through limiting the construction hours, so construction does not begin too early in the morning. Construction-related traffic could largely be controlled through using measures described above. Construction traffic, for instance, could be restricted to entering from Fairfax County Parkway.

After use of the temporary lot ends, a brief construction period would be needed to remove the bus shelters, wooden parking stops, gravel, etc. The surface would be restored in accordance with Fort Belvoir's needs at the time, which have yet to be determined.

Temporary Parking Lot Operating Impacts

During the two-year period the temporary parking lot would be used by commuters displaced from the McNamara HQC parking lot, there would be an increase in vehicular traffic on Backlick Road through Accotink Village, the addition of up to 800 vehicles using the parking lot, and shuttle buses going in and out of the lot, ferrying commuters to and from the McNamara HQC. The hours of operation for the temporary parking lot would be from 7 am to 7 pm. Because it would serve as an overflow lot for the main McNamara HQC, personnel arriving before 7 am would park in the main lot.

Localized noise levels would rise somewhat, particularly from 7-9 am and 3-6 pm as commuters would arrive and leave, and shuttle buses would be most active. A survey of commuters to the DLA HQC taken in 2000 (see [Table 4-4](#)) showed that because of flextime, personnel arrived and left in a pattern relatively well-distributed over a three-hour period. In the morning, 32 percent arrived from 6-7 am, 42 percent from 7-8 am, and 26 percent from 8-9 am. In the afternoon, 25 percent left between 3-4 pm, 45 percent between 4-5 pm, and 30 percent between 5-6 pm. It is assumed that DTRA personnel would follow a similar pattern, but that the personnel arriving before 7 am would park on the McNamara HQC.

Noise levels in parking lots are typically much lower than on roadways because speeds are much lower and acceleration is controlled by the constraints of the parking lot design. If operating noise were to prove to be a problem, speed bumps could be built into parking lot access roads and lanes.

Air pollution levels in the immediate vicinity of the parking lot would rise somewhat, particularly as vehicle engines are started in the afternoon, but the increase would not be significant. Because most arrivals and departures would be spread over about five hours of the day, the effects would dissipate rather than concentrate. Congested intersections with idling

vehicles generate much greater amounts of localized air pollutants. Shuttle bus noise and air emissions would be controlled by ensuring that when selecting a shuttle bus service, vehicles are suitably powered and well-maintained.

Analysis of traffic impacts, as described in [Subchapter 4.4](#), indicates that the proposed action would generate a total of almost new 500 trips to and from the McNamara HQC, 82 percent of which would come from the north by way of the Fairfax County Parkway ([Table 4-3](#)). About 8.8 percent of trips are expected to use Route 1 for access or about 44 of the new trips resulting from relocation of 840 DTRA personnel. During the morning peak hour from 7-8 am, 18 new trips would pass through Accotink Village (42 percent x 44). The 18 trips would represent a 2.8 percent increase in the number of vehicles using Backlick through Accotink Village during the morning peak hour or 2.5 percent in the afternoon peak hour under the 2005 No Action Alternative (derived from data in Appendix [Table C-2](#)).

Under a worst case scenario, if all 800 parking spaces were to fill and 8.8 percent of the 800 vehicles used Route 1 and Backlick Road through Accotink Village to reach the parking lot, then during the morning peak hour, from 7-8 am, about 30 added vehicles would pass through Accotink Village. However, it is likely that at least some of the vehicles coming north on Route 1 (about half) in the morning would turn at the Fairfax County Parkway to reach the northern end of Backlick Road, then on to the parking lot on McCutchen Road, to avoid the heavily congested Route 1/Backlick Road/Pohick Road intersection. Nonetheless, an increase of 30 vehicles would represent only a 4.6 percent increase in the number of 2005 No Action Alternative trips expected to travel through Accotink Village in the morning peak hour or a 4.1 percent increase in the afternoon peak hour. This modest increase in traffic on Backlick Road through Accotink Village would barely be noticeable, and would have an insignificant impact.

Conclusion

The location of the DTRC building and parking structure at the already-developed McNamara HQC has been mandated by the DoD for security reasons. The temporary parking lot is required near the McNamara HQC during the two-year construction period to accommodate displaced parkers. The decision process recounted in [Subchapter 2.4](#) that resulted in selection of the McCutchen Road site for the temporary parking lot concluded that no reasonable site alternatives were available. Therefore, the location of the proposed facilities would not have a disproportionately high and adverse human health effect on minority populations or low-income populations in the Accotink Village community, a residential enclave in the middle of an Army installation.

Construction of the DTRC building, parking structure, and temporary parking lot would likely generate negative, but relatively insignificant, short-term impacts on the Accotink Village community. Most of these impacts, such as the flow of construction vehicles through the community, could largely be mitigated by controlling construction hours, dust, noise, and traffic.

Operation of the temporary parking lot for two years on McCutchen Road also is likely to have negative, although temporary, impacts on the Accotink Village community as the result of an increase in vehicular traffic through the community and the siting of an 800-vehicle parking lot less than 200 ft (60 m) from the nearest houses. The impacts would be largely mitigated by several factors. A band of trees along Mason Run separates the proposed site from the residents of Accotink Village, which would serve as a visual screen for more than half the year. And the use of the site for a parking lot would not represent a new type of intrusion since the residents, located amidst an Army installation, with the National Guard operating their motor pool storage and maintenance facility on the McCutchen Road site, have been exposed to Army activities and vehicle movements nearby for many years. Lastly, most of the operating impacts could be mitigated through control of traffic during the two-year operating period of the parking lot as mentioned above, so that the impacts on the community can be considered to be short-term and insignificant.

4.3 Impact on Community Facilities and Services

4.3.1 No Action Alternative

Under the No Action Alternative, there would be no change in demand for existing services.

4.3.2 Proposed Action

Fort Belvoir

The addition of approximately 840 new military and civilian DTRA personnel to Fort Belvoir would not increase its residential population. Increased use of Fort Belvoir's facilities would be limited to activities likely to be used by workers, especially military personnel. They would be likely to make increased use of services such as the Commissary, the Post Exchange, liquor store, gas stations, and the credit union because of their proximity.

Military personnel in Northern Virginia already are assigned to DeWitt Army Community Hospital and its four community-based primary care clinics. Military personnel would continue to use them, but might be more likely to shift to the main DeWitt facility because of its proximity to their place of work. The 60-bed hospital is operating with an occupancy rate of 50 percent so increased use would not tax the facility. Military personnel also might use the athletic, sport and recreation facilities at Fort Belvoir more often because they would be near their workplace. No adverse impacts on these services and facilities are anticipated because the influx of military personnel is small in relationship to the total use of the facilities.

Military and civilian use of recreational facilities would increase slightly. Such use is not expected to significantly affect these facilities.

Relocated DTRA employees with young children may want to send them to the Complex's Child Development Center, which would likely result in longer waiting lists than at present. Also, the proposed construction work would impact the use of the access road to the site, including the drop-off area at the Center. One possible way of limiting this impact would be to reopen Gate 3, which currently is closed. However, this would raise anew the security concerns that led to closing Gate 3 in the first place.

Fairfax County

The transfer of about 840 DTRA personnel to Fort Belvoir is expected to generate at most a very small net increase of residents to Fairfax County. Where these households would locate is unknown and would be largely dependent on the housing market regarding availability and affordability. It is unlikely that all of them would concentrate in one particular area. Consequently, any increase in demand for services – such as schools, fire, and rescue – is likely to be very modest on any particular resource.

4.4 Transportation Impacts

4.4.1 No Action Alternative

Under the No Action Alternative, no DTRA employees would relocate to Fort Belvoir. The No Action Alternative travel patterns were examined for the year 2005. This alternative provides the baseline against which other alternatives can be evaluated.

4.4.1.1 Traffic Volumes

The No Action Alternative estimates for traffic volumes used here are based on the 2005 No Action Alternative volumes developed for the North Post Transportation Study (Dewberry & Davis and TransCore, December 2000). These volumes were developed based on a roadway network that included planned roadway improvements expected to be in place by 2005. Roadway improvements programmed to be in place by the fall of 2005 in the Metropolitan Washington Council of Government's (MWCOC) *Constrained Long-Range Plan* and included in the travel demand model included:

- Widening of US Route 1 from VA 235 North to Telegraph Road from 4 to 6 lanes.

- Widening of US Route 1 from Telegraph Road to Lorton Road from 4 to 7 lanes.
- Widening of US Route 1 from Lorton Road to Stafford County from 4 to 6 lanes.
- Widening of Telegraph Road from US Route 1 to Franconia Road from 2 to 4 lanes.

Estimated 2005 traffic volumes on Fort Belvoir and adjacent roadways did not include the traffic impacts of the following Fort Belvoir projects:

- Temporary Relocation of DTRA to Fort Belvoir.
- Construction of S Block Addition at Defense Communications-Electronics Evaluation and Testing Activity (Defense CEETA).
- Relocation of the Army Materiel Command (AMC) to Fort Belvoir.
- Consolidation of the National Imagery and Mapping Agency at Fort Belvoir (NIMA).

The impacts of the temporary relocation of DTRA to Fort Belvoir, including the traffic impacts of relocating approximately 1,000 DTRA employees to the McNamara HQC, were assessed in an *Environmental Assessment for the Temporary Relocation of the Defense Threat Reduction Agency to Fort Belvoir, Virginia* completed in March 2000.

The impacts of the construction of an addition to the Defense CEETA HQC, including the traffic impacts of adding approximately 400 new employees to the HQC, were assessed in an *Environmental Assessment for the Construction of S Block Addition and Road Realignment at Defense Communications-Electronics Evaluation and Testing Activity, Fort Belvoir, Virginia* completed in December 2000.

The impacts of the relocation of AMC to Fort Belvoir, including the traffic impacts of relocating approximately 700 AMC employees to the McNamara HQC and 300 employees to the South Post were assessed in an *Environmental Assessment for the Relocation of Army Materiel Command and Co-Located Activities to Fort Belvoir, Virginia* completed in May 2001. The impacts of NIMA's consolidation at Fort Belvoir, including the traffic impacts of adding up to 100 new employees and 120 students to Building 211 on South Post, were assessed in an *Environmental Assessment for Consolidation of the National Imagery and Mapping Agency* completed in May 2001.

The above actions were not explicitly included in the travel demand model. Therefore, the traffic volumes generated by the four actions listed above were layered onto the 2005 No Action volumes developed from the travel demand model to achieve a composite estimate of total 2005 volumes. A summary of the year 2005 No Action Alternative traffic volumes are included in [Appendix C](#).

4.4.1.2 LOS

A traffic capacity analysis was conducted for each of the study intersections described in [Subchapter 3.4](#). These intersections' 2005 LOS under the No Action Alternative are shown in [Tables 4-1](#) (signalized intersections) and [4-2](#) (un-signalized intersections). In general, V/C ratios are expected to increase appreciably between now and 2005 as a result both of general traffic growth and of the Fort Belvoir projects listed in Section 4.4.4.1. In addition, the widening of Telegraph Road from two to four lanes has also attracted significant additional trips to that travel corridor. Intersections projected to be over capacity in 2005 include Telegraph Road and Beulah Street during the morning peak hour, and US Route 1 and Backlick Road during the afternoon peak hour. Intersections projected to be at capacity in 2005 include:

- Fairfax County Parkway and Kingman Road (afternoon peak hour).
- US Route 1 and Fairfax County Parkway (morning peak hour).
- US Route 1 and Backlick Road (morning peak hour).

4.4.1.3 Transit Service

As indicated in [Subchapter 3.4.3](#), approximately 40 to 60 people a day currently use public transportation to access the McNamara HQC. This represents between one and two percent of the current McNamara HQC workforce. Under the No Action Alternative, no new DTRA employees would relocate to the McNamara HQC. The relocation of 700 AMC personnel to the HQC, assuming that they use public transit in the same proportion as current workers at the HQC do, would result in an increase in ridership of 7 to 14 people a day distributed among the four routes that serve the McNamara HQC with a total of 36 peak hour trips (19 in the morning and 17 in the afternoon). Such a small increase would not affect service on these routes.

4.4.1.4 Parking

The supply of and demand for parking at the McNamara HQC would remain the same as at present. No temporary parking lot would be required on McCutchen Road.

4.4.1.5 Traffic Analysis within McNamara HQC

Under the No Action Alternative, there would be no change to traffic conditions within the McNamara HQC.

Table 4-1

LOS for Signalized Intersections
No Action Alternative – Year 2005

Intersection	AM Peak Hour		PM Peak Hour	
	V/C Ratio	Capacity Status	V/C Ratio	Capacity Status
Telegraph Road and Beulah Street	1.04	Over	0.80	Under
Beulah Street and Woodlawn Road	0.40	Under	0.66	Under
Beulah Street and Kingman Road	0.30	Under	0.35	Under
Kingman Rd and West McNamara Driveway	0.31	Under	0.43	Under
Kingman Rd and East McNamara Driveway	0.38	Under	0.29	Under
Fairfax County Parkway and Kingman Road	0.50	Under	0.75	Under
US Route 1 and Fairfax County Parkway	0.99	At	0.91	Near
US Route 1 and Backlick Road	0.96	At	1.13	Over
US Route 1 and Woodlawn Road	0.72	Under	0.89	Near
Source: TransCore, 2001.				

Table 4-2

LOS for Un-Signalized Intersections
No Action Alternative – Year 2005

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Beulah St. and South McNamara Driveway	C	17.4	B	12.3
Beulah St. and Backlick Road	B	11.6	C	15.8
Source: TransCore, 2001.				

4.4.2 Proposed Action

4.4.2.1 DTRA Personnel Travel Patterns

This section analyzes the likely travel patterns of the DTRA employees to Fort Belvoir and develops trip generation information that can be used in determining the impacts of the relocation on traffic.

The likely travel patterns of relocating DTRA employees were calculated based on the residence zip code data described in [Subchapter 3.2](#), and the regional roadway network linking the employees' places of residence to the McNamara HQC. It was assumed that employees would not have relocated their residences by the time of the move. A summary of the access corridors that were thus identified is provided in [Table 4-3](#). A total of 82 percent of the relocated employees would be expected to access the McNamara HQC via the Fairfax County Parkway from the north.

Table 4-3

Access Corridors to Fort Belvoir Likely to be Used
by Relocated DTRA Employees

Access Corridor	Trips	Distribution
US Route 1 (from South)	33	4.0%
US Route 1 (from North)	40	4.8%
Fairfax County Parkway (from North)	687	82.1%
Telegraph Road (from North)	39	4.6%
Beulah Street (from North)	35	4.1%
Fort Belvoir (Local Traffic)	3	0.4%
Total	838	100.0%
Source: TransCore, 2000.		

Based on residence zip code data, the number of vehicle-miles traveled daily by relocating DTRA employees from home to both their present and future workplace were calculated. Currently, the total number of vehicle-miles traveled by all relocating employees driving from home to work and back can be estimated to be 37,151. After the relocation to Fort Belvoir, this number is expected to become 38,027, representing an increase of about 876 vehicle-miles traveled, or 2.4 percent.

As noted in section 4.4.1.1, an environmental assessment was prepared in 2000 for the temporary relocation of DTRA to Fort Belvoir. As a part of that study, all traffic in and out of the McNamara HQC was counted for three hours during the morning peak period and three hours during the afternoon peak period. These data were used not only to assess the operation of the HQC access points, but also to provide complete information on the number of trips to and from the HQC for the main entry and exit periods of the day. For the present study, it has been assumed that the number of trips per employee (trip generation rate) for DTRA and that for the McNamara HQC are similar. A summary of the trips generated by workers traveling to and from the McNamara HQC at the time of the temporary relocation is shown in [Table 4-4](#).

Table 4-4

McNamara HQC Trip Generation

Hour	Inbound	Outbound	Total
6-7 AM	668	27	695
7-8 AM	882	52	934
8-9 AM	550	39	589
3-Hour Total	2,100	118	2,218
3-4 PM	63	440	503
4-5 PM	56	776	832
5-6 PM	34	517	551
3-Hour Total	153	1,733	1,886
Source: TransCore, 2000.			

Thus, the McNamara HQC generated a total of 934 vehicle trips during the morning peak hour (7 to 8). Of this total, more than 94 percent were inbound to the site. In the evening, 832 trips were generated in the peak hour (4 to 5) with 93 percent outbound from the site.

Based on the number of employees at the McNamara HQC at the time of the surveys (approximately 3,000 people), unit rates for trips to and from the site were developed for both peak hours. These rates were then applied to the population being relocated to the McNamara HQC to provide an estimate of the number of trips this relocation would add to the roadway network in the vicinity of Fort Belvoir. With the relocation of about 850 DTRA employees to Fort Belvoir, a total of 263 new trips would be added in the morning peak hour and 234 in the afternoon peak hour. This information is summarized in [Table 4-5](#).

Table 4-5

Estimation of the Number of Trips Generated by the Relocation of DTRA
to the McNamara HQC

Peak Hour	Inbound	Outbound	Total
AM Peak Hour			
Trip Generation Rate	0.293	0.017	0.310
DTRA Trips	249	14	263
PM Peak Hour			
Trip Generation Rate	0.019	0.257	0.276
DTRA Trips	16	218	234
Source: TransCore, 2000.			

Again, the 263 morning peak hour trips and 234 afternoon peak hour trips that would be made by DTRA personnel is an estimate based on current McNamara HQC employee trip-making patterns. The data indicate that their commuting trips are spread throughout the three-hour morning and evening peak periods, and reflect flexible working hours. There also appears to be a significant amount of ridesharing (and/or drop-off) activity, given that about 3,000 employees at the McNamara HQC generated only 2,218 trips in the morning peak and 1,886 in the evening. This pattern is likely to be repeated by DTRA personnel, who operate under similar personnel policies.

4.4.2.2 Traffic Volumes

The Proposed Action Alternative traffic volumes were derived from the No Action Alternative traffic volumes following a two-step process:

- The trips generated by approximately 850 DTRA employees ([Table 4-5](#)) were assigned to the roadway network based on approach routes and paths to the McNamara HQC as described in [Table 4-3](#).
- Total Proposed Action Alternative traffic volumes were estimated by adding the trips generated by DTRA to the No Action alternative volumes for each peak hour. A summary of the Proposed Action Alternative traffic volumes is included in [Appendix C](#).

4.4.2.3 LOS

A traffic capacity analysis was conducted for each of the intersections under consideration. Projected LOS are summarized in [Tables 4-6](#) and [4-7](#). The Proposed Action Alternative would not have an adverse impact on traffic. An adverse traffic impact is defined as an increase in v/c ratio of more than five percent resulting in a v/c ratio of greater than 0.90 for signalized intersections, or LOS E or worse for un-signalized intersections.

Table 4-6

LOS for Signalized Intersections
Proposed Action – Year 2005

Intersection	AM Peak Hour		PM Peak Hour	
	V/C Ratio	Capacity Status	V/C Ratio	Capacity Status
Telegraph Road and Beulah Street	1.04	Over	0.80	Under
Beulah Street and Woodlawn Road	0.41	Under	0.68	Under
Beulah Street and Kingman Road	0.31	Under	0.38	Under
Kingman Rd and West McNamara Driveway	0.39	Under	0.52	Under
Kingman Rd and East McNamara Driveway	0.48	Under	0.35	Under
Fairfax County Parkway and Kingman Road	0.58	Under	0.88	Near
US Route 1 and Fairfax County Parkway	1.00	At	0.92	Near
US Route 1 and Backlick Road	0.96	At	1.13	Over
US Route 1 and Woodlawn Road	0.72	Under	0.89	Near
Source: TransCore, 2001.				

Table 4-7

LOS for Un-Signalized Intersections
Proposed Action – Year 2005

Intersection	AM Peak Hour		PM Peak Hour	
	LOS	Delay	LOS	Delay
Beulah Street and South McNamara Driveway	C	18.5	B	12.5
Beulah Street and Backlick Road	B	11.6	C	16.2
Source: TransCore, 2001.				

4.4.2.4 Transit Service

Under the Proposed Action Alternative, there would be a net increase of about 850 employees at the McNamara HQC. Assuming that between one and two percent of the additional employees would use mass transit, this would represent an increased transit demand of 9 to 17 riders a day. Given the current level of service (19 trips in the morning and 17 trips in the afternoon on the four routes), the current transit capacity is anticipated to be more than adequate to meet the potential increase in demand, even when combined with the assumed increase under the No Action Alternative.

4.4.2.5 Parking

Construction of the DTRC Building and the parking garage would remove 719 parking spaces from the McNamara HQC. The proposed parking garage – with about 1,000 spaces – and the proposed surface parking – with about 155 spaces – would replace the parking spaces lost as well as supply 408 additional spaces to accommodate the increase in personnel on the McNamara HQC. Together the parking garage and surface parking would supply 1,127 parking spaces (RTKL, 2001). The 408 new parking spaces would supply 0.49 parking space for every new employee on site, which is well below the Army Architect/Engineer Design Criteria of 0.65 spaces per employee. When the temporary modular building is removed from the parking lot, an additional 200 parking spaces would be regained which, together with the new parking spaces proposed, would meet the demand for parking spaces at the McNamara HQC.

4.4.2.6 Traffic Analysis within McNamara HQC

An analysis of the impact of adding approximately 850 additional personnel and the proposed parking structure to the McNamara HQC on traffic conditions at intersections within the HQC found that current conditions would not noticeably change at internal intersections. The nine internal intersections analyzed would all operate at LOS A but with slightly longer delay times (Michael Baker Corporation, 2001).

4.5 Air Quality Impacts

The air quality analysis for the No Action and Proposed Action Alternatives includes:

- A micro-scale CO analysis of potential impacts of local traffic, using the modeling procedures described in [Subchapter 3.5](#).
- A Clean Air Act General Conformity applicability analysis of the direct and indirect emission increases that would result from the proposed action.

4.5.1 No Action Alternative

4.5.1.1 Mobile Sources

The results of the micro-scale air quality analysis for the No Action Alternative (year 2005) indicate that CO levels would be about the same as those estimated to exist under present conditions ([Table 4-8](#)). The analysis shows no violations of the one-hour CO standard of 35 ppm or the eight-hour standard of 9 ppm.

4.5.1.2 Stationary Sources

Under the No Action Alternative, air pollutant emissions associated with the Proposed Action Alternative would not occur and emissions at Fort Belvoir would remain at current levels. Thus, the No Action Alternative would not affect current air quality conditions.

Table 4-8

Worst-Case CO Levels - No Action Alternative and Proposed Action

Location	One-Hour Concentration (ppm)		Eight-Hour Concentration (ppm)	
	No Action Alternative	Proposed Action	No Action Alternative	Proposed Action
US Route 1/Backlick Road	9.1	9.1	5.2	5.2
John J. Kingman Road/ Fairfax County Parkway	8.0	8.8	4.4	5.0
Notes: CO levels include background concentrations of 6.0 ppm (1-hour) and 3.0 ppm (8-hour). NAAQS CO one-hour standard is 35 ppm; the eight-hour standard is 9 ppm.				

4.5.2 Proposed Action

4.5.2.1 Mobile Sources

The micro-scale CO modeling indicates that CO levels under the proposed action would be slightly higher than under the No Action Alternative, since the proposed action would increase local traffic. However, the results of the micro-scale CO levels indicate that the proposed action would cause no violations of either the one-hour or the eight-hour CO standard. The predicted worst-case CO concentrations are presented in [Table 4-8](#).

4.5.2.2 Stationary Sources

Following implementation of the proposed action, the new DTRC Building may contain a number of natural-gas-fired boilers for space heating. Once the type and size of each new boiler is identified in the design phase, it will be determined whether a construction permit is necessary under the VDEQ air permit regulations, and if any modifications to the base-wide Title V Permit and/or the Annual Emission Statement are required. Because several post-wide projects have been proposed for implementation within the next few years, it is possible that future stationary sources, including the DTRC Building boilers, may be subject to non-attainment New Source Review (NSR) requirements. These new sources may be required to use the lowest achievable emission rate (LAER) technology to satisfy NSR regulatory requirements and reduce emissions post-wide. The applicability of NSR will be determined during the project design phase.

4.5.2.3 Construction Activities

Construction activities would have short-term air quality impacts, as follows:

- Fugitive dust would be generated during construction operations. Adherence to local ordinances, in combination with the application of water to control dust and periodic street sweeping and/or wetting down of paved roadway surfaces, would help prevent fugitive dust generated by construction activities from becoming airborne.
- Construction activities would cause emission of VOCs and NO_x, which are precursors of O₃. Such activities would include:
 - Use of construction equipment.
 - Movement of trucks containing construction materials.
 - Use of paving equipment.
 - Commutes of construction workers.

4.5.2.4 Clean Air Act Conformity

The following general conformity rule analysis was conducted according to the guidance provided by the USEPA in *Determining Conformity of General Federal Actions to State or Federal Implementation Plans* (November 30, 1993). Under the general conformity rule, reasonably foreseeable emissions associated with all operational and construction activities, both direct and indirect, must be quantified and compared to the annual *de minimis* levels for those pollutants in non-attainment for that area. The general conformity rule analysis is detailed in [Appendix A](#). For a serious ozone non-attainment area, such as Fort Belvoir, the *de minimis* criterion is 50 tons per year (tpy) (45 metric tpy) for both VOCs and NO_x.

Operational Activity Emissions

Commuter Vehicle Emissions

The net changes in VOC and NO_x emissions resulting from the commute of the relocated personnel were calculated based on the change in annual VMT. The USEPA-approved computerized Mobile5b emission factor model was used to calculate pollutant emission factors, assuming that the commuters would travel at an average speed of 50 miles per hour (mph) (80 kilometers per hour [km/h]) along expressways, and 30 mph (48 km/h) on local arterial roadways. The MWCOG provided Mobile 5b input parameters for Fairfax County (Tangirala, January 11, 2000). The calculated emissions are presented in [Table 4-9](#).

Table 4-9

Commuter Vehicle Emissions

Roadway	Additional Vehicle Miles Traveled (VMT) per Year	Emission Factor (gram/mile)		Annual Emissions (tons/year)	
		VOCs	NO _x	VOCs	NO _x
Expressway	175,200	0.34	0.83	0.07	0.16
Local Roadway	43,800	0.50	0.76	0.02	0.04
Total Emissions				0.09	0.20

Boiler Emissions

The proposed new DTRC Building would require installation of a new heating system. Estimates from the 30 Percent Pre-Design Report (RTKL, August 2001) indicate that the building may be adequately heated by natural gas-fired heating boilers with a total heating input capacity of 11.6 Million British Thermal Units (MMBtu). The potential to emit (PTE) associated with the boiler operations is summarized in [Table 4-10](#).

Table 4-10

Proposed Action Operational Emissions

Activity	Year	Emission Source	Pollutant (tpy)	
			VOC	NO _x
Operation of Heating Boilers	2005 and after	Natural Gas-fired Boilers	0.27	4.84

Construction Activity Emissions

Annual emissions from construction activities are summarized in [Table 4-11](#). Estimates of construction equipment emissions were based on the estimated hours of use and emission factors for each motorized source. Emission factors for NO_x and VOCs related to heavy-duty diesel equipment were obtained from *Non-road Engine and Vehicle Emission Study* (USEPA, 1991). Emission factors for NO_x and VOCs related to delivery trucks and the vehicles of construction workers were estimated using the USEPA Mobile5b computer model. The equipment and vehicle operation hours were estimated based on Means (2000) and field experience from similar projects. The detailed methodologies used in calculating construction emissions, as well as summaries of emission estimates, are presented in [Appendix A](#).

Table 4-11

Proposed Action Construction Emissions

Activity	Year	Emission Source	Pollutant (tpy)	
			VOC	NO _x
Construction of the proposed DTRC Building	2003	Equipment	0.38	3.22
		Motor Vehicles	0.41	1.85
	2004	Equipment	0.38	3.22
		Motor Vehicles	0.41	1.85
3-Level Parking Garage Construction	2003	Equipment	0.17	1.41
		Motor Vehicles	0.13	0.60
	2004	Equipment	0.17	1.41
		Motor Vehicles	0.13	0.60
Temporary Parking Lot Construction	2003	Equipment	0.04	0.33
		Motor Vehicles	0.00	0.02

4.5.2.5 Conformity Applicability Determination

Under the general conformity rule, total emissions resulting from proposed federal actions must be compared to the applicable *de minimis* levels on an annual basis ([Table 4-12](#)). 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.

As shown in [Table 4-12](#), the emission values for the proposed action would not exceed the *de minimis* criteria of 50 tpy (45 mtpy) of VOCs or NO_x, therefore, a formal conformity determination is not required. The *Final State Implementation Plan Revision, Phase I Attainment Plan* (MWWCOG, 1997) sets forth daily target levels of 362.9 tpd (329 metric tpd) of VOCs and 637.1 tpd (578 metric tpd) of NO_x for the metropolitan Washington ozone non-attainment area (which includes Fairfax County). The increase in annual emissions would not make up ten percent or more of the available regional emission inventory for VOCs or NO_x and would not be regionally significant. The Record of Non-Applicability is provided in [Appendix B](#).

Table 4-12

Total Annual Emission Levels under the Proposed Action

Emission Source	Pollutant (tons/year)	
	VOC	NO _x
2003 Construction Emission Estimates		
Construction Diesel Equipment	0.6	4.9
Construction Motor Vehicles	0.5	2.5
2003 Totals	1.1	7.4
2004 Construction Emission Estimates		
Construction Diesel Equipment	0.6	4.6
Construction Motor Vehicles	0.5	2.5
2004 Totals	1.1	7.1
Annual Operational Emissions (Years after 2004)		
Motor Vehicle VMT Increase	0.1	0.2
Boiler(s)	0.3	4.8
Annual Operation after 2004	0.4	5.0
De Minimis Level	50	50

4.6 Noise Impacts

4.6.1 No Action Alternative

Under the No Action Alternative, there would be no change in activities at Fort Belvoir. Noise conditions in the project area would remain the same as under existing conditions.

4.6.2 Proposed Action

Human response to changes in noise levels depends on many factors, including the quality of sound, the magnitude of the change, the time of day at which the changes take place, whether the noise is continuous or intermittent, and the individual's ability to perceive the changes. Noise levels are typically expressed in terms of decibels (dB). Decibels are a logarithmic expression of sound energy. Frequency weightings have been developed to more closely duplicate the human hearing response. A-weighted decibels, or dBA, are the weighting network most often applied to traffic noise evaluations.

Human ability to perceive changes in noise levels varies widely with the individual, as does response to the perceived changes. However, the average ability of an individual to perceive changes in noise levels is well documented, and is shown in [Table 4-13](#). Generally, a three-dBA or smaller change in noise level would be barely perceptible to most listeners but a five-dBA level would be readily noticeable. A 10-dBA change is normally perceived as a doubling (or halving) of noise levels. These thresholds permit estimation of an individual's probable perception of changes in noise levels.

Table 4-13

Average Ability to Perceive Changes in Noise Levels

Change in Decibels (dBA)	Human Perception of Sound
2-3	Barely perceptible
5	Readily noticeable
10	A doubling or halving of the loudness of sound
20	A "dramatic change"
40	Difference between a faintly audible sound and a very loud sound
Source: Federal Highway Administration, June 1995.	

An increase in traffic noise due to the proposed action would be expected in the vicinity of the installation and can be determined based on the proportional increase in traffic (on a logarithmic

basis) associated with the project. A doubling of traffic volumes would result in a three-dBA increase in noise level, which is a barely perceptible increase. Based on the traffic analysis described in [Subchapter 4.4](#), future traffic volumes in the vicinity of the proposed action during peak-hour conditions would be unlikely to double the volume under the No Action Alternative. Therefore, noise increases from project-related increase in traffic would be barely perceptible and would not be significant.

Impacts on installation noise levels during construction activities associated with the proposed action would include noise from construction equipment operating at the site and construction vehicles/delivery vehicles traveling to and from the site. Noise impacts would also vary widely, depending on the phase of construction – demolition, land clearing and excavations, foundation and capping, roadway, and parking lot paving, etc. – and the specific task being undertaken. Increased noise levels would be the greatest during the early stages of construction phase, although these periods would be of relatively short duration. Under these circumstances, the noise generated would be similar to noise generated by other construction projects in the area.

Noise levels at a given receptor location would depend on the type and number of pieces of construction equipment being operated and the receptor's distance from the construction site. In addition, small increases in noise levels along the truck routes would be expected as a result of the operation of delivery trucks and other construction vehicles.

4.7 Infrastructure Impacts

The proposed action would result in the construction of new facilities at the McNamara HQC that would require connections to all utilities. Utility plans developed to the 30 percent design level indicate that connections can be made with the existing distribution systems serving the HQC. All local utility systems appear to have the capacity to meet the increased demand (DTRA & COE, 2000). All utility systems would be placed underground, and most, if not all, of the surface disturbance to bury the service lines would occur in the areas that would otherwise be disturbed for construction.

4.7.1 Potable Water Supply

4.7.1.1 No Action Alternative

Implementation of the No Action Alternative would result in no changes in personnel or infrastructure at the installation, and no changes in demand for potable water.

4.7.1.2 Proposed Action

The relocation of 840 DTRA personnel to the McNamara HQC would generate an increase in demand for potable water from the distribution system. At an average water usage per person of 80 gpd (302.8 lpd) adjusted to 30 gpd (114 lpd) for daytime business hours (ICMA, 1988), the net increase in personnel would increase daytime demand by 25,200 gpd (95,760 lpd). The 840 personnel represent an increase in the daytime (non-resident) population of Fort Belvoir of about 4 percent. The demand generated by the additional 840 personnel at the McNamara HQC would represent a negligible increase in demand for the Fairfax County Water Authority's system, which has the capacity to service a large portion of northern Virginia, especially in light of the fact that the majority would be moving from another Fairfax County location. The capacity of the water distribution service to the McNamara HQC is currently being assessed.

4.7.2 Wastewater

4.7.2.1 No Action Alternative

The No Action Alternative would result in no changes in personnel or infrastructure at the installation and, therefore, no changes in the amount of wastewater generated.

4.7.2.2 Proposed Action

Nationally, the amount of wastewater generated per person is about 80 percent of the amount of potable water consumed (ICMA, 1988). Thus, the net increment of 840 personnel would generate about 20,160 gal (76,608 l) of wastewater per day during business hours that would be added to the Fort Belvoir system. The increase would be within the capacity of the existing site service and would have a negligible impact on the capacity of the post and regional systems.

4.7.3 Electricity

4.7.3.1 No Action Alternative

The No Action Alternative would result in no new construction and, thus, no increase in demand for electric service.

4.7.3.2 Proposed Action

The proposed DTRC Building and parking garage would add approximately 45-50 amps per phase to the electrical feeder load, which is within the capacity of the existing McNamara HQC system. Construction of the building would necessitate moving the four existing McNamara

Building emergency generators and their underground fuel supply to a location adjacent to the new building. Adding a fifth generator is under study. If added, this generator would support an additional chiller for the McNamara Building's emergency system (RTKL, 2001).

Electrical service would be provided to the proposed temporary parking lot on McCutchen Road for lighting. An adequate electrical power service connection to the site already exists that once served a storage building, now demolished.

4.7.4 Heating and Cooling

4.7.4.1 No Action Alternative

The No Action Alternative would result in no new construction and, thus, no increase in demand for heating and cooling.

4.7.4.2 Proposed Action

Estimates indicate a 1,320 ton peak load required for the cooling system, which would include some redundant systems. Heating would be provided by two gas-fired boilers with a capacity of 5,800 thousand British thermal units per hour (MBH). The size of each boiler is approximately two-thirds of the heating requirement, which meets industry standards. Both the natural gas and electrical power services at the McNamara HQC have sufficient capacity to accept the new loads (RTKL, 2001).

4.7.5 Solid Waste

4.7.5.1 No Action Alternative

The No Action Alternative would cause no change in the number of employees stationed at Fort Belvoir and, therefore, no change in the rate at which solid waste is generated.

4.7.5.2 Proposed Action

The addition of 840 new employees would increase the amount of solid waste that must be collected and hauled to the Lorton Energy Resource Recovery Facility. The increase would be a small percentage of the solid waste currently produced (four percent of the employee-produced volume, exclusive of the amount produced by families residing on the installation). Any additional solid waste would be beneficial to the Lorton facility, which burns waste in order to produce electricity. The electricity is then sold to generate revenues. Thus, more solid waste means more energy and higher revenues.

4.7.6 Stormwater

4.7.6.1 No Action Alternative

The No Action Alternative would cause no change in paved or other impermeable surfaces and, therefore, no change in the amount of stormwater runoff at Fort Belvoir.

4.7.6.2 Proposed Action

Commonwealth of Virginia codes require stormwater management quantity and quality (best management practices) controls for new construction projects. Similarly, building construction projects in Fairfax County must comply with county stormwater regulations. Fort Belvoir complies with the Fairfax County building codes to the maximum extent practicable. The proposed action would involve land-disturbing activities, and erosion and sedimentation control plans would be developed. Under the Commonwealth of Virginia's stormwater permitting program, a VPDES permit would be required for this project because more than five ac (2 ha) of land would be disturbed.

There would be no change in the amount of impervious surfaces at the McNamara HQC because most of the area is already covered with structures. Construction would disturb 10.47 ac (4.24 ha) of the surface for construction (Fermin, August 16, 2001). On the McNamara HQC, a 15-in (38-cm) storm sewer currently drains a grassy area on the site of the proposed addition. Two similar lines currently drain the parking area where the new parking facility would be built (DTRA & COE, July 2000). The parking area is sloped to collect stormwater in a system of drains that convey the water to the stormwater detention basin south of the DLA HQC building. The stormwater management system for the new structures would also drain into the existing detention basin. Short-term best management practices would be used during construction to minimize erosion and sedimentation. These practices would include the construction of silt fences, temporary sedimentation basins, and the like.

The proposed temporary parking lot on McCutchen Road would cover about 6.1 ac (2.5 ha) of the site with a gravel parking lot and access roads, but much of this area is already covered with pavement and graveled areas used for storing equipment, supplies, and vehicles, so that the increase in impervious surfaces would be substantially less than 6.1 ac (2.5 ha). The existing paved/gravel areas were constructed prior to requirements for stormwater quantity and quality control measures, and none presently exist on site. A stormwater system designed using best management practices would be part of the proposed construction plan at this site. The stormwater management facility would comply with the Fairfax County Chesapeake Bay zoning ordinance requirements.

4.8 Cultural Resources Impacts

4.8.1 No Action Alternative

Under the No Action Alternative, there would be no change in existing conditions.

4.8.2 Proposed Action

No cultural resources potentially eligible for inclusion in the National Register of Historic Places occur at the McNamara HQC or McCutchen Road sites.

4.9 Natural Resources Impacts

4.9.1 Topography and Geology

4.9.1.1 No Action Alternative

The No Action Alternative would have no impact on the topography or geology of the installation.

4.9.1.2 Proposed Action

The proposed action at the McNamara HQC would disturb 10.47 ac (4.24 ha) of the existing surfaces (parking lot, driveway, grass) for construction of the DTRC Building and the parking structure. About 6.1 ac (2.5 ha) of the existing surfaces (pavement, compacted graveled ground, woodlot) at the McCutchen Road site would be disturbed for construction of the temporary parking lot. The basic topography of the parking structure and parking lot sites, both graded and relatively level, would not be appreciably altered. The DTRC Building site would require some resculpting to accommodate the new building.

4.9.2 Floodplains

4.9.2.1 No Action Alternative

The No Action Alternative would have no impact on floodplains.

4.9.2.2 Proposed Action

According to FEMA floodplain maps, no 100-year floodplains occur on the McNamara HQC site. While Mason Run, a perennial tributary of Accotink Creek, is adjacent to the temporary parking lot site on the east, FEMA maps show no associated floodplain.

4.9.3 Soils

4.9.3.1 No Action Alternative

Under the No Action Alternative there would be no grading or construction activities and, therefore, no impacts to installation soils.

4.9.3.2 Proposed Action

Construction of the DTRC Building at the McNamara HQC would take place on urban land. Soil impacts on the parking structure site would be minimal since most of the construction would occur on an existing paved parking area. Construction of the temporary parking lot site on McCutchen Road would disturb urban land, pavement, and a small area of woodland soils. Soil impacts would consist of clearing pavement and re-grading an existing storage yard and 1.45 ac (0.58 ha) of loblolly pine woodlot. Short-term best management practices, including silt fences and temporary sedimentation basins, would be used during construction to minimize erosion and sedimentation.

4.9.4 Groundwater

4.9.4.1 No Action Alternative

Under the No Action Alternative, there would be no impacts to groundwater resources.

4.9.4.2 Proposed Action

The proposed action would have little or no impact on groundwater resources. The DTRA personnel relocation would not require any withdrawal of groundwater since the water supply for the McNamara HQC site is provided by the Fairfax County Water Authority system. There would be no increase in impervious surfaces at the McNamara HQC that might limit groundwater recharge. Potential contaminants in stormwater runoff would be collected by the site stormwater system that conveys drainage to the stormwater management pond at the HQC (see [Figure 2-1](#)).

At the proposed McCutchen Road temporary parking lot, most of a 1.45 ac (0.58 ha) woodlot would be cleared, reducing the amount of permeable surfaces; much of the remainder of the site already is covered by impermeable pavement or compacted gravel. The low topographic position of the site renders it an unlikely groundwater recharge area. Potential contaminants in stormwater runoff would be collected by a stormwater facility planned using best management practices as part of the proposed construction at this site.

4.9.5 Surface Waters

4.9.5.1 No Action Alternative

Under the No Action Alternative there would be no impacts to surface water resources.

4.9.5.2 Proposed Action

Under the proposed action, surface water drainage from the proposed facilities at the McNamara HQC would continue to be collected by the parking area that currently conveys water to the stormwater detention basin south of the McNamara Building. The detention basin has an outfall that discharges into a short tributary of Accotink Creek. By detaining stormwater in the basin, the water flowing into Accotink Creek carries less sediment and pollutants that would degrade the stream. Best management practices, such as silt fences and temporary sediment basins, would be used during construction to minimize erosion and sedimentation.

The proposed temporary parking lot site is adjacent to Mason Run, a perennial stream that flows southwest to Accotink Creek. The proposed parking lot footprint is outside the delineated RPA stream buffer ([Figure 3-6](#)). Short-term best management practices, including silt fences and temporary sedimentation basins, would be used during construction to minimize erosion and sedimentation. For the functioning life of the temporary parking lot, runoff would be collected in a stormwater system designed using best management practices. The stormwater management facility would comply with the Fairfax County Chesapeake Bay zoning ordinance requirements.

4.9.6 Vegetation

4.9.6.1 No Action Alternative

No vegetation impacts would occur under the No Action Alternative.

4.9.6.2 Proposed Action

According to the Fort Belvoir Tree Removal and Protection Policy (US Army Garrison Fort Belvoir, July 20, 1999), any tree or shrub removal or any construction activity that may impact installation trees must be approved by the Directorate of Installation Support (DIS), Environmental and Natural Resource Division. The policy requires that contractors and sub-contractors notify the DIS for a review of natural resource protection requirements in conjunction with the excavation permit. These requirements emphasize tree preservation and the avoidance of impacts through site planning and appropriate construction practices. The policy also requires that two new trees be planted for each tree four in (10 cm) in diameter or larger that is removed for construction. The DIS would determine the size and species appropriate for the conditions and location.

Construction of the DTRC Building and parking structure would require removal of some existing turf grass and landscape shrubs and a few young trees. These landscape elements would be replaced by new landscaping, a preliminary plan for which is illustrated in [Figure 2-3](#).

Construction of the temporary parking lot on McCutchen Road would require clearance of 1.45 ac (0.58 ha) – or most of a 1.5 ac (0.61 ha) – loblolly pine plantation forest community parcel ([Figure 3-5](#)). The pine plantation parcel is relatively young and averages about 20-26 ft (6-8 m) in height. As described above, a review of potential tree impacts would be conducted by the DIS in conjunction with an excavation permit. Any tree impacts would be mitigated in accordance with the requirements of installation policy as determined by the DIS (US Army Garrison Fort Belvoir, July 20, 1999).

4.9.7 Wetlands and Chesapeake Bay Preservation Areas

4.9.7.1 No Action Alternative

Under the No Action Alternative, there would be no impacts to wetlands or to Chesapeake Bay RPAs.

4.9.7.2 Proposed Action

No wetlands or RPAs occur on or near the proposed building sites at the McNamara HQC ([Figure 3-6](#)). No wetlands or RPAs would be affected by the construction of the DTRC Building or parking structure.

No wetlands or RPAs occur within the McCutchen Road temporary parking footprint ([Figure 3-6](#)). The parking lot has been carefully sited to avoid impinging on the RPA and wetlands delineated along Mason Run immediately to the east of the proposed site. Short-term best

management practices, including silt fences and temporary sedimentation basins, would be used during construction to minimize erosion and sedimentation that might affect the RPA and wetlands. For the functioning life of the temporary parking lot, runoff would be collected in a stormwater system designed using best management practices to minimize impacts on the RPA and wetlands.

4.9.8 Wildlife

4.9.8.1 No Action Alternative

Under the No Action Alternative, there would be no impacts to wildlife.

4.9.8.2 Proposed Action

Wildlife habitat at the proposed DTRC Building and parking lot sites is poor and is limited to use by common species that are highly tolerant of human disturbance. Due to the existing urbanized conditions of this site, the proposed action would cause little or no impact to the wildlife species that may currently use this area. The addition of a new area of contiguous landscaping (as opposed to the existing landscaped buffer strips among parking lot sections) may provide better quality habitat for urbanized bird species, particularly if shrub and tree species are selected with an eye to providing attractive food and nesting habitat.

Wildlife use of the proposed McCutchen Road parking lot site is limited by the existence of a considerable expanse of pavement and compacted soils covered with gravel that mark earlier uses for supply, vehicle, and equipment storage. However, the 1.5 ac (0.61 ha) loblolly pine plantation parcel does provide wildlife habitat, and all but 0.05 ac (0.02 ha) of the parcel would be covered by the proposed gravel parking lot. This would reduce the available wildlife habitat in this area and bring urban-type development and human activities closer to the forested corridor along Mason Run. Wildlife use of the surrounding forested wetland and perennial stream corridor habitat may be temporarily affected by disturbance from construction activities. The site of the temporary parking lot would be restored to grass or whatever surface Fort Belvoir finds appropriate at the time. If the surface is tilled and restored with grass or trees and shrubs, the site could actually gain in value to wildlife because the existing pavement fragments remaining in the area would have been removed.

4.9.9 Threatened and Endangered Species

4.9.9.1 No Action Alternative

Under the No Action Alternative, there would be no impacts to any federal- or state-listed threatened or endangered species.

4.9.9.2 Proposed Action

On the McNamara HQC, the proposed action has little potential for impact to federally listed threatened or endangered species or state-listed rare, threatened, or endangered species because of a lack of appropriate wildlife habitat on the site and the extremely developed conditions present. No occurrence of any protected species has been recorded on the McNamara HQC (Hobson, 1996; [Appendix D](#)).

The McCutchen Road temporary parking lot site is located adjacent to forested wetland and perennial stream communities that provide appropriate habitat for the state-listed threatened wood turtle (*Clemmys insculpta*). According to Commonwealth of Virginia records (Hobson, 1996; [Appendix D](#)), there was a documented occurrence of the wood turtle within a mile of the proposed parking lot site, and there have been three sightings on Fort Belvoir in the last several years. The wood turtle inhabits forested floodplains and nearby fields, wet meadows, and farmlands. Because this species over-winters on the bottoms of creeks and streams, a primary habitat requirement is the presence of water (Mitchell, 1994). No appropriate habitat for over-wintering occurs on the temporary parking lot site, but the wood turtle could conceivably venture onto the site since it is known to frequent farm fields and to forage for earthworms, baby mice, and insects in fields.

Because it is Fort Belvoir's policy to protect state-listed species, the installation has contracted with Paciulli, Simmons Associates, Inc. for Joseph C. Mitchell – who wrote *Reptiles of Virginia* (1994) – to survey the area between McCutchen Road and Mason Run. The objective of the survey will be to evaluate whether appropriate habitat for wood turtle exists and to search for the presence of the species in wetlands near the proposed parking lot site. The area will be surveyed on two days within the period from late September to the middle of November, 2001 (locating wood turtles before they return to their streams beginning in late September is difficult at best). A final report will be tendered in December, 2001, which will include habitat management recommendations. If wood turtles are found to inhabit the proposed project area, Fort Belvoir will coordinate with the Virginia Department of Game and Inland Fisheries and the Virginia Department of Conservation and Recreation.

4.10 Hazardous Substances Impacts

4.10.1 No Action Alternative

Implementation of the No Action Alternative would result in no new construction or redevelopment. Thus, there would be no additional use of hazardous materials or generation of hazardous wastes.

4.10.2 Proposed Action

Implementation of the proposed action would not result in an increase in the use of hazardous materials or generation of hazardous wastes. Redevelopment of the McNamara HQC within the last decade addressed any site contamination problems.

In the vicinity of the McCutchen Road temporary parking lot site, the nearest SWMUs are associated with the Army National Guard building (Building 2476) north of the proposed site. Building 2476 and its associated parking area would not be disturbed by construction of the new temporary parking lot. Therefore, the two SWMUs would not be disturbed as the result of this alternative. Fort Belvoir has an action plan to remove these SWMUs, but that action is separate from the proposed action being evaluated in this EA.

4.11 Cumulative Impacts

Cumulative impacts have been defined by the CEQ in 40 CFR 1508.7 as:

Impacts on the environment which result 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.

The CEQ regulations further require that NEPA environmental analyses address connected, cumulative, and similar actions in the same document (40 CFR 1508.25). This requirement prohibits segmentation of a project into smaller components to avoid required environmental analysis.

There are a number of plans being planned for implementation at Fort Belvoir that, considered together with the relocation of DTRA personnel to the post and construction of the DTRC Building, parking structure, and temporary parking lot, could have the potential to negatively affect the transportation system, air quality, stormwater runoff, and water quality on and in the

vicinity of the post. Each of the proposed projects individually may not introduce severe adverse impacts, but taken together, the projects have the potential to do so, particularly if mitigation measures do not consider all the proposals together.

Periodic access control exercises are underway at Fort Belvoir to determine the most appropriate measures for increasing installation force security. These exercises are testing potential options for increasing access control through installation gates and on roads that pass through the post. The terrorist attack on September 11, 2001 interrupted the access control exercises, and requirements are stricter for the time being. Testing is on-going and no final decisions have been made about access control measures. Personnel from both the Virginia Department of Transportation (VDOT) and Fairfax County have been briefed on and involved in the on-going access control exercises.

Two projects are well-articulated with planning and design in advanced stages. Environmental assessments have been being prepared for both projects that will address cumulative effects of the proposed action in this EA – including traffic, air quality, and natural resource impacts – combined with the impacts of each of the other projects. The two projects for which implementation is probable are:

- **Tompkins Basin Recreation Area** – A master plan has recently been developed and an environmental assessment of the plan is in process for this proposal to build recreational facilities for military use in the Gunston Cove/Tompkins Basin area, southwest of the 200 Area at the end of Warren Rd. on Accotink Bay. Proposed are tent and recreational vehicle sites, rental cabins, a lodge, and a 150-room hotel with conference center and restaurant. An EA for this project is currently being prepared.
- **Relocation of the Army Materiel Command (AMC) and Co-Located Activities to Fort Belvoir** – AMC plans to move approximately 1,600 personnel and relocate their headquarters from Alexandria, Virginia to Fort Belvoir. The move is expected to occur over a minimum of the next five years. During Phase 1 (FY 2002), about 300 personnel would move into existing space on South Post. During Phase 2 (FY 2002 or 2003), about 700 personnel would move into existing space on North Post. In Phase 3 (future date), an additional 600 personnel would move into new or existing space. An environmental assessment, dated May, 2001 was prepared to document the impacts of the proposed relocation.

Six other major projects are in earlier stages of conceptualization and planning, and their eventual implementation may or may not occur, or later plans may evolve to encompass different elements:

- **Army Museum** – Proposals are gaining momentum to build a Museum of the US Army on the post that would commemorate the Army's history and exploits. A Washington Post article (Vogel, 2001) reported that the Army has "chosen Fort Belvoir to house a national Army museum, according to Senate aides." An official announcement is expected by the end of September, 2001. "The estimated \$100 million facility would sit on a 30-acre site along Route 1" and "as envisioned by organizers, would include a conference center, research and preservation facilities and an IMAX theater, and it could draw more than 1 million visitors a year."
- **New Hospital** – Planning of and design for a new Army hospital/medical treatment facility, approximately 320,000 GSF (30,000 sq m) in size, will soon be underway. The facility likely would be located north of the PX and south of John J. Kingman Road on North Post.
- **Widening of US Rt. 1** – The Virginia Department of Transportation (VDOT) is considering widening US Route 1 through Fort Belvoir in the future. This action would require outgrants of land to VDOT by Fort Belvoir and would affect traffic levels near the post.
- **North Post Transportation Study** – As part of the post's on-going process to evaluate options for increasing force security, this recent study identified transportation alternatives for the North Post to improve security. Examined were north-south roadway alternatives to replace existing Beulah Street and Woodlawn Road, the potential to completely close the North Post to off-site traffic, and improvements to local off-site roads to accommodate traffic redirected around North Post. The impacts of closing old roads and locating new ones would be evaluated in further environmental documentation if any of the plans proposed in the North Post Transportation Study are pursued.
- **Administrative Park Site Evaluation Report** – In this study, completed in May 2000, several sites were investigated for their potential to accommodate an office park with several million square feet of office space. The sites investigated were located in the EPG, on North Post, and the southwest area of the post south of US Route 1 and west of Pohick Road. No decision has been reached about a preferred site or even whether the proposal will go forward into the next phase of study.
- **Renovation of Dogue Creek Marina** – This proposed project would involve dredging Dogue Creek and replacing all marina facilities.

4.12 Unavoidable Adverse Impacts

The Proposed Action Alternative would adversely affect traffic congestion in and near Fort Belvoir, but the impacts would not be significant.

4.13 Relationship between Local Short-term Uses of the Environment and the Enhancement of Long-term Productivity

Implementation of the proposed action would have long-term benefits for DTRA personnel, who would be able to carry out their mission with the appropriate level of security and force protection in the more appropriate context of a large military installation. The presence on Fort Belvoir of 840 additional personnel would result in a slightly more intensive use of existing resources. The proposed temporary parking lot on McCutchen Road would be a short-term use of the area which will generate some short-term impacts on local traffic, noise, and air quality levels.

4.14 Irreversible and Irretrievable Commitments of Resources

Modest amounts of money and man hours would be expended to plan and carry out the proposed relocation as well as to plan for, design, and build the proposed facilities DTRA would use.

4.15 Conclusion

The proposed action, as described and assessed in this document, is not expected to have a significant, long-term, adverse impact on the environment, nor is it expected to create environmentally-based controversy. Therefore, an environmental impact statement will not be prepared.

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5 MITIGATION MEASURES

Mitigation measures would be incorporated into the proposed action or would be required by contract documents. These mitigation measures are summarized as follows:

- **Protection of Trees** – In accord with Fort Belvoir’s Tree Removal and Protection Policy, all proposed tree and shrub removals and excavation activities that may impact the growth and survival of trees will be approved by the Directorate of Installation Support, Environmental and Natural Resources Division. For all trees removed that measure four inches diameter at breast height or more, two trees will be replaced. The size and species of the replacement trees will be at the discretion of the Environmental and Natural Resource Division.
- **Wood Turtle Protection** – Fort Belvoir will undertake a survey to determine if suitable habitat exists and if state-threatened wood turtles (*Clemmys insculpta*) now inhabit the proposed temporary parking lot site on McCutchen Road. If they are found to be using the site or nearby Mason Run, Fort Belvoir will coordinate with the Virginia Department of Game and Inland Fishes on ways to protect them and their habitat.
- **Best Management Practices for Erosion Control during Construction** – BMPs will be implemented during construction to slow stormwater flows and minimize soil erosion. These will include the use of silt fences, temporary holding basins for runoff, and seeding of areas with annual grasses where soils are to be exposed longer than 30 days.
- **Air Quality** – Spraying water on process operations and on-site will mitigate fugitive dust emissions during construction.
- **Noise and Traffic Impacts during Construction** – Noise impacts will be mitigated by restricting construction traffic (construction company vehicles and workers’ private vehicles) from using the portion of Backlick Road through Accotink Village. If necessary, the post will work with VDOT and Fairfax County to erect “No Construction Traffic” or “No Through Trucking” signs in the residential community and will encourage enforcement of the prohibitions.

Construction of the temporary parking lot on McCutchen Road will be limited to daytime hours to mitigate construction noise impacts. The shuttle bus service for the temporary parking lot will be selected considering noise as one of the important criteria. The hours of operation for the temporary parking lot will be

limited to 0700 to 1900 hours (7 am to 7 pm) to minimize early morning traffic and noise levels in the vicinity of the parking lot.

- **Light Impact during Construction** – Light fixtures for the temporary parking lot on McCutchen Road will be selected to focus in a downward arc rather than outward to avoid disturbing Accotink Village residents, particularly during the winter when buffer strip trees are leafless.
 - **Solid Waste Recycling** – Fort Belvoir now recycles more than 50 percent of its solid waste, and a full recycling program will be implemented in the DTRC Building in keeping with the goals of the Integrated Solid Waste Management Plan.
 - **Transportation Management Plan** – To increase the use of ridesharing and public transportation, Fort Belvoir will: be mindful of the placement of bus stops when planning facilities; continue and improve the Transportation Coordination Office; establish a personalized rideshare matching service; promote increased use of telecommuting, staggered work hours, flex time, and compressed schedules; and continue and promote the transit discount program. DTRA will actively support and promote the programs of the Transportation Coordination Office among their personnel.
 - **Increased Use of Post Facilities** – Fort Belvoir will make a commitment to maintaining wildlife refuge facilities, fishing facilities, and the Environmental Education Center to support increased demand resulting from the increase in personnel using post facilities.
 - **Landscape Maintenance Practices** – Fort Belvoir will adhere to the principles of low impact landscape maintenance in the post's developed areas. Such methods include the use of integrated pest management, beneficial landscaping, native plants, innovative stormwater techniques, sound urban forestry techniques, and water efficient practices, as detailed in Section 10 of the Integrated Natural Resources Management Plan (US Army Garrison Fort Belvoir, March 2001).
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6 RELATIONSHIP OF THE PROPOSED ACTION TO FEDERAL, STATE, AND LOCAL PLANS, POLICIES AND CONTROLS

The implementation of the proposed action would comply with existing federal regulations and with state, regional, and local policies and programs. The federal acts, executive orders, and policies with which the proposed action must demonstrate compliance include:

- NEPA.
- Clean Water Act.
- Clean Air Act.
- Endangered Species Act.
- CERCLA and SARA.
- National Historic Preservation Act.
- Coastal Zone Management Act.
- Executive Order 11990, Protection of Wetlands.
- Executive Order 11988, Floodplain Management.
- Executive Order 12898 Environmental Justice.
- Executive Order 13045, Protection of Children.
- Executive Order 12372, Coordination with State and Regional Agencies.

6.1 NEPA

NEPA is the National Environmental Policy Act of 1969. This Environmental Assessment has been prepared in accordance with the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 CFR Part 1500-1508) and Army Regulation (AR) 200-2, “Environmental Effects of Army Actions,” at 32 CFR Part 651.

6.2 Clean Water Act

The Clean Water Act of 1977 (which amends the Federal Water Pollution Act of 1972) and subsequent amendments were designed to assist in restoring and maintaining the chemical, physical, and biological integrity of the nation's waters. The act covers the discharge of pollutants into navigable waters, wastewater treatment management, and protection of relevant fish, shellfish, and wildlife. Congress also passed the Water Quality Act of 1987 to address the excessive levels of toxic pollutants still found in some waters.

The proposed action would not generate any shoreline pollution. The proposed action would discharge wastewater into the Fort Belvoir sewer system which is connected to the Fairfax County wastewater system and treated at the Noman J. Cole Jr. Pollution Control Plant. Section 402 of the Clean Water Act established requirements for discharges of stormwater associated with industrial activity under the National Pollutant Discharge Elimination System (NPDES) permit program, administered in Virginia by VDEQ under the Virginia Pollutant Discharge Elimination System (VPDES) permit program. The VPDES permit program governs any construction activity, including clearing, grading, and excavating, except for operations that result in disturbance of less than 5 ac (2 ha) of total land. The proposed action would result in more than 5 ac (2 ha) of land being disturbed. Consequently, a VPDES stormwater permit would be required. Stormwater would be collected and discharged to the existing stormwater systems at the McNamara HQC and to a new system at the McCutchen Road site, designed using best management practices.

6.3 Clean Air Act

The Clean Air Act (CAA) of 1955 and subsequent amendments specify regulations for control of the nation's air quality. Federal and state ambient air standards have been established for each criteria pollutant. The 1990 amendments to the CAA require federal facility compliance with all applicable substantive and administrative requirements for air pollution control. Under the proposed action there would be no violations of either the one-hour or the eight-hour CO standard as a result of increases in traffic volumes. The new heating boilers to be installed in the proposed buildings would be considered minor sources with minimal air quality impact.

However, because Fort Belvoir is located in a serious ozone nonattainment area, a general conformity rule analysis was conducted according to the guidance provided by the USEPA in *Determining Conformity of General Federal Actions to State or Federal Implementation Plans* (November 30, 1993). The results of this analysis indicate that emission values for the proposed action would not exceed the *de minimis* criteria of 50 tpy (45 tpy) of VOCs or NO_x; therefore, a formal conformity determination is not required. Furthermore, the *Final State Implementation Plan Revision, Phase I Attainment Plan* (MWWCOG, October, 1997) sets forth daily target levels of 362.9 tons per day (tpd) of VOCs and 637.1 tpd of NO_x for the Washington Metropolitan ozone nonattainment area (which includes Fairfax County). The increase in annual emissions would not make up ten percent or more of the available regional emission inventory for VOCs or NO_x and, therefore, would not be regionally significant.

6.4 CERCLA and SARA

In 1980, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) was passed in order to provide a superfund for cleanup of sites with uncontrolled

releases of hazardous substances. This program was continued in the Superfund Amendments and Reauthorization Act (SARA) of 1986. Section 211 of SARA provides continued authorization for the DoD Environmental Restoration Program and the Defense Environmental Restoration Account. Major responsibilities for monitoring compliance with these acts rest with the USEPA. Implementation of the proposed action would not disturb hazardous materials or waste sites or generate new sources of hazardous waste.

6.5 Endangered Species Act

The Endangered Species Act of 1973 and subsequent amendments provide for the conservation of threatened and endangered species of animals and plants, as well as the habitats in which they are found. No federally threatened or endangered species has been documented to occur at the project sites. However, one state-listed threatened species – the wood turtle (*Clemmys insculpta*) – has been documented within one mile of the McCutchen Road site, and appropriate habitat is present along Mason Run, adjacent to the proposed temporary parking lot. Consequently, Fort Belvoir will conduct a search for wood turtles at the most appropriate season – late September to mid-November. If the species is found on or near the proposed parking lot construction site, further consultation regarding protection measures for wood turtles will be conducted with the Virginia Department of Game and Inland Fisheries and the Virginia Department of Conservation and Recreation.

6.6 National Historic Preservation Act

The National Historic Preservation Act (NHPA) was passed in 1966 to provide for the protection, enhancement, and preservation of any property that possesses significant architectural, archaeological, historical, or cultural characteristics. Executive Order 11593 of 1974 further defined the obligations of federal agencies concerning this act. Section 106 of NHPA requires the head of any federal agency having direct or indirect jurisdiction over a proposed federal or federally financed undertaking, prior to the expenditure of any federal funds on the undertaking, to take into account the effect of the undertaking on any district, site, building, structure, or object that is included in or eligible for inclusion in the National Register of Historic Places. No cultural resources potentially eligible for inclusion on the National Register of Historic Places were found at any of the project sites.

6.7 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 (16 USC § 1451, et seq., as amended) provides assistance to states, in cooperation with federal and local agencies, for developing land

and water use programs in coastal zones. Section 307 of CZMA stipulates that federal projects that affect land uses, water uses, or coastal resources of a state's coastal zone must be consistent to the maximum extent practicable with the enforceable policies of that state's federally approved coastal management plan.

The Commonwealth of Virginia has developed and implemented a federally approved Coastal Resources Management Program (CRMP) describing current coastal legislation and enforceable policies. Virginia's enforceable policies subject to federal consistency include: commercial fishing; recreational fishing in freshwater tidal rivers; encroachments on subaqueous lands; encroachments on wetlands; encroachments on primary sand dunes; land-disturbing activities needing erosion and sediment control; actual or potential wastewater discharges; control of septic and other on-site domestic waste systems; coastal land management; and air pollution control.

The Army has determined that the proposed action would be consistent with CZMA policies and Virginia Coastal Resources Management Program regulations as there would be no effect on wetlands, dunes, fisheries, subaqueous lands, septic systems, nor would the project generate any shoreline pollution. As indicated in [Subchapter 6.3](#), there would be no significant air quality impacts. The proposed action would discharge wastewater into the Fort Belvoir sewer system which is connected to the Fairfax County wastewater system and treated at the Noman J. Cole Jr. Pollution Control Plant. The proposed action would disturb more than five ac (two ha) of ground surface, so a VPDES stormwater permit would be required. The proposed action would not affect the potential for development in the coastal zone. There would be no permanent increase in the amount of impervious surface at the McNamara HQC, but there would be a temporary increase of about 6.1 ac (2.5 ha) (minus an unknown amount of paving to be removed) in the Mason Run watershed during the two-year life of the temporary parking lot on McCutchen Road. Stormwater would be collected and discharged to the existing stormwater systems at the McNamara HQC. The stormwater system for the McCutchen Road temporary parking lot will be designed using best management practices that meet Fairfax County requirements for the Chesapeake Bay RMA. The proposed action would not disturb Chesapeake Bay RPAs.

6.8 Executive Order 11990, Protection of Wetlands

This order of May 24, 1977 directs federal agencies to take action to protect wetlands on their property and mandates review of proposed actions on wetlands through procedures established by NEPA. The proposed action would have no adverse impact on wetlands.

6.9 Executive Order 11988, Floodplain Management

This order sets forth the responsibilities of federal agencies in reducing the risk of flood loss or damage to personal property, minimizing the impact of flood loss, and restoring the natural and

beneficial functions of floodplains. The order was issued in furtherance of the National Flood Insurance Act of 1968 and the Flood Disaster Protection Act of 1973. The proposed action would have no adverse impact on floodplains.

6.10 Executive Orders 12898 and 13045, Environmental Justice and the Protection of Children

Executive Order 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, was signed on April 21, 1997. Because the scientific community recognized that children may suffer disproportionately from environmental health and safety risks, each federal agency is directed to identify and assess such risks, and consequently to ensure that its policies, programs, activities, and standards address effects on children. “Environmental health and safety risks” are defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come in contact with or ingest.” Covered regulatory actions that are affected by this EO are those substantive actions that concern an environmental health risk or safety risk that an agency has reason to believe may disproportionately affect children. This proposed action would not disproportionately affect children.

Signed on February 11, 1994, Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, directs all federal departments and agencies to incorporate environmental justice considerations in achieving their mission. Each federal department or agency accomplishes this by conducting programs, policies, and activities that substantially affect human health or the environment in a manner that does not exclude communities from participation in, deny communities the benefits of, nor subject communities to discrimination under such actions because of their race, color, or national origin.

The proposed action has the potential to affect the residents of Accotink Village, a residential enclave surrounded by Fort Belvoir on all sides that qualifies as an Environmental Justice community. The potential impacts of the proposed action on Accotink Village are described in [Subchapter 4.2.4.2](#) of this EA. The impacts should be short-term in nature, occurring only during the construction period, and with proper mitigation, should be barely perceptible to residents.

6.11 Other State and Local Plans and Policies

The Army pursues close and harmonious planning relations with local and regional agencies and planning commissions of adjacent cities, counties, and states for cooperation and resolution of mutual land use and environmentally-related problems. In addition, notification may be made to state and regional planning clearinghouses as established pursuant to Executive Order 12372, *The Presidential Intergovernmental Review of Federal Programs*, signed on July 14, 1982.

In preparing this EA, information from relevant state, regional, and local agencies was reviewed for data on potential impacts of the proposed action, including Fairfax County. The proposed action would be consistent with existing and future land use patterns and other applicable plans and policies.

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8 ACRONYMS AND ABBREVIATIONS

Acronym/Abbreviation	Definition
ac AMC AR AST	Acres Army Materiel Command Army Regulation Aboveground storage tank
BMP	Best management practice
CAA CAAA CBLAD CBPA CBPO CERCLA CEQ CFR cm CO COE CRMP CZMA	Clean Air Act Clean Air Act Amendments Chesapeake Bay Local Assistance Department Chesapeake Bay Preservation Act Chesapeake Bay Preservation Ordinance Comprehensive Environmental Response, Compensation, and Liability Act Council on Environmental Quality Code of Federal Regulations Centimeters Carbon monoxide Army Corps of Engineers Coastal Resources Management Plan Coastal Zone Management Act
dB dBA DCEETA DIS DLA DNL DoD DRMO DTRA DTRC DVP	Decibel A-weighted decibels Defense Communications Electronics Evaluation and Testing Agency Directorate of Installation Support Defense Logistics Agency Day-night average sound level Department of Defense Defense Reutilization and Marketing Office Defense Threat Reduction Agency Defense Threat Reduction Center Dominion Virginia Power
EA EIS EMS EMT EO EPG ESA	Environmental assessment Environmental impact statement Emergency medical service Emergency medicine technician Executive Order Engineer Proving Grounds Endangered Species Act
FCPS FCWA FEMA FHWA FICON FNSI FY	Fairfax County Public School System Fairfax County Water Authority Federal Emergency Management Agency Federal Highway Administration Federal Interagency Committee on Noise Finding of No Significant Impact Fiscal year
gal	Gallons

Acronym/Abbreviation	Definition
GIS gpd GSF GSM	Geographic information system Gallons per day Gross square feet Gross square meters
ha HAP HEC HQC	Hectares Hazardous air pollutant Humphrey Engineer Center Headquarters Complex
in INRMP IRP	Inches Integrated Natural Resources Management Plan Installation Restoration Program
Km kpy kV kW	Kilometers Kilograms per year Kilovolts Kilowatts
l LAER LOS lpd LPF	Liters Lowest achievable emission rate Level of service Liters per day Loblolly pine forest
MFH MGD mi MILCON MLD MMBtu MOA MP MPH mph msl MWAQC MWCOG	Moderately well-drained floodplain hardwood forest Million gallons per day Miles Military construction Million liters per day Million British Thermal Units Memorandum of Agreement Military police Mixed pine hardwood forest Miles per hour Mean sea level Metropolitan Washington Air Quality Committee Metropolitan Washington Council of Governments
NAAQS NCPC NEPA NESHAPS NCR NHPA NO ₂ NO _x NPDES NRCS NSPS NSR	National ambient air quality standards National Capital Planning Commission National Environmental Policy Act National emission standards for hazardous air pollutants National Capital Region National Historic Preservation Act Nitrogen dioxide Nitrogen oxide National Pollutant Discharge Elimination System Natural Resources Conservation Service New source performance standards New Source Review
O ₃ OFG	Ozone Old field grasslands
P2 Pb	Pollution Prevention Plan Lead

Acronym/Abbreviation	Definition
PM<2.5(10) ppm PTE	Particulate matter 2.5 (10) microns or less Parts per million Potential to emit
RCRA RIMS RMA RPA	Resource Conservation and Recovery Act Regional Input/Output Model System Resource management area Resource protection area
SARA SCS SIP SPCC SO ₂ sq ft sq m SWMU	Superfund Amendments and Reauthorization Act Soil Conservation Service State Implementation Plan Spill Prevention Control and Countermeasures Plan Sulfur dioxide Square feet Square meters Solid waste management unit
TPM tpy TSP	Total particulate matter Tons per year Total suspended particulate matter
URB USC USDA USEPA USFWS USGS UST	Urban land US Code US Department of Agriculture US Environmental Protection Agency US Fish and Wildlife Service US Geological Survey Underground storage tank
V/C VDCR VDEQ VDGIF VDHR VDOT VMT VOC VPDES VRE	Volume to capacity ratio Virginia Dept. of Conservation and Recreation Virginia Department of Environmental Quality Virginia Department of Game and Inland Fisheries Virginia Department of Historic Resources Virginia Department of Transportation Vehicle miles traveled Volatile organic compound Virginia Pollutant Discharge Elimination System Virginia Railway Express
WMATA	Washington Metropolitan Area Transit Authority
µg/m ³	Micrograms per cubic meter.

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APPENDIX A

GENERAL CONFORMITY RULE ANALYSIS

A.1 Clean Air Conformity

The 1990 amendments to the Clean Air Act (CAA) require federal agencies to ensure that their actions conform to the appropriate State Implementation Plan (SIP) in a non-attainment area. The SIP is a plan that provides for the implementation, maintenance, and enforcement of the National Ambient Air Quality Standards (NAAQS), and it includes emission limitations and control measures to attain and maintain the NAAQS. Conformity to a SIP, as defined in the CAA, means conformity to a SIP's purpose of reducing the severity and number of violations of the NAAQS to achieve attainment of such standards. The federal agency responsible for an action is required to determine if its action conforms to the applicable SIP.

The US Environmental Protection Agency (USEPA) has developed two sets of conformity regulations, and federal actions are appropriately differentiated into transportation projects and non-transportation projects:

- Transportation projects are governed by the “transportation conformity” regulations (40 CFR Parts 51 and 93), which became effective on December 27, 1993 and were revised on August 15, 1997;
- Non-transportation projects are governed by the “general conformity” regulations (40 CFR Parts 6, 51 and 93) described in the final rule for *Determining Conformity of General Federal Actions to State or Federal Implementation Plans* that was published in the *Federal Register* on November 30, 1993. The general conformity rule became effective January 31, 1994 and has not been updated since then.

Since the proposed is a non-transportation project, only the general conformity rule applies.

This general conformity applicability analysis is prepared as an appendix to the Environmental Assessment for the permanent relocation of approximately 840 Defense Threat Reduction Agency (DTRA) personnel to the McNamara HQC and the construction of the Defense Threat Reduction Center (DTRC Building) and related facilities.

A.2 General Conformity

A.2.1 Attainment and Non-attainment Areas

The general conformity rule applies to federal actions occurring in air basins designated as being in non-attainment for the NAAQS or in attainment areas subject to maintenance plans (maintenance areas). Federal actions occurring in air basins that are in attainment with the NAAQS are not subject to the conformity rules.

A criteria pollutant is a pollutant for which an air quality standard has been established under the CAA. Non-attainment designation is based on the exceedances or violations of the air quality standard. A maintenance plan establishes measures to control emissions so as to ensure that the air quality standard is maintained in areas that have been redesignated as attainment from a previous non-attainment status.

Under the requirements of the 1970 Clean Air Act (CAA), as amended in 1977 and 1990, the USEPA established standards, known as the NAAQS, for six criteria pollutants: carbon monoxide (CO), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), ozone (O₃), inhalable particulate matter (PM 10), and lead (Pb).

Areas that meet the NAAQS standard for a criteria pollutant are designated as being in “attainment;” areas where the criteria pollutant level exceeds the NAAQS are designated as being in “non-attainment.” O₃ non-attainment areas are subcategorized based on the severity of their pollution problem (marginal, moderate, serious, severe, or extreme). Particulate matter (PM) and CO non-attainment areas are classified as moderate or serious. When insufficient data exists to determine an area’s attainment status, it is designated unclassifiable (or in attainment).

The proposed action would take place in Fort Belvoir, Fairfax County, VA, which is located in an area currently designated as in serious non-attainment for O₃ and in attainment for the other criteria pollutants. O₃ is principally formed from nitrogen oxides (NO_x) and volatile organic compounds (VOC) through chemical reactions in the atmosphere.

A.2.2 *De Minimis* Emission Levels

To focus general conformity requirements on those federal actions with the potential to have significant air quality impacts, threshold (*de minimis*) rates of emissions were established in the final rule. A formal conformity determination is required when the annual net total of direct and indirect emissions from a federal action, occurring in a non-attainment or maintenance area, equals or exceeds an annual *de minimis* level. Table A-1 lists the *de minimis* levels by pollutant.

For O₃ non-attainment areas, USEPA’s conformity rules establish *de minimis* emission levels for both categories of O₃ precursors (VOC and NO_x) on the presumption that both VOC and NO_x reductions will contribute to reductions in O₃ formation. Since the project is located in a serious O₃ non-attainment area, 50 tons per year (tpy) of VOC or NO_x applies.

Table A-1

De Minimis Emission Levels for Criteria Air Pollutants

Pollutant	Non-attainment Designation	Tons/Year
Ozone*	Serious	50
	Severe	25
	Extreme	10
	Other non-attainment areas outside ozone transport region	100
	Marginal and moderate non-attainment areas inside ozone transport region	50/100**
Carbon Monoxide	All	100
Sulfur Dioxide	All	100
Lead	All	25
Nitrogen Dioxide	All	100
Particulate Matter	Moderate	100
	Serious	70
Notes: * Applies to ozone precursors – volatile organic compounds (VOC) and nitrogen oxides (NO _x). ** VOC/NO _x		

A.2.3 Regional Significance

A federal action that does not exceed the threshold emission rates of criteria pollutants may still be subject to a general conformity determination if the direct and indirect emissions from the action exceed ten percent of the total emissions inventory for a particular criteria pollutant in a non-attainment or maintenance area. If the emissions exceed this ten-percent threshold, the federal action is considered to be a “regionally significant” activity, and thus, the general conformity rules applies.

A.2.4 Analysis

The conformity analysis for a federal action examines the impacts of the direct and indirect net emissions from mobile and stationary sources. Direct emissions are emissions of a criteria pollutant or its precursors that are caused or initiated by a federal action and occur at the same time and place as the action. Indirect emissions, occurring later in time and/or further removed in distance from the action itself, must be included in the determination if both of the followings apply:

- The federal agency can practicably control the emissions and has continuing program responsibility to maintain control.
- The emissions caused by the federal action are reasonably foreseeable.

Operational Activities

After implementation of the proposed action, the new DTRC Building would contain a number of natural gas fired boilers for heating. Therefore, there would be a net increase in the base-wide emissions due to the new heating sources.

In addition, the daily commuting of personnel would result in an increase in mobile source operation emissions on a regional level, since an average longer distance of travel than currently would be required. Vehicular NO_x and VOC emissions were estimated based on the annual change in vehicle miles traveled (VMT) discussed in Chapter 4.4 and the USEPA-provided emission factor computer model.

Construction Activities

Under the proposed action, US Army Garrison Fort Belvoir is proposing to accommodate the permanent relocation of about 840 DTRA personnel to the McNamara HQC. To accomplish this, a new 306,530-gross sq ft (28,477 gross sq m) addition to the McNamara HQC (the DTRC Building) and a 3-level parking garage to accommodate 1,000 to 1,100 vehicles would be built mostly during 2003 and 2004. A temporary gravel parking lot for approximately 800 cars would be built in 2003 on nearby McCutchen Road to accommodate parking spaces lost at the McNamara HQC during construction of the proposed new facilities. This temporary parking lot would be demolished in 2005.

Construction activities-related air emissions were analyzed. Increased direct and indirect VOC and NO_x emissions from construction would result from the following potential activities:

- Use of construction equipment.
- Movement of trucks containing construction materials.
- Use of paving equipment.
- Construction workers commutes.

In estimating NO_x and VOC emissions, the usage of equipment and the duration of activities for construction were first determined based on the size of building structure and parking lot to be constructed. The increase in emissions was then calculated using the USEPA provided guidance and emission factors.

A.3 Emissions Determination

The General Conformity Rule (GCR) requires that potential emissions generated by any project-related demolition or construction activity and/or increased operational activities be determined on an annual basis and compared to the annual *de minimis* levels for those pollutants (or their precursors) for which the area is classified as non-attainment or maintenance. Emissions attributable to operational commuter vehicles, operational activities, and construction were analyzed for NO_x and VOC.

In estimating operational commuter vehicle emission-related NO_x and VOC emissions on a regional level, the change in VMT was determined by measuring the likely travel distance of DTRA personnel to the McNamara HQC based on available residential zip code information (see Subchapters 3.2 and 3.4), and using the USEPA-approved Mobile5b emission factors to calculate emissions on an annual level.

In estimating operational-related boiler emissions, the USEPA-developed AP-42 emission factors were used. Emissions from the operation of the boilers were assumed to be released after construction of the new facility is completed in 2005.

In estimating construction-related NO_x and VOC emissions, the usage of equipment, the likely duration of each activity, and manpower estimates for each activity for the construction were determined based on:

- Heavy Construction Cost Data (Means, 2000).
- Past field experience for similar types of demolition and construction projects.
- Discussions with Blandford Land Clearing Corp. and the Magic Group, licensed demolition and general contractors.

The weekly duration given for each activity is assumed to be eight hours per day and five days.

A.3.1 Operational Activities

Commuter Vehicle Emissions

The net change in VOC and NO_x emissions from relocated personnel commuting vehicles was calculated based on the change in annual VMT. The change in VMT was determined by measuring the likely travel distance to the McNamara HQC as indicated above. The USEPA-approved computerized Mobile5b emission factor model was used to calculate pollutant emission factors assuming that the commuters would travel at an average speed of 50 miles per hour (mph) (80 kilometers per hour [km/h]) along expressways and 30 mph (48 km/h) on local arterial roadways. The Metropolitan Washington Council of Governments (MWCOCG) provided the Mobile5b input parameters used in the analysis for the Fairfax County area in Virginia (Tangirala, January 11, 2000).

An overall VMT increase would result from relocation of the 840 DTRA personnel. The calculated emissions are presented in Table A-2.

Table A-2

Commuter Vehicle Emissions

Roadway	Additional Vehicle Miles Traveled (VMT) per Year	Emission Factor (g/mile)		Annual Emissions (tons/year)	
		VOC	NO _x	VOC	NO _x
Expressway	175,200	0.34	0.83	0.07	0.16
Local Roadway	43,800	0.50	0.76	0.02	0.04
Total Emissions				0.09	0.20

Boiler Emissions

The proposed new DTRC Building would need a heating system. Based on estimates contained in the 30 percent Pre-Concept Design Report (RTKL, August 2001), the facility would be adequately heated through the operation of a couple of natural gas-fired boilers with a total input of approximately 11.6 Million British Thermal Units (MMBtu) per hour.

It was estimated that boilers would begin operation in 2005 after the facility is completed. Emission estimates were calculated based on the USEPA-provided emission factors for a natural gas burning boiler. The potential to emit (PTE) on an annual basis was calculated based on the maximum boiler operational capacity over 8,760 hours (Table A-3).

A sample calculation for the annual emission rate for NO_x is presented below:

$$\begin{aligned}
 \text{AP-42 emission factor} &= 100 \text{ lb}/10^6 \text{ ft}^3 \\
 \text{Hourly Gas Volume} &= 11,600,000 \text{ (BTU/hour)} / 1,050 \text{ BTU/ft}^3
 \end{aligned}$$

$$\begin{aligned}
 \text{Emission rate} &= 11,048 \text{ ft}^3/\text{hour}. \\
 &= 100 \text{ lb}/10^6 \text{ ft}^3 \times 11,048 \text{ ft}^3/\text{hour}. \\
 &= 1.105 \text{ lb}/\text{hour} = 4.84 \text{ tons}/\text{year}.
 \end{aligned}$$

Table A-3

Boiler Potential to Emit Calculations

Equipment	Emission Factor ¹ (lb/10 ⁶ scf)		Maximum Throughput (scf/hr)	Emissions (TPY)	
	VOC	NO _x		VOC	NO _x
Boilers	5.5	100	11,048	0.27	4.84
Total Boiler PTE Emissions				0.27	4.84
¹ Source: <i>Compilation of Air Pollution Emission Factors. Volume I: Stationary Point and Area Sources. Fifth Edition.</i> USEPA, July 1998.					

A.3.2 Construction Activities

The construction activities for the Proposed Action would include three components: construction of the DTRC Building; construction of a three-level parking garage; and construction of a temporary parking lot. The emissions of these three activities were calculated separately and then added together for comparison on an annual basis.

A.3.2.1 DTRC Building Construction

The proposed DTRC Building would be a 306,530-gsf (28,477-gsm) addition to the approximately 900,000 gsf (83,610 gsm) McNamara Building. The addition, four stories above ground and two below ground, would connect to the south end of the McNamara Building. Construction of the DTRC Building would require a significant amount of site preparation, construction of new utility service lines to the building, modifications to surface parking, pedestrian paving, and landscaping. On the McNamara HQC site, a total of 456,135 sq ft (42,376 sq m) acres would be disturbed by construction.

Construction Equipment Operations and Emissions

Construction of the proposed DTRC Building would include equipment mobilization, site preparation, auger-cast grout piling foundations, reinforced cast-in-place concrete basement walls, and a one-way cast-in-place concrete wide module joint system, supported by concrete girders on column lines, and paving of the interior concrete floors, interior and exterior utilities, and exterior pavement around the new DTRC Building. Therefore the construction activities would involve operations of 1) on-site construction equipment and 2) motor vehicles including construction material delivery trucks and workers commuting vehicles.

The number and type of equipment necessary for construction activities were determined for the building. All equipment was assumed to be diesel-powered unless otherwise noted. Each piece of equipment is assumed to be operated continuously for 75 percent of the time during each working day, which is equivalent to six hours per day. Pieces of equipment to be used for each building to be constructed include, but are not limited to:

- Hoerams.
- Backhoes.
- Hammers.
- Gas engine vibrators.

Estimates of construction equipment emissions were based on the estimated hours of usage and emission factors for each motorized source for the project. Emission factors for NO_x and VOC related to heavy-duty diesel equipment were obtained from *Non-Road Engine and Vehicle Emission Study B Report* (USEPA, 1991). Emission factors are available for hydrocarbons (HC), which include all VOC as well as other non-VOC constituents; therefore, HC emissions may be slightly higher than VOC emissions. For the purposes of this analysis the term VOC was used, but emission factors included all HC emissions.

Emission factors in grams of pollutant per hour per horsepower were multiplied by the estimated running time and equipment associated average horsepower provided by the USEPA to calculate total grams of pollutant from each piece of equipment. Finally, these total grams of pollutant were converted to tons of pollutant.

The USEPA recommends the following formula to calculate hourly emissions from nonroad engine sources including front-end loaders, hoerams, backhoes and dump trucks:

$$M_i = N \times HP \times LF \times EF_i$$

Where:

M_i = mass of emissions of i th pollutants during inventory period.

N = source population (units).

HP = average rated horsepower.

LF = typical load factor.

EF_i = average emissions of i th pollutant per unit of use (e.g., grams per horsepower-hour).

Estimated emissions from onsite building construction are presented in Table A-4. It is assumed that most of the building construction would take place in 2003-2004. Therefore emission estimates are evenly split between these two years. A sample calculation for a backhoe engine NO_x emissions during construction is provided below:

Operational Hours	= 720 hours.
Operational Emissions	= 720 hours x 77 hp x 55 % x 10.10 grams/hp-hr. = 0.34 tons (see Table A-4).

The personnel needed for the construction would include foremen, equipment operators, plumbers, electricians, landscapers, truck drivers and utility installation crew, etc. Based on crews information from Means (2000) and field experience from similar type of construction projects, the crew members time for each task were estimated assuming each of the identified work would be conducted in sequence without overlapping.

Construction Motor Vehicle Operations and Emissions

Truck and commuting vehicle operations would result in indirect emissions. However, the only activities that are subject to the general conformity determination include vehicle operations within Fort Belvoir, over which the US Army Garrison would have control. Motor vehicle operations within Fort Belvoir are assumed to be as follows:

- Pickup and dump trucks would travel at an average speed of 25 miles per hour (mph) on site, for a total estimated run time of four hours per working day.
- Each commuter vehicle would make a 20-minute round trip within Fort Belvoir at an average speed of 25 mph.

Emission factors for motor vehicles were calculated for 2003 for both dump trucks (heavy duty diesel vehicles) and commuter vehicles (light duty gasoline vehicles) using the USEPA Mobile5b mobile source emission factor model associated with input parameters provided by the MWCOG for an O₃ season that is applicable to the Fairfax County area. These emission factors were then multiplied by the vehicle operational hours to determine motor vehicle emissions (Table A-5).

Table A-4

Proposed Action DTRC Building Construction
Diesel Equipment Emissions Worksheet

Type (number)	Hours of Operation	Horse power (HP)	Load Factor (%)	Emission Factor (grams/HP-hr)		Emissions (tons)	
				VOC	NO _x	VOC	NO _x
Site/Civil Preparation – 456,135 sq ft (42,376 sq m) (12 weeks)							
Backhoe (2)	720	77	55	1.40	10.10	0.05	0.34
Loader (2)	720	158	54	0.84	10.30	0.06	0.70
Hoeram (2)	720	161	62	1.41	11.01	0.11	0.87
Gas Engine Vibrator (1)	360	56	73	1.41	11.01	0.02	0.18
Auger-cast grout piling foundations (20 weeks)							
Crane (1)	600	194	43	1.26	10.30	0.07	0.57
Gas Engine Vibrator (1)	600	56	73	1.41	11.01	0.04	0.30
Erection of Frame - concrete girders on column lines (26 weeks)							
Crane (1)	780	194	43	1.26	10.30	0.09	0.74
Scissor Lift (2)	1,560	43	46	1.57	14.00	0.05	0.48
Concrete Flooring, Interior and Exterior Utilities, and Exterior Pavement (32 weeks)							
Scissor Lift (4)	3,840	43	46	1.57	14.00	0.13	1.17
Backhoe (3)	1,080	77	55	1.40	10.10	0.07	0.51
Loader (1)	360	158	54	0.84	10.30	0.03	0.35
Gas Engine Vibrator (2)	480	56	73	1.41	11.01	0.03	0.24
Total DTRC Building Construction Emissions						0.75	6.43

Table A-5

Proposed Action DTRC Building Construction
Motor Vehicle Emissions Worksheet

Source	Activity	Hours of Operation	VOC Emission Factor (lbs/hr)	NO _x Emission Factor (lbs/hr)	Emissions (tons)	
					VOC	NO _x
Heavy Trucks	Site/Civil Preparation	960	0.096	0.456	0.05	0.22
	Foundations	3,200	0.096	0.456	0.15	0.73
	Framing	4,160	0.096	0.456	0.20	0.95
	Flooring/Utilities/Pavement	7,680	0.096	0.456	0.37	1.75
Workers Commuting Vehicles	Site/Civil Preparation	240	0.029	0.037	0.00	0.00
	Foundations	533	0.029	0.037	0.01	0.01
	Framing	693	0.029	0.037	0.01	0.01
	Flooring/Utilities/Pavement	1,280	0.029	0.037	0.02	0.02
Total Truck/Vehicle Emissions from DTRC Building Construction					0.81	3.69

A.3.2.2 Construction of a Parking Garage

A three-level parking garage would be constructed about 240 feet (73 m) southeast of the proposed DTRC Building to accommodate between 1,000 and 1,100 vehicles. Each floor of the garage would be 110,400 sq ft (10,256 sq m) in area.

Construction Equipment Operations and Emissions

Construction of the proposed three-level parking garage would include activities and equipment similar to those described for the DTRC Building construction. The emission estimates from the onsite parking garage construction are presented in Table A-6.

Construction Motor Vehicle Operations and Emissions

Determination of usage data for construction trucks was also based on field experience for a project at such scale, and emission estimates are similar to those described for the DTRC Building construction. Calculated mobile emission sources for the Parking Garage are presented in Table A-7.

A.3.2.3 Construction of a Temporary Parking Lot

A temporary 265,890 sq ft (24,702 sq m) gravel parking lot would be built in 2003 along McCutchen Road to accommodate approximately 800 cars during construction of the DTRC Building and the three

level parking garage. The site is about 500 ft (150 m) south of the McNamara HQC.

The area where the temporary parking lot would be built has been used as a storage yard. As a result, the soil is compacted and the surface covered with grass, weeds and remnants of pavement. To build the lot, the surface would be leveled, compacted, and covered with gravel. When the temporary lot would no longer be needed, the surface would likely be restored to grass. Restoration work would only require the use of a few vehicles over a very short period. Consequently, emissions from this activity are considered negligible.

Construction Equipment Operations and Emissions

Construction of the temporary gravel parking lot would include activities and equipment used to break up any existing concrete/pavement and compact and level the existing area. The emission estimates from the onsite parking lot construction are presented in Table A-6.

Construction Motor Vehicle Operations and Emissions

Determination of usage data for commuter vehicles and trucks was also based on field experience for a project at such scale, and emission estimates are similar to those described for the DTRC Building construction. Calculated mobile emission sources for the temporary gravel parking lot are presented in Table A-7.

A.4 Conformity Applicability Determination

Under the general conformity rule, emissions resulting from proposed federal action must be compared to the applicable *de minimis* levels on an annual basis. Total annual emissions were determined for the Proposed Action based on the mobile-source emissions during operation and construction and are summarized in Table A-8. 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 applicable for that pollutant in order to determine air quality impact significance.

As shown in Tables A-8, the emission values for the Proposed Action would not exceed the *de minimis* criteria of 50 tpy (45 mtpy) of VOC or NO_x, therefore a formal conformity determination is not required. Furthermore, since The *Final State Implementation Plan Revision, Phase I Attainment Plan* (MWCOG, October, 1997) sets forth daily target levels of 362.9 tons per day (tpd) of VOC and 637.1 tpd of NO_x for the Washington Metropolitan ozone non-attainment area where the Fairfax County area is included, the increase in annual emissions would not make up ten percent or more of the available regional emission inventory for VOC or NO_x and would not be regionally significant. The Record of Non-Applicability is provided in Appendix B.

Table A-6

Proposed Action Parking Garage Construction
Diesel Equipment Emissions Worksheet

Type (number)	Hours of Operation	Horse power (HP)	Load Factor (%)	Emission Factor (grams/HP-hr)		Emissions (tons)	
				VOC	NO _x	VOC	NO _x
3-Level Parking Garage- each level is approximately 110,400 sq ft (10, 256 sq m) (52 weeks)							
Foundations (10 weeks)							
Crane (1)	300	194	43	1.26	10.30	0.03	0.28
Gas Engine Vibrator (1)	300	56	73	1.41	11.01	0.02	0.15
Erection of Frame (16 weeks)							
Crane (1)	480	194	43	1.26	10.30	0.06	0.45
Scissor Lift (2)	960	43	46	1.57	14.00	0.03	0.29
Concrete Flooring, Interior and Exterior Utilities, and Exterior Pavement (26 weeks)							
Scissor Lift (3)	2,340	43	46	1.57	14.00	0.08	0.71
Backhoe (2)	720	77	55	1.40	10.10	0.05	0.34
Loader (1)	360	158	54	0.84	10.30	0.03	0.35
Gas Engine Vibrator (2)	480	56	73	1.41	11.01	0.03	0.24
Total Parking Garage Construction Emissions						0.33	2.82
Temporary Parking Lot - 265,890 sq ft (24,702 sq m) (2 weeks)							
Hoeram (3)	180	161	62	1.41	11.01	0.03	0.22
Backhoe (1)	60	77	55	1.40	10.10	0.00	0.03
Loader (1)	60	158	54	0.84	10.30	0.00	0.06
Gas Engine Vibrator (1)	60	56	73	1.41	11.01	0.00	0.03
Total Temporary Parking Lot Construction Emissions						0.04	0.33

Table A-7

Proposed Action Parking Garage Construction
Motor Vehicle Emissions Worksheet

Source	Activity	Hours of Operation	VOC Emission Factor (lbs/hr)	NO _x Emission Factor (lbs/hr)	Emissions (tons)	
					VOC	NO _x
Parking Garage Construction						
Heavy Trucks	Foundations	800	0.096	0.456	0.04	0.18
	Framing	1,280	0.096	0.456	0.06	0.29
	Flooring/Utilities/Pavement	3,120	0.096	0.456	0.15	0.71
Workers Commuting Vehicles	Foundations	133	0.029	0.037	0.00	0.00
	Framing	213	0.029	0.037	0.00	0.00
	Flooring/Utilities/Pavement	520	0.029	0.037	0.01	0.01
Total Truck/Vehicle Emissions from Parking Garage Construction					0.26	1.19
Temporary Parking Lot Construction						
Heavy Trucks	Clearing and Prep	80	0.096	0.456	0.00	0.02
Workers Commuting Vehicles	Clearing and Prep	27	0.029	0.037	0.00	0.00
Total Truck/Vehicle Emissions from Temporary Parking Lot Construction					0.00	0.02

Table A-8

Total Annual Emission Levels under the Proposed Action

Emission Source	Pollutant (tons/year)	
	VOC	NO _x
2003 Construction Emission Estimates		
Construction Diesel Equipment	0.6	4.9
Construction Motor Vehicles	0.8	2.5
2003 Totals	1.1	7.4
2004 Construction Emission Estimates		
Construction Diesel Equipment	0.6	4.6
Construction Motor Vehicles	0.5	2.5
2004 Totals	1.1	7.1
Annual Operational Emissions (Years after 2004)		
Motor Vehicle VMT Increase	0.1	0.2
Boiler(s)	0.3	4.8
Annual Operation after 2004	0.4	5.0
De Minimis Level	50	50

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APPENDIX B

CLEAN AIR ACT -- GENERAL CONFORMITY RULE RECORD OF NON-APPLICABILITY



DEPARTMENT OF THE ARMY
U.S. ARMY GARRISON, FORT BELVOIR
DIRECTORATE OF INSTALLATION SUPPORT
9430 JACKSON LOOP, SUITE 107
FORT BELVOIR, VIRGINIA 22060-5130

REPLY TO
ATTENTION OF

ANFB-ELE-E (200-1a)

SEP 24 2001

MEMORANDUM FOR RECORD

SUBJECT: Record of Non-Applicability (RONA) for Permanent Relocation of the Defense Threat Reduction Agency to the Andrew T. McNamara Headquarters Complex on Fort Belvoir

1. Upon review, it has been determined that the permanent relocation of the Defense Threat Reduction Agency (DTRA) to the Andrew T. McNamara Headquarters Complex on Fort Belvoir does not require a Clean Air Act (CAA) General Conformity Determination. Emissions for this project are below the thresholds established under 40 CFR Parts 51 and 93 and in 9 VAC Chapter 160 of the Commonwealth of Virginia air quality regulations. Therefore, this action will not result in criteria pollutant emissions above *de minimus* levels.

Patrick McLaughlin
Chief, Environmental and Natural
Resource Division

"EXCELLENCE THROUGH SERVICE"

APPENDIX C
TRAFFIC ANALYSIS DATA

Table C-1
Existing Conditions -- Peak Hour Turning Movement Volumes

AM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Telegraph/Beulah	66	473	227	227	663	85	220	661	109	272	284	107
Beulah/Woodlawn	55	0	4	0	0	0	0	644	400	4	711	0
Beulah/Kingman	8	20	26	107	139	102	15	130	55	44	220	12
Kingman/McNamara - west	8	0	4	0	0	0	0	343	300	7	85	0
Kingman/McNamara- east	12	0	13	0	0	0	0	187	160	250	80	0
Beulah/McNamara - south	145	133	0	0	99	20	9	0	6	0	0	0
Fairfax Co Pkwy/Kingman	56	459	98	540	572	36	4	5	15	10	23	60
Beulah/Backlick	55	228	0	0	100	5	50	0	110	0	0	0
Route 1/Fairfax Co Pkwy	0	0	0	428	0	22	260	2040	0	0	679	306
Route 1/Backlick	86	36	17	80	89	41	180	1361	927	14	858	37
Route 1/Woodlawn	0	0	0	221	0	289	134	1377	0	0	820	294

PM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Telegraph/Beulah	120	676	257	36	614	245	138	318	84	362	551	214
Beulah/Woodlawn	346	0	3	0	0	0	0	884	176	1	707	0
Beulah/Kingman	78	95	34	35	78	57	193	287	18	28	201	77
Kingman/McNamara HQ - west	258	0	10	0	0	0	0	278	11	1	477	0
Kingman/McNamara HQ - east	163	0	216	0	0	0	0	282	6	21	315	0
Beulah/McNamara HQ - south	8	51	0	0	181	9	29	0	100	0	0	0
Fairfax Co Pkwy/Kingman	5	631	24	230	411	1	32	35	48	100	10	625
Beulah/Backlick	225	51	0	0	256	25	8	0	68	0	0	0
Route 1/Fairfax Co Pkwy	0	0	0	303	0	200	36	678	0	0	1844	394
Route 1/Backlick	790	181	15	95	45	184	25	831	125	30	1264	70
Route 1/Woodlawn	0	0	0	364	0	165	284	785	0	0	1117	275

Table C-2
No Action Alternative -- Year 2005
Peak Hour Turning Movement Volumes

AM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Telegraph/Beulah	88	513	324	240	722	90	240	1359	150	411	709	120
Beulah/Woodlawn	99	0	5	0	0	0	0	747	536	5	826	0
Beulah/Kingman	10	34	29	140	178	158	30	144	65	50	219	15
Kingman/McNamara - west	18	0	5	0	0	0	0	464	401	5	134	0
Kingman/McNamara - east	19	0	14	0	0	0	0	225	244	267	120	0
Beulah/McNamara - south	203	150	0	0	144	24	8	0	8	0	0	0
Kingman/Fairfax Co Pkwy	60	528	138	722	729	40	5	5	15	29	30	93
Beulah/Backlick	60	297	0	0	142	10	56	0	130	0	0	0
Route 1/Fairfax Co Pkwy	0	0	0	593	0	34	298	2301	0	0	775	378
Route 1/Backlick	99	47	20	102	109	61	236	1489	1169	15	993	74
Route 1/Woodlawn	0	0	0	235	0	325	152	1538	0	0	1009	332

PM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Telegraph/Beulah	175	738	422	46	661	260	150	689	113	505	1169	261
Woodlawn/Beulah	483	0	5	0	0	0	0	1026	253	5	852	0
Beulah/Kingman	90	115	38	45	103	85	253	299	20	30	219	80
Kingman/McNamara - west	348	0	14	0	0	0	0	340	23	5	602	0
Kingman/McNamara - east	237	0	233	0	0	0	0	339	15	24	370	0
Beulah/McNamara - south	14	78	0	0	210	8	30	0	151	0	0	0
Fairfax Co Pkwy/Kingman	5	813	48	271	464	6	36	44	55	148	9	793
Beulah/Backlick	235	88	0	0	332	29	15	0	131	0	0	0
Route 1/Fairfax Co Pkwy	0	0	0	369	0	243	48	716	0	0	2088	594
Route 1/Backlick	959	193	15	126	49	242	32	909	144	35	1481	87
Route 1/Woodlawn	0	0	0	381	0	182	335	914	0	0	1267	311

Table C-3
Proposed Action Alternative -- Year 2005
Peak Hour Turning Movement Volumes

AM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Telegraph/Beulah	88	514	325	240	732	90	240	1359	150	423	709	120
Beulah/Woodlawn	101	0	5	0	0	0	0	747	558	5	826	0
Beulah/Kingman	10	35	29	140	189	169	31	144	65	53	222	15
Kingman/McNamara - west	23	0	5	0	0	0	0	573	501	5	140	0
Kingman/McNamara - east	25	0	15	0	0	0	0	225	353	281	120	0
Beulah/McNamara - south	215	150	0	0	144	38	9	0	9	0	0	0
Fairfax Co Pkwy/Kingman	60	528	143	926	729	40	5	5	15	29	30	104
Beulah/Backlick	60	309	0	0	143	10	56	0	130	0	0	0
Route 1/Fairfax Co Pkwy	0	0	0	593	0	34	303	2306	0	0	775	378
Route 1/Backlick	99	48	20	103	109	61	241	1489	1169	15	993	80
Route 1/Woodlawn	0	0	0	235	0	325	152	1539	0	0	1015	338

PM Peak Hour

	Northbound			Southbound			Eastbound			Westbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Telegraph/Beulah	175	747	432	46	662	260	150	689	113	506	1169	261
Beulah/Woodlawn	502	0	5	0	0	0	0	1026	255	5	852	0
Beulah/Kingman	90	125	38	45	104	86	262	304	20	30	219	80
Kingman/McNamara - west	431	0	16	0	0	0	0	345	31	5	702	0
Kingman/McNamara - east	337	0	245	0	0	0	0	341	20	25	370	0
Beulah/McNamara- south	15	78	0	0	210	9	40	0	162	0	0	0
Fairfax Co Pkwy/Kingman	5	813	48	284	464	6	36	44	55	152	9	972
Beulah/Backlick	235	88	0	0	343	29	15	0	85	0	0	0
Route 1/Fairfax Co Pkwy	0	0	0	369	0	247	48	716	0	0	2093	594
Route 1/Backlick	959	193	15	131	50	247	32	909	144	35	1481	88
Route 1/Woodlawn	0	0	0	386	0	182	335	919	0	0	1268	311

APPENDIX D

COORDINATION LETTERS



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
6669 Short Lane
Gloucester, VA 23061



August 16, 2001

Mr. Laurent Cartayrade
TAMS Consultants, Inc.
2101 Wilson Boulevard, Suite 300
Arlington, Virginia 22201

Re: EA for the Permanent Relocation of
the Defense Threat Reduction
Agency to Fort Belvoir
Fairfax County, Virginia

Greetings:

We have reviewed your request for information on federally listed and proposed endangered and threatened species and designated critical habitat for the above referenced project. The following comments are provided under provisions of the Endangered Species Act of 1973 (87 Stat. 884, as amended; 16 U.S.C. 1531 *et seq.*)

Based on the project description and location, it appears that no impacts to federally listed or proposed species or critical habitat will occur. Should project plans change, or if additional information on the distribution of listed or proposed species or designated critical habitat becomes available, this determination may be reconsidered.

If you have any questions, please contact Eric Davis of this office at (804) 693-6694, extension 104.

Sincerely,

Karen L. Mayne
Supervisor
Virginia Field Office

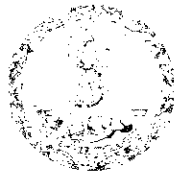
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AUG 17 2001

U.S. FISH & WILDLIFE SERVICE

James S. Gilmore, III
Governor

John Paul Woodley, Jr.
Secretary of Natural
Resources



David G. Brickley
Director

COMMONWEALTH of VIRGINIA
DEPARTMENT OF CONSERVATION AND RECREATION

217 Governor Street, 3rd Floor

TDD (804) 786-2121 Richmond, Virginia 23219 (804) 786-7951 FAX (804) 371-2674
<http://www.state.va.us/~dcr/vaher.html>

August 15, 2001

Laurent Cartayrade
TAMS Consultants Inc.
2101 Wilson Blvd., Suite 300
Arlington, VA 22201

Re: Environmental Assessment for the Permanent Relocation of the Defense Threat Reduction Agency to US Army Garrison Fort Belvoir, Virginia

Dear Mr. Cartayrade:

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

According to the information currently in our files, the wood turtle (*Clemmys insculpta*, G4/S2/NF/LT) has been documented in the project vicinity and may occur within the project limits if appropriate habitat is present. The wood turtle inhabits forested floodplains and nearby fields, wet meadows, and farmlands (Mitchell, 1994). As this species overwinters on the bottoms of creeks and streams, a primary habitat requirement is the presence of water (Mitchell, 1994). Please note that the wood turtle is classified as threatened by the Virginia Department of Game and Inland Fisheries (VDGIF).

DCR understands that you are aware of the potential for wood turtle within the project vicinity and supports your plans for conducting a survey in late September to early October. We recommend coordination of this action with VDGIF. In addition, DCR would appreciate receiving a copy of this survey once completed.

To minimize adverse impacts to the aquatic ecosystem as a result of the proposed activities, DCR recommends the implementation of and strict adherence to erosion and sediment control measures during all land disturbing activities.

In addition, our files do not indicate the presence of any State Natural Area Preserves under DCR's jurisdiction in the project vicinity.

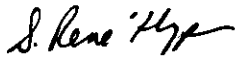
Under a Memorandum of Agreement established between the Virginia Department of Agriculture and Consumer Services (VDACS) and the Virginia Department of Conservation and Recreation (DCR), DCR represents VDACS in comments regarding potential impacts on state-listed threatened and endangered plant and insect species. The current activity will not affect any documented state-listed plants or insects.

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

A fee of \$65.00 has been assessed for the service of providing this information. Please find enclosed an invoice for that amount. Please return one copy of the invoice along with your remittance made payable to the Treasurer of Virginia, Department of Conservation and Recreation, 203 Governor Street, Suite 402, Richmond, VA 23219, ATTN: Cashier. Payment is due within thirty days of the invoice date.

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

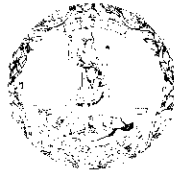
Sincerely,



S. René Hypes
Project Review Coordinator

Literature Cited

Mitchell, J. C. 1994. Reptiles of Virginia. Smithsonian Institution Press, Washington. pp. 88-91.



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SEP 05 2001

TAMS CONSULTANTS INC.
ARLINGTON VA

COMMONWEALTH of VIRGINIA

James S. Gilmore, III
Governor

Department of Game and Inland Fisheries

John Paul Woodley, Jr.
Secretary of Natural Resources

William L. Woodfin, Jr.
Director

August 31, 2001

Laurent Cartayrade
TAMS Consultants, Inc.
2101 Wilson Boulevard, Suite 300
Arlington, VA 22201

RE: ESSLOG 13411; Permanent Relocation of the Defense Threat Reduction Agency at U.S.
Army Garrison Fort Belvoir, Virginia

Dear Ms. Cartayrade:

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

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

There are no documented occurrences of threatened or endangered species at the project site. However, the state threatened wood turtle, (*Clemmys insculpta*), has been documented approximately 1 mile from the project site and could occur at the project site if the appropriate habitat exists.

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

There is a processing charge of \$25.00 for our response. Please remit a check, made payable to **TREASURER OF VIRGINIA**, within 30 days to MaryBeth Murr at the address listed on the first page. Include a copy of this letter with your payment to ensure that your account is properly credited.

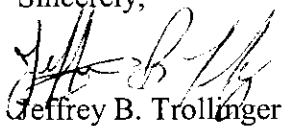
Laurent Cartayrade
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This letter summarizes the likelihood of the occurrence of endangered or threatened animal species at the project site. If you have additional questions in this regard, please contact me at (804) 367-8747. Please note that this response does not address any other environmental concerns; these issues are analyzed by our Environmental Services Section, in conjunction with interagency review of applications for state and federal permits. If you have any questions in this regard, please contact Ray Fernald or Tom Wilcox at (804) 367-8999.

The Fish and Wildlife Information Service, the system of databases used to provide the information in this letter, can now be accessed via the Internet! The Service currently provides access to current and comprehensive information about all of Virginia's fish and wildlife resources, including those listed as threatened, endangered, or special concern; colonial birds; waterfowl; trout streams; and all wildlife. Users can choose a geographic location and generate a report of species known or likely to occur around that point. From our main web page, at www.dgif.state.va.us, choose the hyperlink to "Wildlife Information Online". For more information, please contact Amy Martin, Online Service Coordinator, at (804) 367-2211.

} Thank you for your interest in the wildlife resources of Virginia.

Sincerely,



Jeffrey B. Trollinger
Wildlife Diversity Biologist

cc: R.T. Fernald, VDGIF