Town Center Area Development Plan

January 2008

Final

Belvoir
NEW VISION

Town Center

Area Development Plan

January 2008

BELVOIR
NEW VISION
PLANNERS

Contents

1 Introduction

Purpose

Area Development Plans (ADPs), by definition, address the site planning of a specific area of an installation – unified by function, identity, location or architectural style. The focus area for this ADP is the development of the Town Center into a mixed use walkable neighborhood center. The ADP will illustrate short-term and long-term physical changes, with the latter depicted in phases. In all cases, the ADP will present much of the data through graphics.

In addition to analysis, drawings, and plans, the ADP will also include details or sketches that illustrate important features of the plan - such as architectural character, recommended solutions to circulation problems, etc. It will also indicate construction phasing and development priorities, which will correlate with the facility programming contained in the Short-Range Component (SRC), Military Construction (MILCON), and other project funding documentation.

The vision for the Town Center Area of Ft. Belvoir is to take the existing uses, buildings and landscapes and creating a "place" for the post.

Process

Developing an ADP is an inherently flexible process. While each ADP has its own unique focus, there are eight key steps that are general to creating an ADP. The intent is to use these steps in coordination with the Leadership in Energy and Environmental Design (LEED) for Neighborhood Development (ND) Rating System administered by the US Green Building Council (USGBC). The use of this program within the ADP will encourage and raise awareness of best practices in sustainable design.

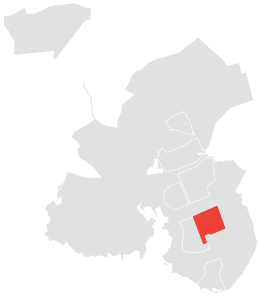
— STEP 1: Set goals.
— STEP 2: Define area boundary.
— STEP 3: Define program requirements.
— STEP 4: Collect and analyze data.
— STEP 5: Develop alternative plans.
— STEP 6: Evaluate alternative plans.
— STEP 7: Develop final plan.
— STEP 8: Develop implementation plan.

Vision

It is the goal of all the ADPs to ensure that Belvoir is organized into dense, compact and clearly defined neighborhoods that each have their own specific character and feel. The town center area should be a place where there is not only a mix of uses that complement each other, but a mix of modes of transportation. The area should create a feeling of comfort for those who choose to walk, bike, ride public transit or ride in a car around and though the area. The creation of a walkable post will promote the community feel as well as wellness for all who live, work and play on Belvoir.

The vision of the Town Center is to:
— An outstanding place to live, work and play
— A culture that exists in harmony with surrounding communities and the natural environment
— A continuing legacy of a "Beautiful to See" installation
— Redevelop the area as a mixed use center with office uses, amenities, retail and housing
— Focus housing along the 12th Street and 16th Street corridors
— Create a new office center with retail and amenities at key intersections
— Locate parking in the middle of the blocks and away from major pedestrian areas

Figure 1–1 The Setting: Future Town Center



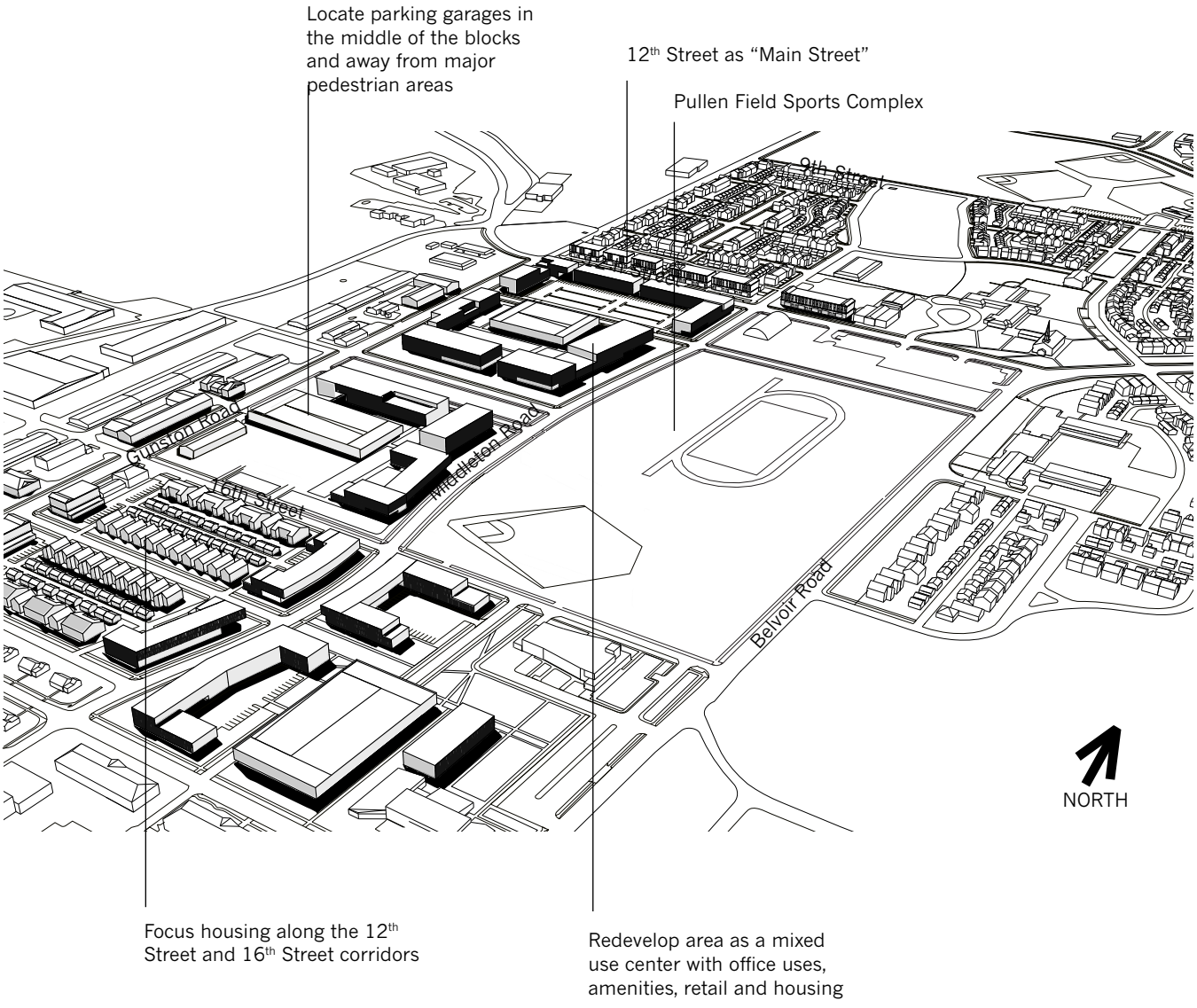


Figure 1–2 Existing Town Center Site

129	FAMILY HOUSING NCO	194	DISTR TRANSFORMER	1147	MORALE SPT ACTIVITY OFC	1183	DISTR TRANSFORMER
131	FAMILY HOUSING NCO	195	UNINTERRUPTABLE POWER SOURCE	1148	GEN MAINTENANCE BLDG, NAF	1185	EXCHANGE SVC OUTLET
133	FAMILY HOUSING NCO	200	SOSA COMMUNITY CENTER	1150	ADMIN FAC, AAFES	1186	FAMILY LIFE CENTER
135	FAMILY HOUSING NCO	238	EXCH, CLASS VI, CLOTHING, ETC.	1151	DISTR TRANSFORMER	1188	EXCHANGE SVC OUTLET
137	FAMILY HOUSING NCO	240	WALLACE THEATER	1153	EXCHANGE SVC OUTLET	1189	HOME & GARDEN CENTER
139	FAMILY HOUSING NCO	259	BATH HOUSE W/WATER TREATMENT	1154	EXCHANGE SVC OUTLET	1194	EAGLE'S ESPRESSO BAR
141	FAMILY HOUSING NCO	1000	CIVILIAN PERSONNEL	1155	EXCHANGE SVC OUTLET	1195	CREDIT UNION
186	DISPATCH OFFICE-TMP MOTOR POOL	1017	BARDEN EDUCATION	1156	SUBSTATION	1196	EXCH SVC OUTLET, LAUND/DRY CLN
187	ADMIN, GEN PURP, TMP	1018	BELVOIR CHAPEL	1157	STANDBY GENERATOR W/TANK	1197	EXCH AUTO SVC STATION
188	OVERHEAD WATER TANK	1023	PHYSICAL FITNESS CENTER	1158	STANDBY GENERATOR W/TANK	1199	BOWLING ALLEY
189	MOTOR POOL	1024	VAN NOY LIBRARY	1161	RED CROSS		
190	VEH MAINT SHOP, ORGN	1028	CHILD DEVELOP/RELIGIOUS ED CTR	1163	SNACK BAR		
191	SOUTH POST FIRE STATION	1099	LOGAN DENTAL CLINIC	1169	ELECTRICAL SWITCH STATION		
193	ADMIN/ADP FACILITY	1146	EXCHANGE AUTO SVC STATION	1182	SPECKER FIELD HOUSE		

Figure 1–3 Proposal for the Town Center Area

Existing Buildings
Proposed Buildings
Future Expansion
Proposed Parking Garage

Area Development Plan Boundary
Proposed Block Framework
Streams
Forest
Grasslands

Engineered Open Space
Previously Developed Land
Recreational Fields

2 The Setting

Location of ADP Study Limits

The Town Center site is located on the South Post bound by 12th Street on the north, Belvoir Road on the east, Gunston Road on the west, and 18th Street on the south.

Character of ADP Study Limits

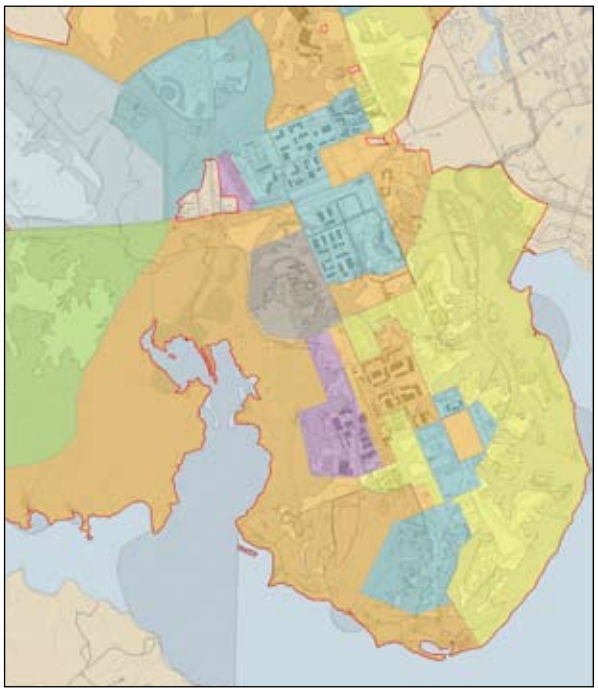
The Town Center area is located on what can be called the "developable plateau" of Ft. Belvoir. This plateau on post is the area that has the fewest acres that are considered not developable due to environmental constraints such as steep slopes, RPAs, wetlands etc. This area is also where the historic core of the post is located, most likely because it was the most accessible and needed the least amount of site work when the post was first built.

LRC Land Use Designation

The existing land use map for Fort Belvoir shows the Town Center Area designated as a mix of Residential, Community and Professional/Institutional uses. The land use maps for 2030 show little change in these uses; with the exception that some community areas change to professional near the southeast portion of the area. Some of the areas that are designated as "community" also include future Morale, Welfare, and Recreation (MWR) Program projects.

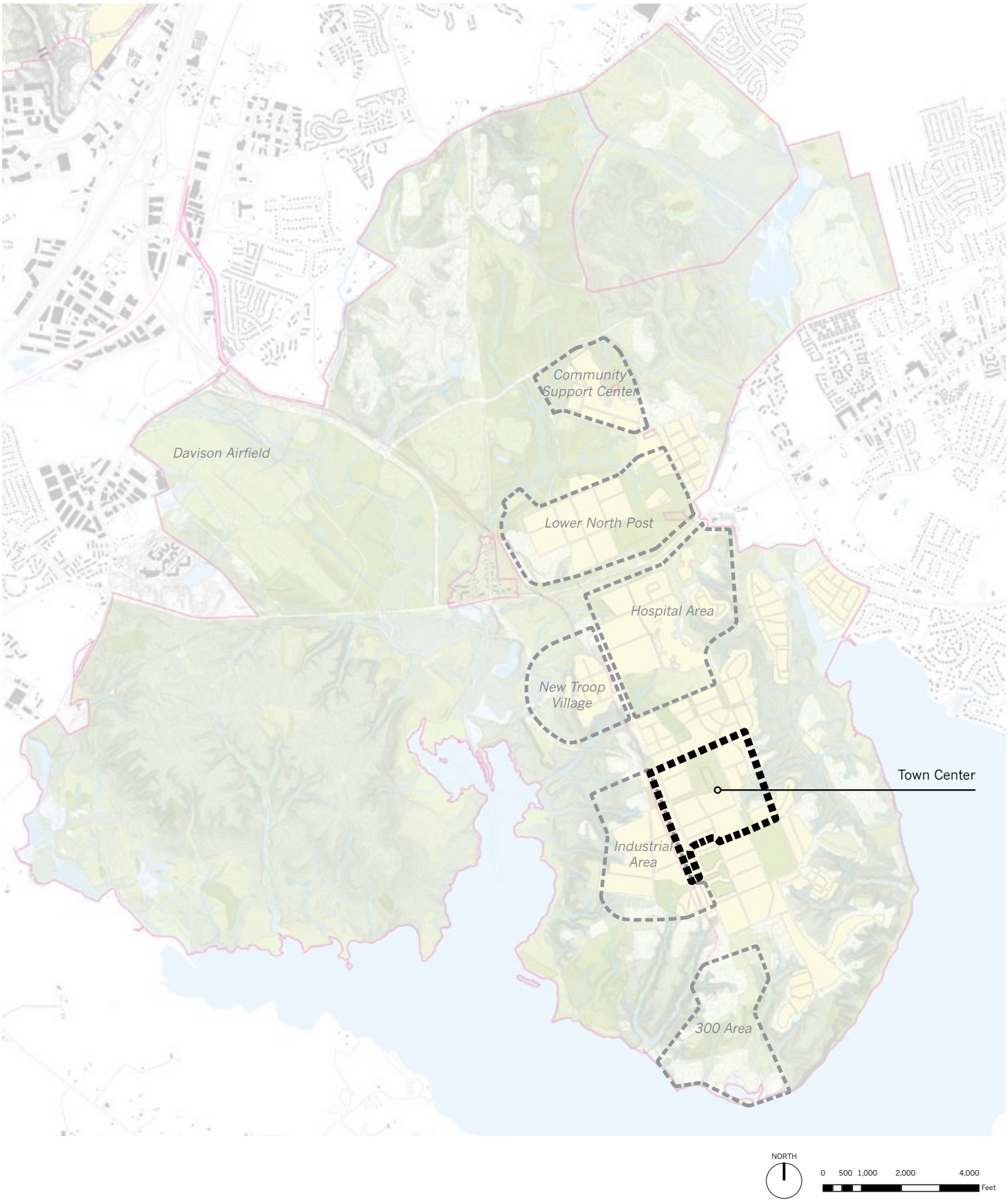
Land Use Legend

- Constrained Areas Overlay
- Main Post Installation Boundary
- Airfields (AIR)
- Community (CMY)
- Industrial (IND)
- Professional Institutional (PRO)
- Residential (RES)
- Ranges and Training (TNG)
- Troop (TRP)



Land Use Map 2030

Figure 2–1 Main Post Neighborhoods



3 Existing Site Character

Overview

This section describes the existing character of the site by analyzing its existing natural constraints, buildable areas, structures, and circulation patterns.

Fort Belvoir is a significant part of the local and regional ecosystem. All decisions affecting Fort Belvoir's wealth of natural resources have a critical impact on the surrounding environment. It is important for the Town Center Area Development Plan to uphold the land-use planning goals as established by the post.

The way in which Fort Belvoir manages its ecosystem requires all proposed development to understand the delicate interrelationships that exist within and outside the installation boundaries.

Existing 12th Street

Town Center Area Housing under construction, 2006

Figure 3–1 Aerial Today (2007)

Development Constraints

From an environmental perspective, many of the areas in the Town Center parcel are developable as these areas have been disturbed by previous development. However, cultural, historical, and operational environmental constraints are present within the Town Center parcel.

The methodology used to evaluate the environmental constraints on the Town Center parcel was to populate a constraints matrix using a GIS-based tool that calculates the acreage or number of each environmental constraint within the footprint of the Town Center parcel.

This methodology identified the following environmental constraints that could be affected by development within the Town Center parcel:

— Airfield 500-ft Building Height Restriction
— Solid Waste Management Units
— Hazardous Waste Management Units
— Petroleum Storage Areas
— Petroleum Release Sites
— Historic Buildings
— Historic District
— Air Quality Permits
— Construction Permits

The constraint and the extent of these impacts are summarized in Table 3–1.

Table 3–1 Development Constraints Located in the Study Area

Resource	Size or Number	Units	Comment/Description
Operational Resource Constraints			
Airfield Restrictions	approx. 160-300	Feet	See Appendix for Airfield discussion. Further site studies should be done once the site is selected.
Solid Waste Management Units (SWMUs)	7	Each	Many SWMUs will require environmental investigations to determine the nature and extent of the impacts. I nvestigation work plans will require EPA and VDEQ approval. Site investigations can be performed concurrently with site preparation activities.
Hazardous Waste Management Units (HWMUs)	3	Each	Investigation work plans will require EPA and VDEQ approval. Site investigations can be performed concurrently with site preparation activities. Additional investigation can be performed to determine if and where residual impacted soils exist.
Petroleum Storage Areas (PSAs)	45	Each	There are 15 active and 30 inactive PSAs in the Town Center parcel. These could be aggressively addressed Town Center Environmental Analysis Report 2 Resource Size or Number Comment/Description as part of the site preparations. A closure process involving administrative and decontamination process will be required. Confirmation samples collected beneath USTs and potentially some AST will likely be required to demonstrate no release has occurred. It can be expected that some USTs will have a release previously undiscovered. Mitigation measures could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule.
Petroleum Release Sites (PRSs)	14	Each	Petroleum releases were discovered at these locations, pollutant complaint numbers (PC #s) were assigned by the VDEQ, and various corrective actions/ remediation occurred at the sites. Any disturbance to the subsurface soil at these sites may require environmental remediation actions. Intrusive activities at the sites would require a Health and Safety Plan be prepared specifying construction workers protection and monitoring requirements at the site(s). PRSs located within a proposed building envelope could be aggressively addressed as part of the site preparations. Mitigation measures could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule. Excavation and sampling of petroleum impacted soils areas will likely be the most effective manner to address these PRSs within an aggressive time frame.
Cultural and Historic Resource Constraints			
Historic Buildings	25	Each	See historic district description below.
Fort Belvoir Historic District	10.7	Acres	Negligible impact would be expected. Development within the historic district is permitted, however, design of buildings to reflect the character of the historic district should be considered.
Other Environmental Regulatory Considerations			
Air Quality	N/A	Not Applicable	Air quality permitting requirements will require all development be involved in calculating pollution loads and determining the most prudent air permitting course of action. The threshold value of 100 tons of NOx per year would trigger additional permitting requirements for large Fort Belvoir development projects.
Construction Permits	TBD		Disturbance of wetland will require permit. Sediment and Erosion Plan and Registration Statement also required for development projects.

Natural Constraints

Riparian Buffer Areas. Although there are no riparian areas within the Town Center parcel, there are 2 riparian zones in close proximity to the parcel border. The first of these is located 100 feet from the eastern border of the parcel. The riparian buffer surrounds a small tributary of Douge Creek. The second area is located 550 feet to the west of the area along a small tributary that eventually empties into Accotink Bay. No impact would be expected for the riparian areas near the Town Center footprint.

Operational Constraints

Airfield 500-ft Building Height Restriction. The entire area for the Town Center parcel (94 acres) occurs within the building height restriction surface buffers for Davison Army Airfield. This represents 60 to 180 feet above the runway elevation. The restrictions are relative to the airfield runway elevation of 73 feet above mean sea level. Designs for the Town Center parcel should reflect the site-specific ceiling limits for each portion of the development areas.

Solid Waste Management Units (SWMUs). The development areas for the Town Center parcel include 7 SWMUs which are located at the northern boundary, at the western boundary, and along 16th Street. Table 3–2 summarizes the SWMUs. Mitigation for these SWMUs range from administrative closure to site investigation including soil and groundwater sample collection and analysis. The cost estimates for the investigation of these SWMUs is about $500,000, and if fully funded would take about a year to complete. However, for those sites requiring confirmation sampling or site investigation, subsequent cleanup requirements can only be determined following analysis of the samples to determine if additional corrective action is required.

Table 3–2 SWMUs located in the Town Center parcel.

SWMU_ID	SWMU Description
B-10	Former PCB Storage Room Building 190
C-02	Outdoor Wash Rack east of Building 187
C-09	Indoor Car Wash Rack Inside Building 187
D-07	Bldg 187 Oil/Water Separator & Grit Chamber
G-09	Waste Oil UST South of Building 1197
H-02	Battery Storage Areas Building 1146
L-13	Holding Tank at Building 187

Hazardous Waste Management Units (HWMUs).
Three HWMUs are located within the development areas of the Town Center parcel. VDEQ has issued letters of concurrence with the no further action determination for all HWMU sites at Fort Belvoir. However, disturbance of these sites could result in a complete exposure pathway to human health and the environment. In these cases, it is likely VDEQ will require reopening the site to properly protect human health and the environment.

Table 3–3 HWMUs located in the Town Center ADP

HAZSITE_ID	HWMU Description
00181-hpcs	Underground Storage Tanks at Building 181
00190-hpcs	Aboveground Storage Tank at Building 190
01146-hpcs	Underground Storage Tank at Building 1146

Disturbance of HWMU sites can be mitigated by further characterizing the impacted area through sample and analysis and employing a Health and Safety Program including qualified industrial hygienists and a Health and Safety Plan (HSP). Additional investigation could identify if residual impacted soils exist and where they are located so that plans to excavate and remove the impacted soils can be developed. The HSP specifies worker training requirements, personnel protective equipment, air monitoring requirements along with health and safety protocols appropriate to the project. The industrial hygienists would oversee the activities to ensure compliance with the HSP. The cost estimates for this

mitigation are not considered significant as the specifications of the construction project itself will likely require a HSP for the general construction so addressing this constraint can be incorporated into the construction program without adding significant costs.

Petroleum Storage Areas (PSAs).
45 PSAs, 15 active and 30 inactive, have been identified on the Town Center parcel (Figure 3–5). Table 3–4 identifies all the active tanks and Table 3–5 indentifies the inactive tanks on the Town Center parcel. Mitigating these PSA constraints is a straightforward decommissioning process. Many of the open PSAs are unregulated, so a costly formal closure process can be avoided. On average, 1 in 3 USTs at Fort Belvoir is an old singlewalled steel UST, so it can be expected that some USTs will have a release previously undiscovered. This mitigation measure could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule.

Table 3–4 Active Petroleum Storage Areas in Town Center ADP

ACTIVE			
TANK_ID	TANK_ID	TANK_ID	TANK_ID
00193B 01148B 01147A 01196A	01150A 01156A 01157A 01197H	01197G 01197J 01197K 01197I	00191A 00191B 00193C

Table 3–5 Inactive Petroleum Storage Areas in Town Center ADP

INACTIVE			
TANK_ID	TANK_ID	TANK_ID	TANK_ID
00190A 01146A 01148A 01158C 01199A 01197B 01197D 01153C	01153A 01170A 00193A 00240A 00181F 01197C 01197E 00200A	00181B 00181E 00187A 00190B 00238A 00181A 01197A	01197L 01146B 01158A 01158B 01193A 01197F 01153B

Petroleum Release Sites (PRSs).
14 PRSs have been identified in the Town Center parcel (Figure 3–5). The PRS are summarized in Table 3–6. Petroleum releases were discovered at these locations, pollutant complaint numbers (PC #s) were assigned by the VDEQ, and various corrective actions/ remediation occurred at the sites. Any disturbance to the subsurface soil at these sites may require environmental remediation actions. Intrusive activities at the sites would require a Health and Safety Plan be prepared specifying construction workers protection and monitoring requirements at the site(s).

PRSs located within a proposed building envelope could be aggressively addressed as part of the site preparations. Mitigation measures if required could be integrated into the construction phase of the project in concert with the site preparation and earthwork features for minimal impact to the overall construction schedule. Excavation and sampling of petroleum impacted soils areas will likely be the most effective manner to address any residual contamination associated with these PRSs within an aggressive time frame.

This constraint can be mitigated by employing a Health and Safety Program including qualified industrial hygienists and a HSP. Most large construction firms are experienced in this area. The cost estimates for a Health and Safety Program to adequately address this issue are not considered significant as the specifications of the construction project itself will likely require a HSP. This requirement can be incorporated into the construction program without adding significant costs.

Table 3–6 PRSs located in the Town Center ADP

POLLUTION_SOURCE_ID	POLLUTION_SOURCE_ID
01158_1 01193_1 00181_2 01153_1 01197_1 01146_1 01146_2	00240_1 01199_1 00193_1 01197_2 00200_1 00181_1 00190_1

Historic Resource Constraints

Historic Structures.

The development areas for the Town Center parcel include 25 historic structures located along the western and southern boundary of the development area with the exception of Pullen Field, which is located in the northeast quadrant (Figure 3–6). These 25 structures are mostly located within, and contribute to the Fort Belvoir Historic District except for Pullen Field. Of the 25 historic structures, 20 are National Register of Historic Places (NRHP) eligible, and the eligibility of the other 5 remain unknown.

Historic Districts.

The development areas for the Town Center parcel include 11.5 acres of the Fort Belvoir Historic District along Gunston Road, 16th Street, and 18th Street (Figure 3–6).

Development within the historic district is permitted, however, mitigation measures should be considered. Example measures include tree buffers, building height restrictions so that the structure cannot be seen from the resource, and development and design themes matching the theme of the historic district.

Other Environmental Constraints

Air Quality.

If the pollution loads of a single proposed development in the Town Center Parcel exceed 100 tons of NOx per year, a New Source Review (NSR) would be required. The reviews typically take 18-24 months to complete. If mitigation and engineering controls such as selective catalytic reduction (SCR) can be used the pollution load can be lowered. The issue is installation-wide so Fort Belvoir should work with future tenants to address this issue.

Fort Belvoir is currently near the threshold of their current Title V permit. Disaggregating emissions sources and permitting processes is a novel approach that requires support from VDEQ. However, disaggregation should be examined further for this program as a feasible form of mitigation.

Construction Permits.

The lack of wetlands and perennial streams within the parcel alleviate the need to obtain a wetland permit or permits for stream crossings. It is possible that the Fort Belvoir development contractor will need to prepare and submit a sediment and erosion control plan to Fort Belvoir DPW-ENRD for approval as Fort Belvoir holds a MS4 Permit and self-regulates in this arena.

Town Center Parcel Conclusions

In light of the numerous environmental constraints at Fort Belvoir the constraints within the Town Center parcel are relatively small when compared to Fort Belvoir as a whole. This is especially due to the absence of natural constraints within the parcel. There are mitigation measures for the remaining cultural, historical, and operational constraints. The areas identified in Table 3–1 should be avoided where possible to facilitate the development of the Town Center parcel.

Buildable Areas

Buildable areas within the study area are shown in Figure 3–2. Except for building height restrictions due to the airfield, buildable areas are not limited by the previously described development constraints. Because these areas are the most cost-effective and readily available, development plans will aim to completely utilize buildable areas before venturing on to constrained land.

The Buildable Areas Overlay is generated by subtracting the constraints overlay area from the installation area. The constraints overlay utilizes all GIS constraint layers – natural, cultural and operational.

Figure 3–2 Buildable Areas Overlay Map

Legend

Developable Areas Overlay

Source- Fort Belvoir DPW GIS Department

NORTH

0 250 500 1000 1500 Feet

Figure 3–3 Water Resources

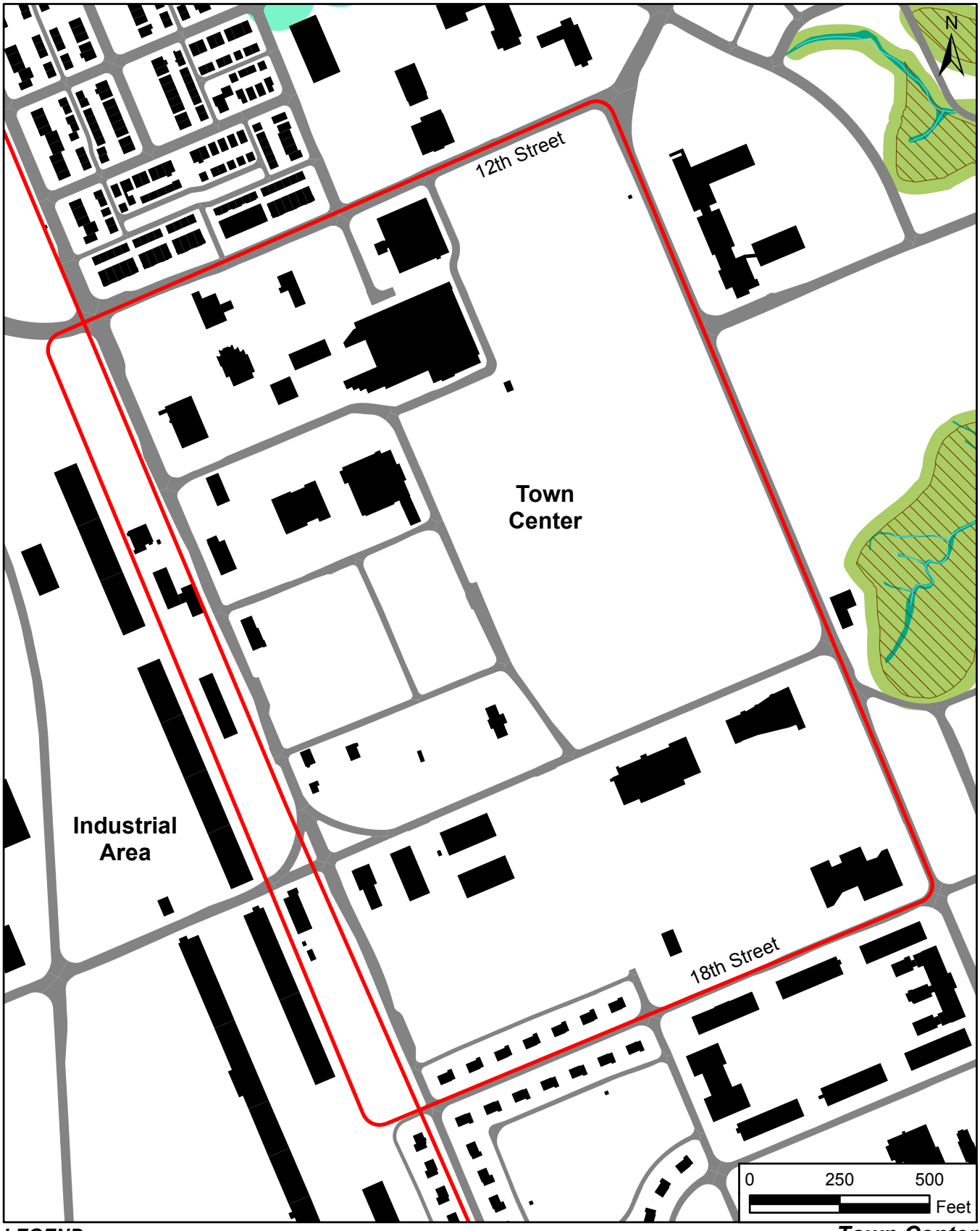


Figure 3–4 Sensitive Habitat

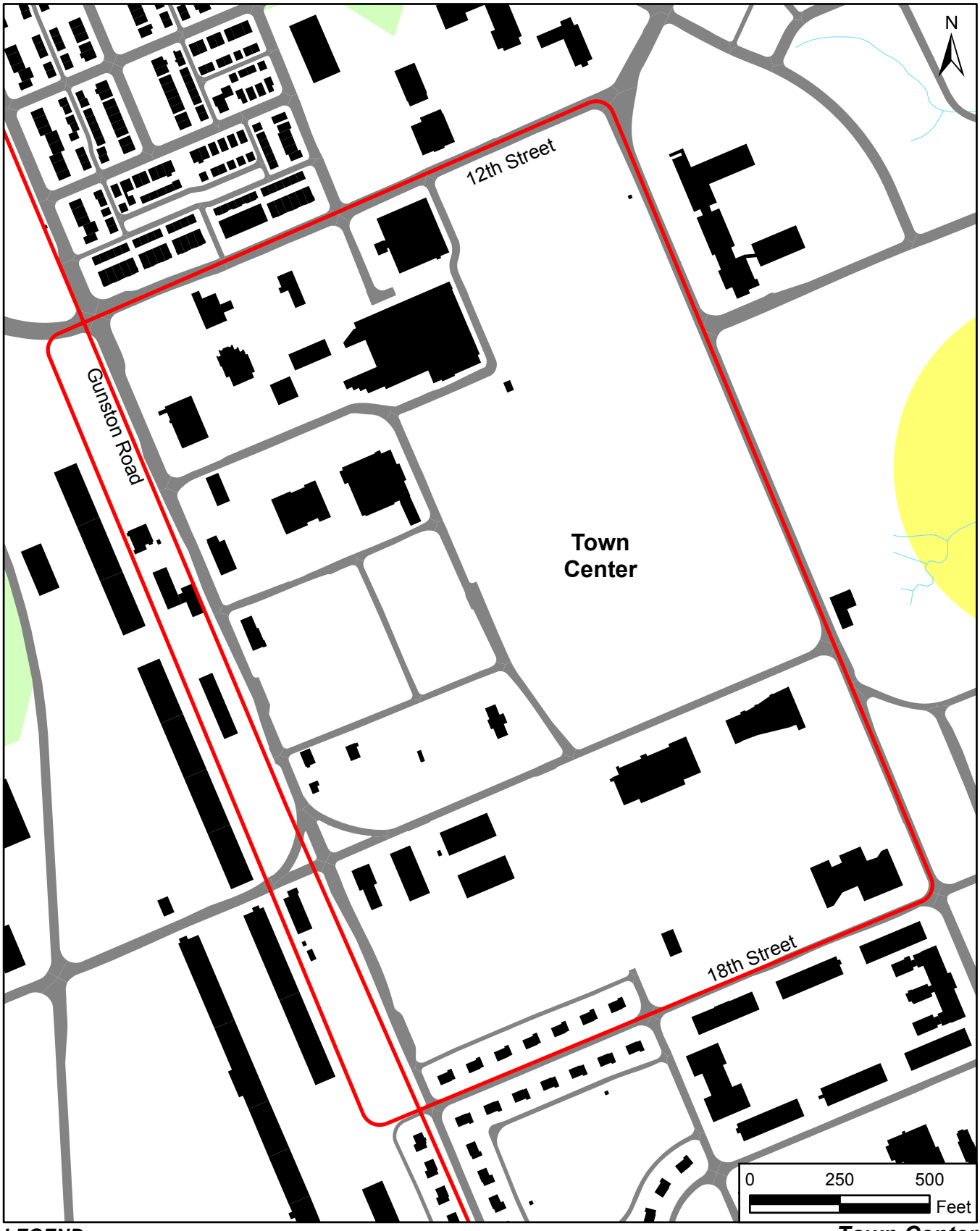


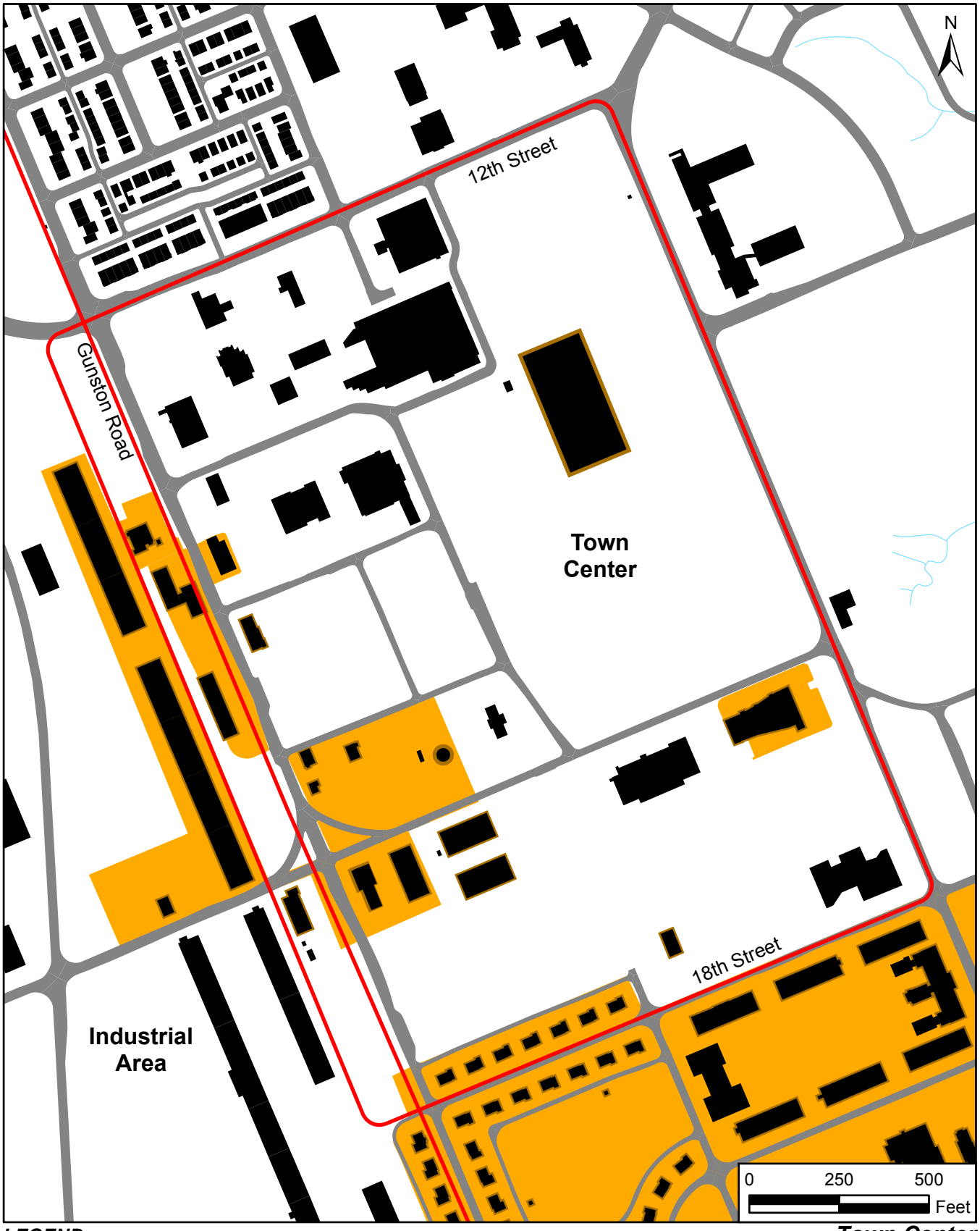
Figure 3–5 Operational Constraints

LEGEND

- ADP Boundary
- Petroleum Storage Area - Active
- Petroleum Storage Area - Inactive
- Solid Waste Management Unit
- Petroleum Release Site
- 150-ft Air Restriction Zone
- Former Range
- 500-ft Air Restriction Zone

Town Center
Operational Constraints

Figure 3–6 Cultural Resources



LEGEND

ADP Boundary

Historic District

Historic Building

Town Center
Cultural Resources

Table 3–7 ISR Rating Definitions

Rating	Definition
Q-1 (Green)	Minor facility condition deficiencies and no significant facility configuration deficiencies, with negligible impact on the capability to support the tenant organizations' required missions.
Q-2 (Yellow)	Some facility condition deficiencies and/or configuration deficiencies that have limited impact on the capability to support the tenant organizations' required missions.
Q-3 (Red)	Significant facility condition deficiencies and/or configuration deficiencies that impair the capability to support some of the tenant organizations required missions.
Q-4 (Black)	Major facility condition deficiencies and/or configuration deficiencies that present significant obstacles to the tenant organizations accomplishment of required missions.

Table Sources:
1. Military Planning Technical Manual
2. U.S. Army Installation Management Agency, Public Works Digest Vol. XVIII No.1, Jan/Feb 2006, downloaded from http://www.ima.army.mil/sites/pw/digest/pwd_janfeb06.pdf

Facilities and Operations

Each item of real property is defined as a facility. The Army uses four facility types for analysis purposes:

Land (L) - Land (in acres) comprises whole, or part, of a military installation owned in fee by the Federal Government and/or under custody and accountability of the Army.

Building (B) - Buildings (in square feet) are constructed on a space of land that is completely enclosed by a roof, walls, and usually flooring. It normally serves the purpose of occupancy.

Utility (U) - A utility (in capacity) is a distribution system, commodity source, or commodity collection point that provides a service or commodity to more than one building or structure.

Structure (S) - A structure is any real property facility that is not classified as a building, utility system, or land by the previous definitions. Typical examples are airfield pavements, roads, firing ranges, and athletic fields.

Source:
1. Department of the Army, Pamphlet 415–28: Guide to Army Real Property Category Codes, 11 April 2006

Building Quantity

The study area contains more than 30 buildings, totaling over 300,000 GSF. Appendix A-1 lists each existing building, its tenants, and functional use from the Real Property Inventory (RPI).

Building Quality

Installation buildings are always under consideration for maintenance and repair. In order to determine the current quality of a building, it is assigned a Quality or Q-Rating. These ratings are based on a ratio of restoration cost estimates ("cost to fix") to facility plant replacement value (PRV). Restoration cost is based on facility condition assessments conducted by facility occupants. These Q-Ratings are used to derive an installation-wide Quality Rating at the Facility Class level. All military services report Q-ratings using the same DoD methodology. The four Q-Ratings are defined in Table 3-4 that follows. Q-ratings for facilities can be found in the Installation Status Report (ISR). Q-rating colors are applied to the installation's GIS data to create a graphic overlay that clearly shows ratings in the study area. See Table 3–7.

Figure 3–7 Building Installation Status Report

Circulation Patterns

The basic boundaries of the proposed Town Center include Gunston Road to the west, Belvoir Road to the east, 12th Street to the north and 18th Street to the south. Circulation in the study area is categorized into primary roadways, secondary roadways, and alleys. These designations are defined by roadway characteristics and frequency of use.

Primary roads provide main access into the Post and internal circulation between North and South Post, and are heavily traveled. Primary roadways serving the proposed Town Center include:

- Belvoir Road, which is the main access point from Route 1 into South Post via Pence Gate. Belvoir Road is currently one lane in each direction.
- Gunston Road, currently one lane in each direction with left turn bays, provides connection between Lower North Post and South Post, including the proposed Town Center neighborhood.
- 12th Street, a two-lane road, links Belvoir Road to Gunston Road, as well as Pohick Road.
- 16th Street, a two-lane road links Belvoir Road to Gunston Road and onto Theote Road.
- Pohick Road lies at the northwest corner of the study area, is a two-lane roadway that provides access from U.S. Route 1 via Tulley Gate to the Town Center neighborhood.

Within the Town Center, a number of secondary roads provide internal circulation, connecting to the primary roadways. These roadways are Middleton Road, 14th Street and 15th Street.

Currently, there are three signalized intersections within the Town Center. They are at the following intersections:

- Belvoir Road and 12th Street
- Gunston Road, 12th Street and Pohick Road
- Gunston Road and 16th Street

Other intersections within the study area are under stop-controlled conditions. The major circulation problem in the Town Center is the intersection of Pohick/Gunston/12th. This intersection has often been referred to as the 100% corner as most traffic from lower South Post destined to North Post must travel through this intersection, as well as most traffic using Pohick Road also traverse through this intersection to their destinations.

Figure 3–8 Roads, Circulation and Parking

Existing Buildings
Railroad
Metro Route REX
Metro Route 11Y
Fairfax Bus Route Series 100 (Huntington)
Fairfax Bus Route Series 300 (Huntington)
Fairfax Bus Route Series 200 (Huntington)
Security
Parking and sidewalks
Road
Recreational Trails
Fence

4 Program Requirements

Overview

The following is a summary of the near term requirement and long term program strategy.

Existing Tenants and Functions

The existing Town Center is a well-developed area of Belvoir with a mix of uses that includes housing, recreation, retail, office and installation support functions.

Proposed Projects

The Near Term plan for the Town Center is that by 2015 there will be projects that cover construction, renovation, and demolition and/or replacement of other buildings. All the projects are detailed in Figure 8–2 "Near-Term Development Strategy 2015" and the accompanying chart on A-2 "Strategy for Future Block Development" these lay out the plans along with square footage and other details of the 2015 plan.

In addition, Army & Air Force Exchange Service (AAFES) plans on building a shoppette on the corner of Pohick and Gunston Roads that will include a gas station, car wash and Burger King restaurant. The historic fire house will be replaced with a new one along Gunston Road, a new credit union will be built, and there is a plan to add structured parking.

Long-Term Program Strategy

Although near-term needs are specific, long term strategy is flexible to accommodate other uses. One scenario studied during the planning of the Town Center as a mixed use neighborhood identified redevelopment could accommodate up to 1,000,000 sq ft of office space, ±400 housing units, ±300,000 of retail, ±250,000 of civic space, and necessary parking to accommodate the development. If the strategy for the redevelopment of the Town Center is realized the only thing impeding future development is the transportation infrastructure of the region.

Figure 4–1 Long Term Program Capacity
As determined by preferred framework plan developed in Planning Framework, Chapter 6

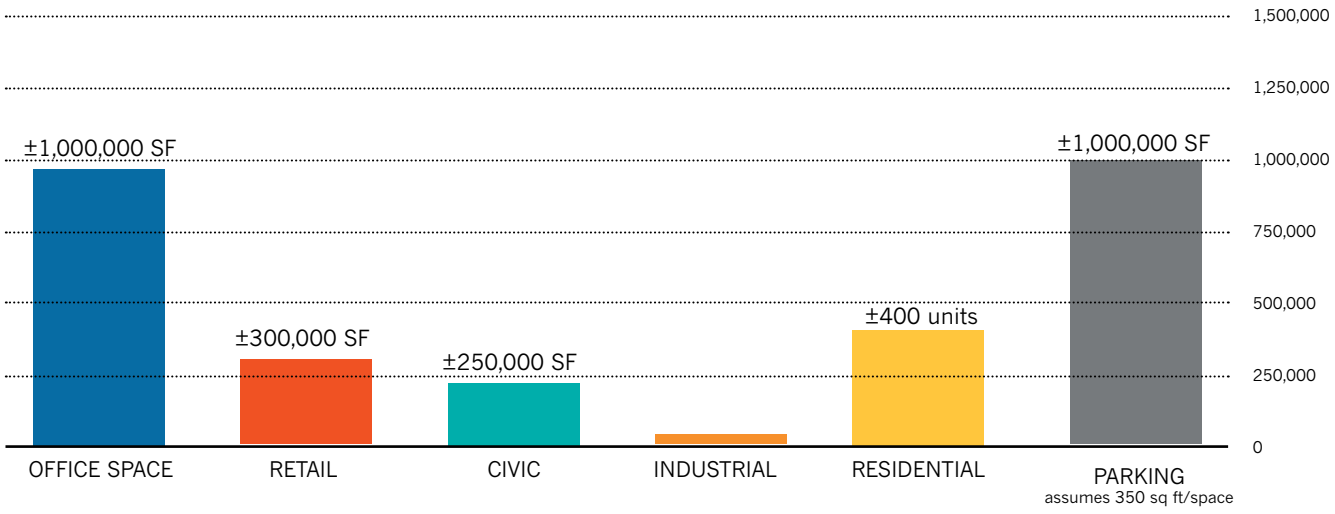


Table 4–1 Near Term Projects

Project Number	Project Name	PROJECT DESCRIPTION/ (COMMENTS)	FUNDING SOURCE	SIZE (GSF/PN)	CWE	1391 PROGRAM YEAR (FY)
65592 (EIS #17)	PEO EIS Admin Facility	Renovate and expand current PEO facilities (including AKO facilities) to support incoming BRAC activities. (This project currently considered discretionary.)	BCA	290,000 SF 850 PN	$103 M	
67321 (EIS #17)	Secure Admin Facility for PEO EIS	Construct a secure administrative facility for BRAC personnel coming from Ft. Monmouth. (This project not currently recognized by BRAC.)	BCA	157,400 SF 454 PN	$69 M	
64234	Secure Admin Facility	Construct admin facility for Army Lease activities on Fort Belvoir. (This project not currently recognized by BRAC.)	BCA	789,326 SF	$314 M	2010
61453	Replace South Post Fire Station	Replace existing, inadequate South Post fire station in historic Bldg. 191 with a standard design, 2-company, satellite fire station.	MCA	10,297 SF	$3.6 M	2009
61452	Emergency 911 Center	Renovate historic Bldg. 191 for conversion to an emergency operations center after South Post fire station moves into new facilities.	MCA - Validated	9,200 SF	$2.05 M	2012
65218	Expand Main Post Library	Expand and modernize existing library on 12 th Street, South Post, to support increased population.	MCA	Add: 11,500 SF Ren: 13,000 SF	$7.5 M	
57837	South Post Fitness Facility	Replace Specker Field House with a modern recreation center, including indoor swimming pool and jogging track, ball courts, apparatus rooms, health bar, and other recreational facilities.	MCA	89,448 SF Pool: 5,800 SF	$21 M	
65314	Expand Recreation Center	Renovate and expand SOSA Recreation Center.	NAF	10,500 SF	$2.45 M	
65141	Expand Bowling Center	Renovate and expand existing bowling center; add ten lanes.	NAF	Bowl: 10,750 SF Storage: 350 SF Snack bar: 500 SF	$2.65 M	
65447 (EIS #11)	USANCA Support Facility	Replace existing USANCA facility. (Renovate BLDG 238)	BCA			2008
67320 (EIS #3)	Missile Defense Agency Facility	Construct a facility for MDA (North end of P-1 Parade field).	BCA	89,522 SF	$25.1 M	2008

5 Planning Principles

Figure 5–1 Town Center: Reinvesting in the Main Post

Overview

The Belvoir New Vision master plan embraces many principles from connected street grids, accessible open space and appropriate and compact development. The recently established LEED for Neighborhood Development (ND) pilot program is aligned with these principles and provides a open forum to further organize and raise awareness of these complex and comprehensive issues. The LEED ND system emphasis is to:

- Revitalize existing urban areas
- Reduce land consumption
- Reduce automobile dependence
- Promote pedestrian activity
- Improve air quality
- Decrease polluted stormwater runoff
- Build more livable communities for people of all income levels

LEED for Neighborhood Development

Implementing best practices in sustainable design is key for the post to maintain it's long standing commitment to conserve the natural beauty of the land and preserve their standing as one of America's enduring installations. The purpose of LEED ND pilot program is to provide an accessible and comprehensive framework to make environmentally sensitive and livable places. The framework incorporates the principles of smart growth, new urbanism and green building technologies. Participation in the program would be a first for the US Military and will help provide an example for other installations for Fort Belvoir to continue as a model world-class installation.

What is a "Neighborhood Development"? The LEED ND rating system is designed to certify exemplary development projects that perform well in terms of smart growth, new urbanism, and green building.

The LEED ND rating system is organized into three sections: smart location and linkage, neighborhood patterns and design, and green construction and technology.

Smart Location and Linkage
The goals and intent of the smart location and linkage principles are largely addressed within Chapter 3 (Existing Site Character) in the mapping of natural constraints and defining where to build and where not to build.

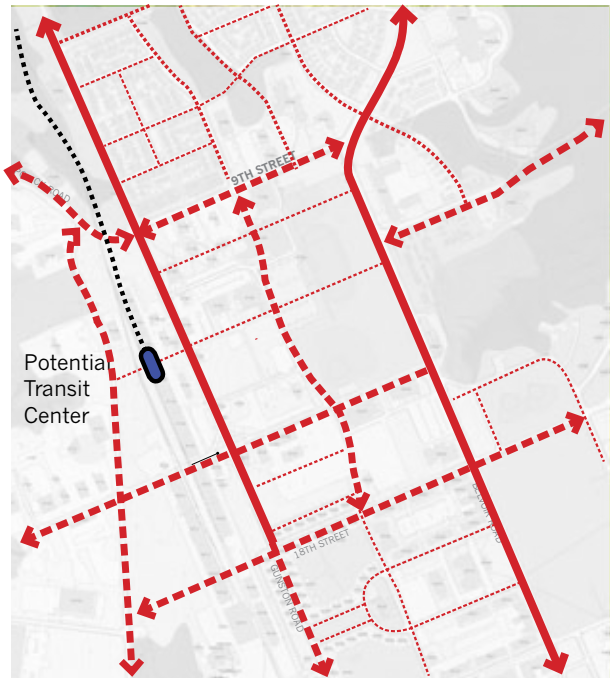
Neighborhood Design and Pattern
Chapter 6 of this document (Planning Framework) addresses many of the credits in the Neighborhood Design and Pattern section regarding compact development, walkable neighborhoods and diversity of uses.

Green Technologies and Construction
Strategies to address the green technologies and construction are contained within Chapters 7 (Planning Recommendations) as well as Chapter 8 (Implementation) to ensure that the future projects within the ADP will maintain the highest standards of construction. This is in conjunction with meeting the current Federal Mandates in both water and energy consumption and achieving individual building certification under the LEED for New Construction where required.

General Planning Principles

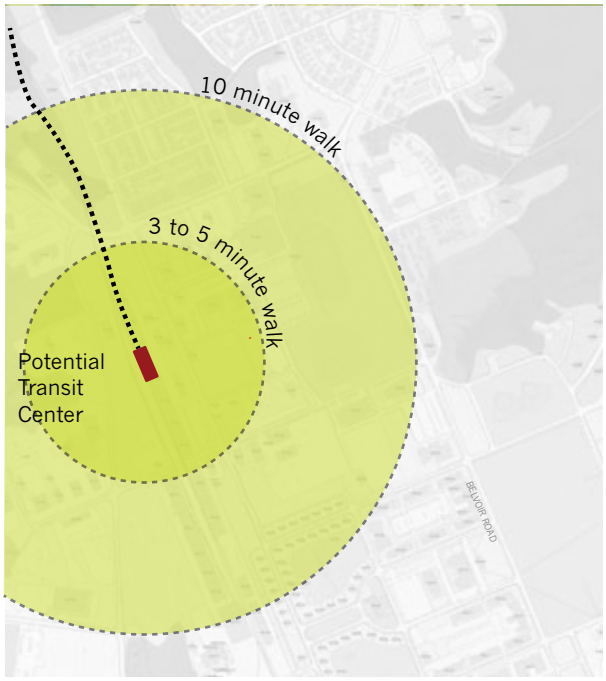
- **Buildings should reinforce the common campus edges.** This includes the central open space. Buildings should be in conversation with one another. An attention to the compatibility of uses and building typology is critical along any common campus areas.
- **Locate parking at the perimeter of each campus** area along the major access routes. This will reinforce standoff requirements and provide optimal development area for programs.
- **Connect buildings and places** with pedestrian paths and a series of "campus gardens".
- **Maintain and preserve views** and sight lines to important open spaces from each campus area
- **Develop a hierarchy of streets** and points of access that are coordinated with the larger transportation strategy.
- **Reinforce a comprehensive strategy for security** and AT/FP requirements that is integrated with building siting, access and overall development concept.
- **Initiate collective approaches** for stormwater management, ancillary uses, and remote truck inspection areas that share resources to optimize site development and program integration.
- **Promote sustainable strategies** that minimize development impact and embrace forward thinking and best practices in site planning, open space design, and architecture.
- **Develop a feasible and constructible strategy** that is sensitive to schedule and costs.

Figure 5–2 Town Center Planning Principles



Streets

NORTH



Transit

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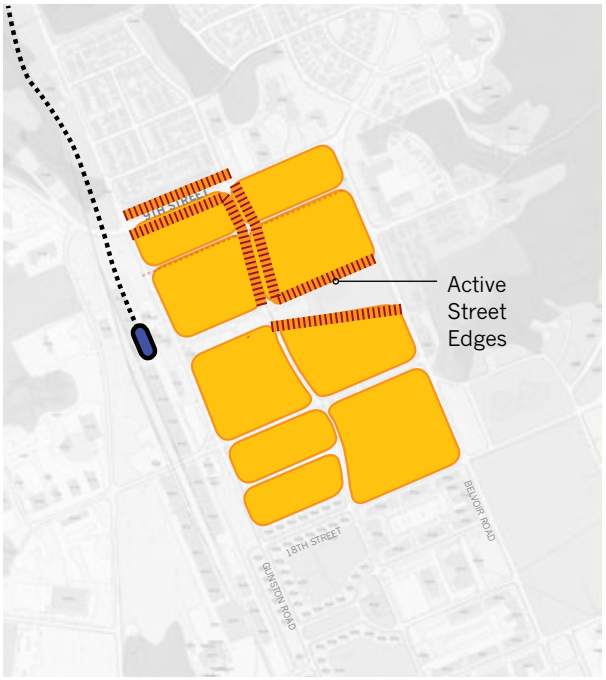
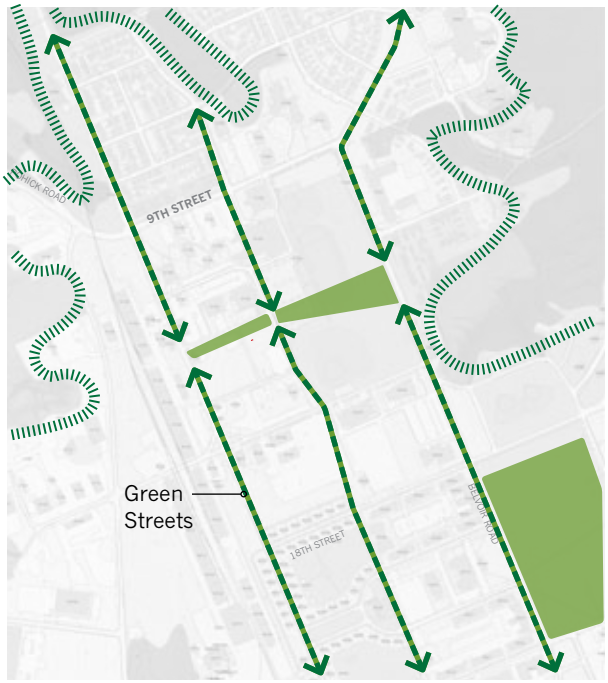


Blocks and Retail Streets

NORTH



Open Space

NORTH

6 Planning Framework

Overview

The goal of a planning framework is to establish a street framework and block pattern that can allow for a variety of scenarios of intensity or diversity of use. The planning principles endorsed with LEED ND encourage compact growth, promote pedestrian activity, improve air quality, and work together to create a living framework that can be adjusted without sacrificing the quality of place in response to future needs of tenants as the neighborhood continues to grow and develop. The end state of the intensity and use will be a balance of intensity and use within the recommended framework allows for a flexibility to respond to future demands.

Required NEPA Documentation

The new Town Center including the new Missile Defense Agency (MDA) building were included in the larger Environmental Impact Statement (EIS) that covers all projects being built by 2011 as part of the BRAC action. This includes all roads and infrastructure; therefore there is no additional National Environmental Policy Act (NEPA) documentation required for this area of the post. Any future growth may need an additional Environmental Assessment including any additional road improvements that may occur in the future.

The entire Master Plan documentation needs to have an EIS or EA approved once it is completed.

Framework Plan Alternatives

Before arriving at the preferred plan, several alternatives were explored in order to ensure all implications of a siting decision are understood and to illustrate different means of achieving the common planning principals. Each alternate scheme generates varying amounts of new building construction based on the amount of space designated for outdoor motor pools and storage. New building efficiencies are also affected by the building size and the amount of existing buildings that may be preserved.

Evaluation Criteria

In addition to the principles of LEED ND, the following factors should be considered when evaluating the schemes:

1. What are the environmental impacts and benefits?
2. What are the cost differentials?
3. What are the operational cost savings?
4. What are the long term maintenance implications?
5. Is the aesthetic and design consistent with the Installation Design Guide?
6. Are the strategies compatible with intended use?

Figure 6–1 Framework Plan Alternatives

Alternative A: Residential Emphasis
Enhance the Town Center with a renewed civic park and emphasize the future of Town Center as a mixed use residential neighborhood.

Alternative B: Office Emphasis
Emphasize the future of Town Center as a mixed use office campus adjacent to a potential transit center.

Alternative C: Civic Emphasis
Create a new school in the Town Center and strengthen the civic neighborhood with a renewed town center park.

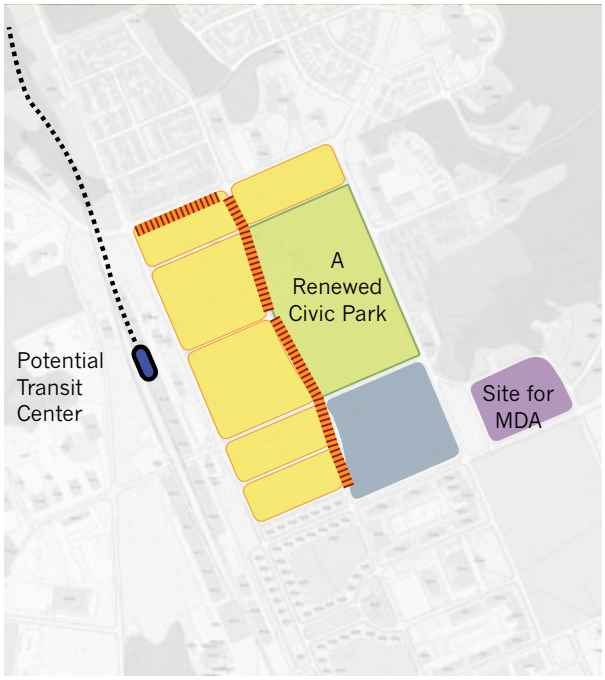
Office/Administrative

Civic/Community

Residential

Open Space

Active Street Fronts



Alternative A: Residential Emphasis

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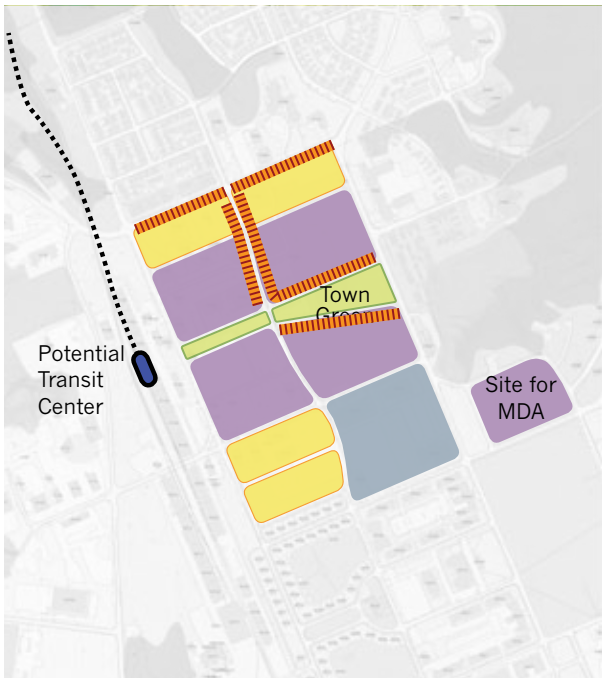

Alternative B: Office Emphasis

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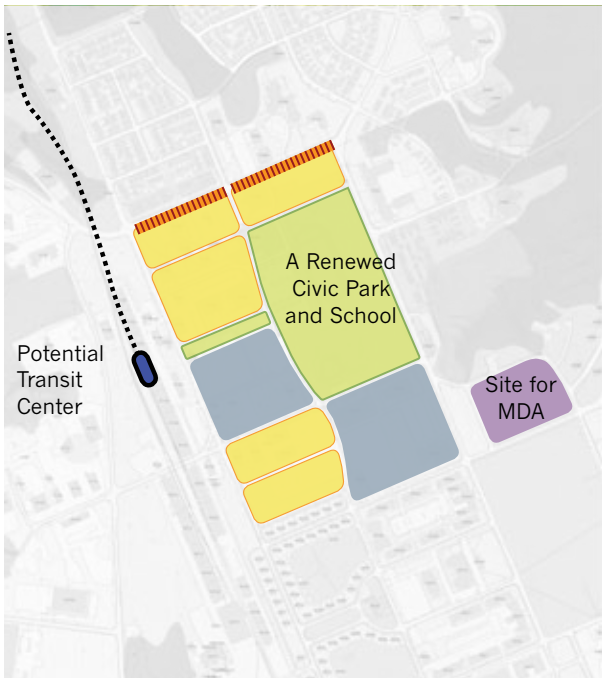


Alternative C: Civic Emphasis

NORTH

Long Term Framework

The preferred framework illustrated in figure 6–3 allows for the flexibility of any of the alternatives (residential, civic or office focus) described in the previous chapter to be achieved. The goal of this ADP is to take advantage of the fact that the town center sits on the developable plateau of Belvoir and create a "heart" for the installation at this town center that has more 24/7 activities to become a more pedestrian-friendly, walkable area. The general emphasis has been to focus the Town Center as a strong mix of residential, retail and civic uses. The appropriate tenants will be included as this discussion continues to evolve with key stakeholders.

The framework encourages compact development with a recommended density for non-residential of 1.0 FAR and build any residential components of the project at an average density of seven or more dwelling units per acre of buildable land available for residential uses. If achieved, the redevelopment of Town Center area could accommodate more than 3,000,000 square feet of space.

Table 6–1 Town Center Block Framework

Block No	Land Use	Area-SF (Measured)	Area-SF (Rounded)	Area (Acres)
A1	Residential/Retail	218,461	219,000	5.1
A2	Residential	238,000	238,000	5.5
A3	Residential/Office/Retail	359,097	360,000	8.3
A4	Recreational Space	434,964	435,000	10
A5	Residential/Office	398,500	399,000	9.2
A6	Office/Retail	400,000	400,000	9.2
A7	Residential/Retail	217,925	218,000	5.1
A8	Residential/Retail	193,739	194,000	4.5
A9	Residential	539,937	540,000	12.4
A10	Office	269,860	270,000	6.2
TOTAL AREA		3,579,693	3,583,000	82.3

Figure 6–2 Preferred Block Framework

Proposed Block

Proposed Open Space

Area Development Plan Boundary

7 Planning Recommendations

Development Strategy

— Relocate Dental Clinic to the Hospital Area and replace with new Child Development Center
— Housing over retail and other services
— New administrative program offices over retail and other services
— Structured parking for employees
— A new civic park and central open space
— New Missile Defense Agency on former recreational fields and replace fields
— Replace fitness center with library expansion
— New community fitness center / indoor pool
— New parking garage for historic area uses Coordinate with possible expansion to Sosa Community Center
— New residential units between 12th and 16th Streets
— Renovate theater
— Renovate and expand Sosa Community Center

Relationship to Long Range Development Plan

Redevelopment of the Town Center will also adhere to these important guiding principles, specifically:

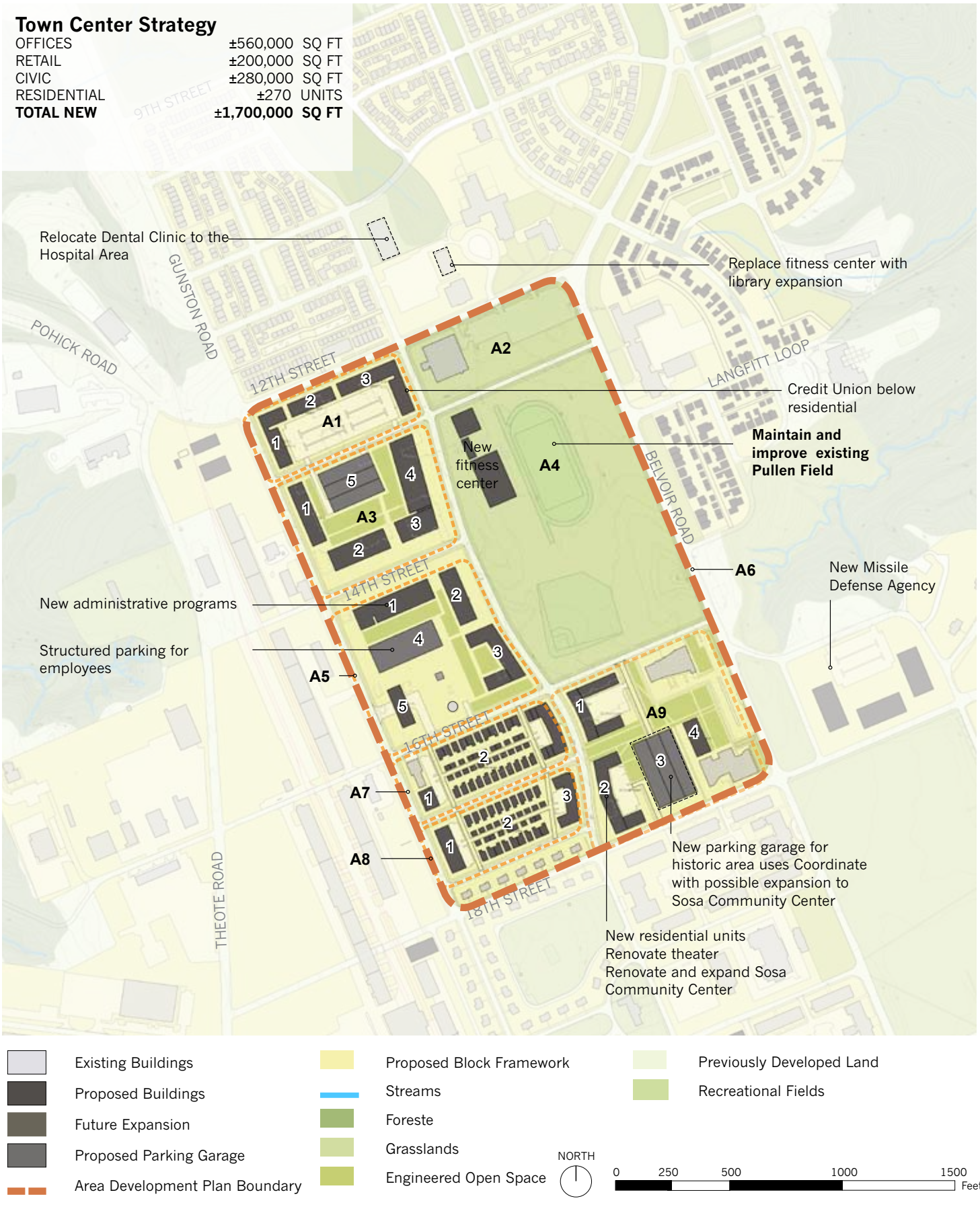
— Optimize use of existing roads, parking, outdoor loading areas, and other paved areas
— Increase diversity of campus functions – to allow locating noisy/unsightly facilities with bigger footprints behind buffers comprised of smaller, community-oriented facilities
— Increase diversity of functions within each cluster – to allow for a gradual transition between land use clusters and create better functioning, more visually appealing environments .

Figure 7–1 Near Term Proposal for the Town Center Area

Table 7–1 Proposed Town Center Building Development Summary

Block	Building No.	Primary Use	Building Footprint-SF	No. Floors	Total GSF	Dwelling Units 1,500 sf/DU	Parking Garage 350 sf/car	NOTES
A1	**1**	RESIDENTIAL/RETAIL	17,000	3	51,000	20		
	2	RESIDENTIAL/RETAIL	12,000	3	36,000	20		
	3	RESIDENTIAL/RETAIL	27,000	3	81,000	40		Potential site for Credit Union
subtotal					**168,000**	**80**		
A2		NO NEW DEVELOPMENT			0			
A3	**1**	RESIDENTIAL/RETAIL	18,000	3	54,000	40		
	2	OFFICE	24,000	2	48,000			
	3	OFFICE	17,000	4	68,000			
	4	OFFICE	33,000	4	132,000			
	5	PARKING GARAGE	43,000	5			600	
subtotal					**302,000**	**40**	**600**	
A4	**1**	FITNESS CENTER	57,000	2	114,000			Possible fitness center w/ bowling alley
A5	**1**	OFFICE	32,000	4	128,000			
	2	OFFICE	14,000	4	56,000			
	3	RESIDENTIAL	27,000	3	81,000	26		
	4	PARKING GARAGE	27,000	5			400	
	5	CIVIC	15,000	2	30,000			Potential site for the new South Post Fire Station
subtotal					**295,000**	**26**	**0**	
A6	**1**	RETAIL	17,000	2	34,000			Long term project
	2	OFFICE	30,000	4	120,000			Long term project
	3	CIVIC	47,000	5	235,000			New Hotel -- Long term project
	4	PARKING GARAGE	51,000	5			730	Long term project
subtotal					**389,000**		**730**	
A7	**1**	RESIDENTIAL/RETAIL	6,000	3	18,000	6		
	2	RESIDENTIAL	37,000	2	74,000	22		
	3	RESIDENTIAL/RETAIL	12,000	3	36,000	16		
subtotal					**128,000**	**44**		
A8	**1**	RESIDENTIAL/RETAIL	13,000	3	39,000	13		
	2	RESIDENTIAL	23,000	2	46,000	20		
	3	RESIDENTIAL/RETAIL	15,000	3	45,000	15		
subtotal					**130,000**	**48**		
A9	**1**	RESIDENTIAL/RETAIL	26,000	3	78,000	26		
	2	RESIDENTIAL/RETAIL	26,000	3	78,000	26		
	3	PARKING GARAGE	34,000	5			500	
	4	CIVIC	10,000	1	10,000			SOSA Expansion
subtotal					**166,000**	**52**	**500**	
TOTAL NEW (ROUNDED)					**1,700,000**	**270**	**1,830**	

Figure 7–2 Building Development Strategy for the Town Center Area



Building Siting

Encourage the design and construction of buildings to utilize green building practices. Design, construct, or retrofit one building as part of the project to be certified under one of the following
LEED building rating systems: LEED for New Construction, LEED for Existing Buildings. Encourage the design and construction of energy efficient buildings to reduce air, water, and land pollution and environmental impacts from energy production and consumption.

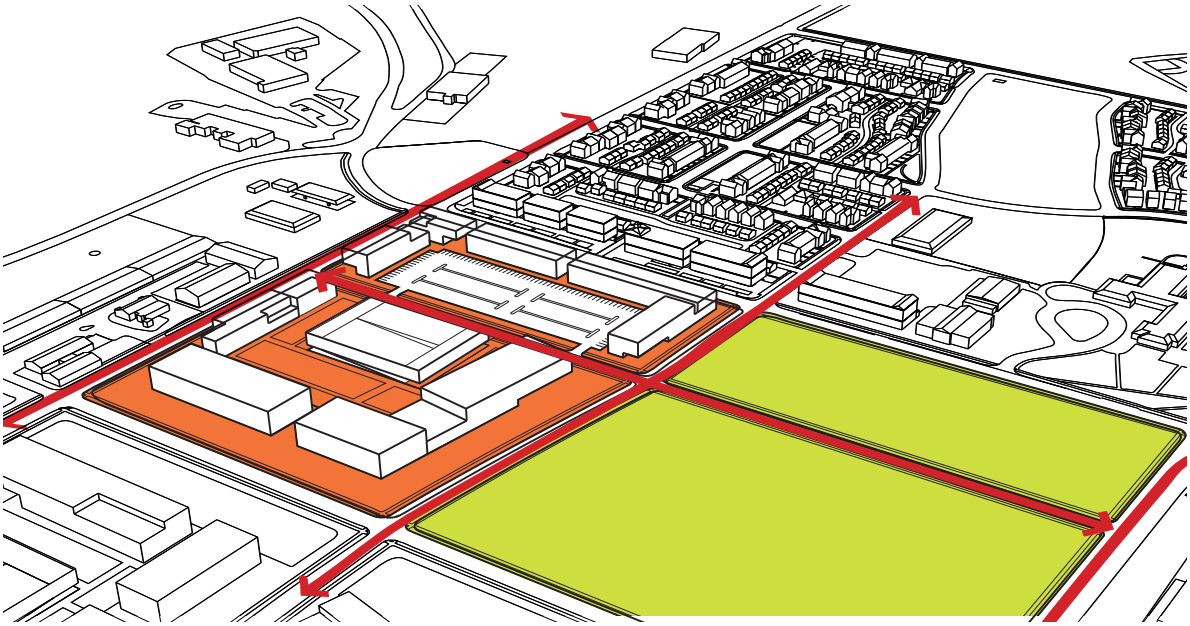
LEED Standards

The following are LEED standards relating to the Town Center and should be considered during the implementation phase:

- Evaluate existing facilities for continued use and reuse
- Reduce environmental impacts through site selection
- Provide alternative transportation
- Protect open space and reduce site disturbance by reducing development footprint
- Implement stormwater management to control flow-rate and treatment
- Landscaping to reduce heat impacts
- Create water-efficient landscaping
- Reduce water use
- Use renewable energy

Sources:
1. www.usgbc.org downloaded on May 17, 2007
2.The U.S. Green Building Council, LEED-NC Application Guide for Multiple Buildings and On-Campus Building Projects, October 2005
3. The U.S. Green Building Council, Green Building Rating System for New Construction and Major Renovations (LEED-NC), Version 2.1, March 2003
4. The U.S. Green Building Council, Green Building Rating System for Existing Buildings, Upgrades, Operations and Maintenance, Version 2, July 2005

Encourage site planning strategies that:



Building Character

Retail

The retail programs proposed within the Town Center should be coordinated with the tenant programs and requirements. Current proposals include retail space and food services. These new retail buildings will be generally one to two floors and should reinforce a high quality pedestrian environment.

Alexandria

Landscape

Bioretention Systems

Utilize native landscaping and soils to treat stormwater runoff by collecting it in shallow heavily landscaped swales and basins.

Environmental Benefits

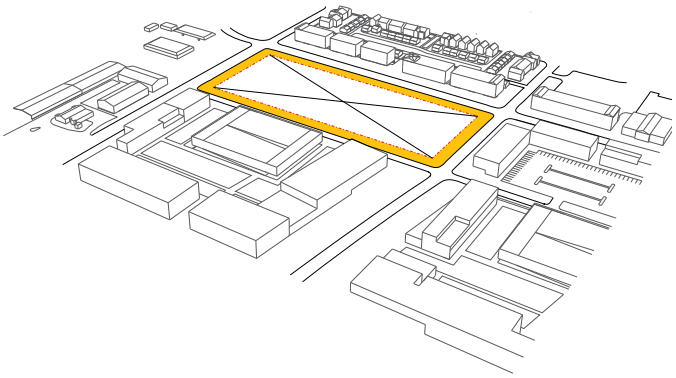
- Detain and Filter Stormwater on site.
- Recharges groundwater and sustains flows to natural water bodies.
- Reduce Pollutants in Stormwater Runoff.
- Diversify Site Habitat

Financial Benefits

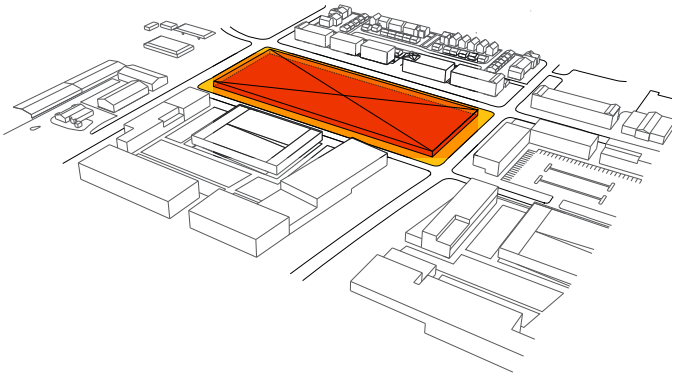
- Reduce Maintenance Costs - compared to conventional lawn surface or irrigated plantings.
- Aesthetic Value
- Reduce need for costly Stormwater Infrastructure

Figure 7–3 Residential Block Framework

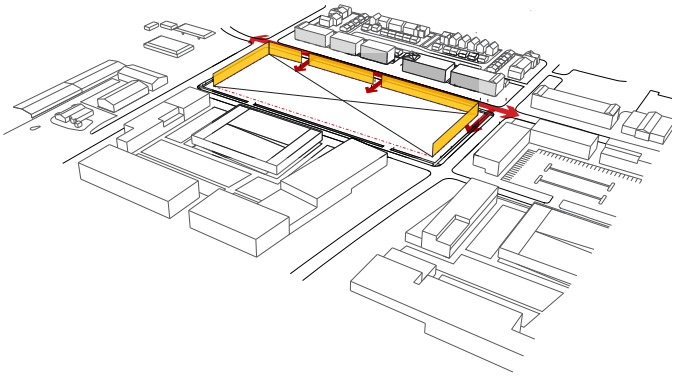
Setback
All AT/FP requirements shall be developed in concert with the building design and IDG



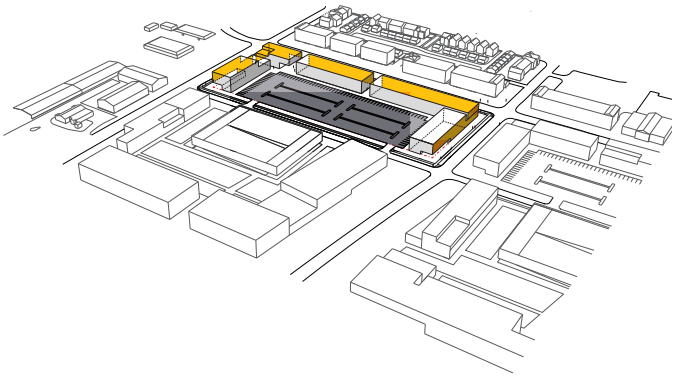
Density
The framework encourages compact development with a recommended density for non-residential of 1.0 Floor Area Ratio (FAR) and build any residential components of the project at an average density of seven or more dwelling units per acre of buildable land available for residential uses.



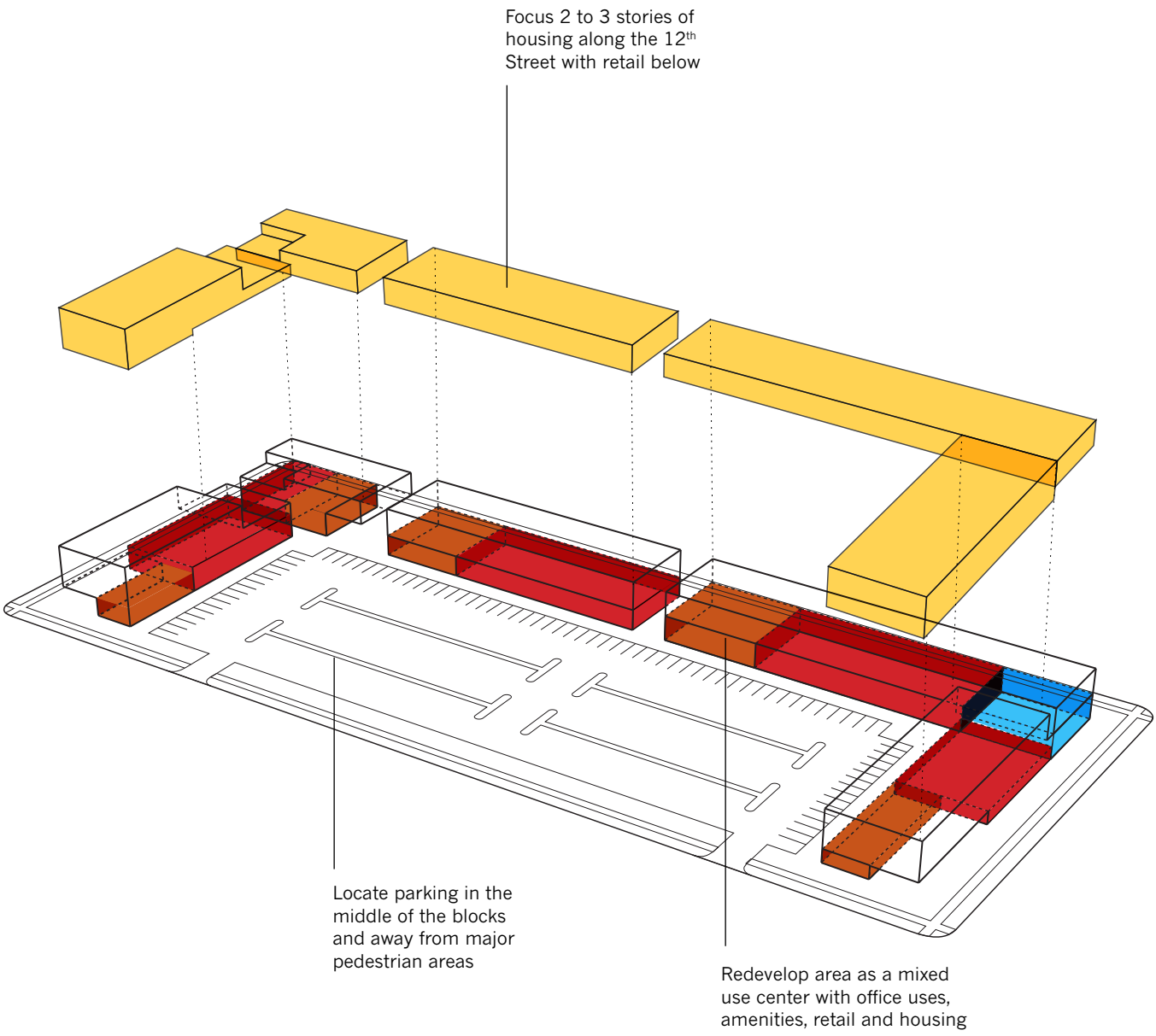
Streetfronts
Emphasize important streetfronts to encourage more density, more 24/7 activities to become a more pedestrian-friendly, walkable area



Massing
Conserve land. Promote livability, transportation efficiency and walkability.



Residential Typology



Building Guidelines

General recommendations and building guidelines are organized into building material and color, response to climate, pedestrian emphasis, building height and roof form, and building flexibility.

Response to Climate

— All new facilities should be developed to meet and/or exceed LEED Silver criteria
— Building orientation and design should optimize the ability for day lighting in most administrative and public spaces
— Buildings should be designed to "shade themselves". Design should take advantage of the existing woodlands and forested areas as part of an integrated design solution.

Mixed use; Housing above retail

Parking Garage

Structured parking is a critical aspect in the ability to optimize the developable portions of the site to build new buildings without disturbing environmentally sensitive areas. Parking structures should be located along the perimeter of each campus area, allowing immediate access from the north and south campus parkways

Structured parking with retail on first floor

Buildings - Green Roofs

Environmental Benefits

- Water Conservation/ Reduced Stormwater Runoff
- Fire Prevention
- Habitat Recreation
- Noise Reduction

Financial Benefits

- Conservation of Water Management Systems
- Extension of Roof Life
- Energy Conservation
- LEED Certification Points
- Aesthetic Value

LiveRoof System - www.LiveRoof.net

- Easily handled and transported
- Implement on both new and existing structures.
- Reduce Costs - Cultivate native plant life from seeds.
- Plantings can grow offsite during construction or retrofit or within vacant paved areas as temporary greenhouses.

Surface Parking

Reduce heat islands to minimize impact on microclimate and human and wildlife habitat.

Provide the following strategies for the non-roof impervious site landscape (including roads, sidewalks, courtyards, parking lots, and driveways):

- Shade (within five years of occupancy)
- Paving materials with a Solar Reflectance Index (SRI) of at least 29
- Open grid pavement system
- Place off-street parking spaces under cover

Porous Concrete

A specific mix of concrete creates stable air pockets to be encased within it, allowing water to drain uniformly through the material into the ground below.

Infrastructure Strategy

The Area Development Plan for the Town Center area significantly reconfigures the existing road networks. New building locations as proposed in the ADPs will conflict with many of the existing utilities. Since much of the existing water, sanitary sewer, and storm drainage systems are over 50 years old and nearing the end of their useful life, we recommend that the construction plan provide for replacement of most of the existing systems in each area. This may also provide an opportunity to construct more efficient utility networks with potential operational savings; for example, some existing pump stations which will require replacement or expansion can be combined.

We have developed potential water distribution, storm drainage, and sanitary collection systems for each of the Area Development Plans to serve as guidance for replacing and relocating these systems as new development is funded. These are described below. Overall conceptual sanitary, water and storm layouts are shown in Figure 7–4 to 7–6.

We also developed preliminary calculations to determine the quantity control volumes needed with the anticipated redevelopment. Approximate facility sizes are shown assuming a five-foot depth of storage. Quality control will also need to be provided; it could be provided within the quantity volumes shown or be provided separately. Facility locations were determined based on space and the topography of the area.

Ultimate development to the densities shown in the long-term strategy will require a combination of surface treatment for quality control, with above ground basins or below ground storage to provide the required quantity control. The conceptual storm plan can be used to guide location and design of drainage systems as future projects are authorized.

Design of all new facilities which require relocation or replacement of existing utilities should consider the ultimate anticipated development in the surrounding area, including the entire upstream sanitary or storm drainage-shed. New infrastructure should be designed to serve the new building; the existing adjacent facilities to remain; and, to the extent possible, the ultimate development in the adjacent area. For example, if a new building requires relocation of an existing 8-inch water main, and ultimate development requires the main to be increased to 12-inches; the portion of the main being relocated should be constructed to the ultimate 12-inch size. Similarly, new storm water conveyance facilities and new sanitary sewers should be designed and constructed for the ultimate anticipated flow from the upstream area. New storm water management facilities should be designed with adequate area to allow for expansion to serve future development in the drainage area.

Assuming that quality control is provided by rain gardens or similar low impact development (LID) facilities near each new building; additional quantity control is provided by a storage facility located to serve several blocks of the area. When the initial building is constructed, possibly with temporary surface parking, an LID facility is built adjacent to it, and the first portion of the quantity control facility is built. As additional buildings are constructed, surface parking is replaced with structured parking, additional LID facilities are built, and the quantity control facility is enlarged. Eventually the quantity control facility may be replaced by an underground structure to provide quantity storage.

Conceptual Utility Plans

Sanitary:
Long-term strategy of the Town Center area will require an entirely new network of sanitary sewer piping. The northern portion of the area, between 12th Street and 16th Street, generally flows toward the west. The pipes collecting sewage from the buildings could discharge into a main trunkline running south along Gunston Road and will continue running south, eventually tying into the existing system within the Industrial Area (See Figure 7–4). The buildings south of 16th Street could drain to the west and east. The area to the east could tie in to existing pipe in the Industrial Area and the flow from the west could tie into an existing pipe along Belvoir Road. Refer to Figure 7–4 for the proposed sanitary layout.

As the design is more refined in this area, a capacity analysis must be performed to determine whether the existing downstream sanitary sewer pipe is adequate for the proposed development.

Storm Water Management:
There is a ridgeline essentially down the middle of the Town Center Area, running in the north-south direction. The runoff from the east side of the Town Center Area will be collected into several SWM facilities and discharge to streams that eventually connect to Dogue Creek. The runoff from the west side will drain through a series of SWM facilities or to an existing storm system that drains to Accotink Bay. Refer to Figure 7–5 for the Town Center long term SWM plan.

Water:
The Town Center area will require a new network of pipes to accommodate the full build out plan. Major interconnections can be made at the water lines running along Belvoir Road and 12th Street. Refer to Figure 7–6 for the proposed water system layout.

Electrical Power

Electrical distribution at Fort Belvoir Main post has been privatized and is now provided by Dominion Virginia power. (DVP). DVP has a robust distribution network both on and off Main Post and can provide additional capacity as required.

Primary Electrical Lines

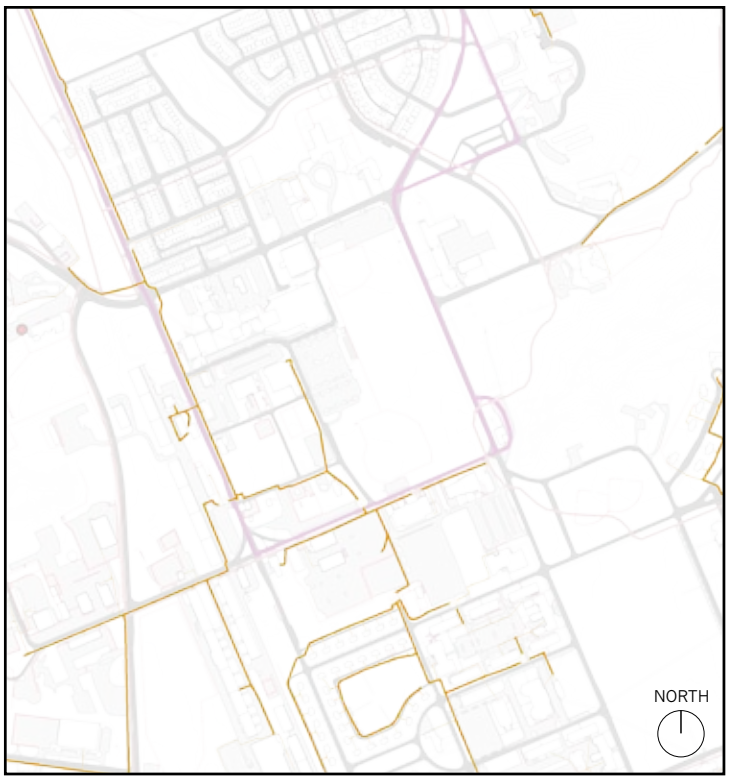
Natural Gas

Existing System - Supply

Washington Gas supplies natural gas to Fort Belvoir and the surrounding community. The gas company has a robust distribution system in the area that appears capable of providing adequate natural gas.

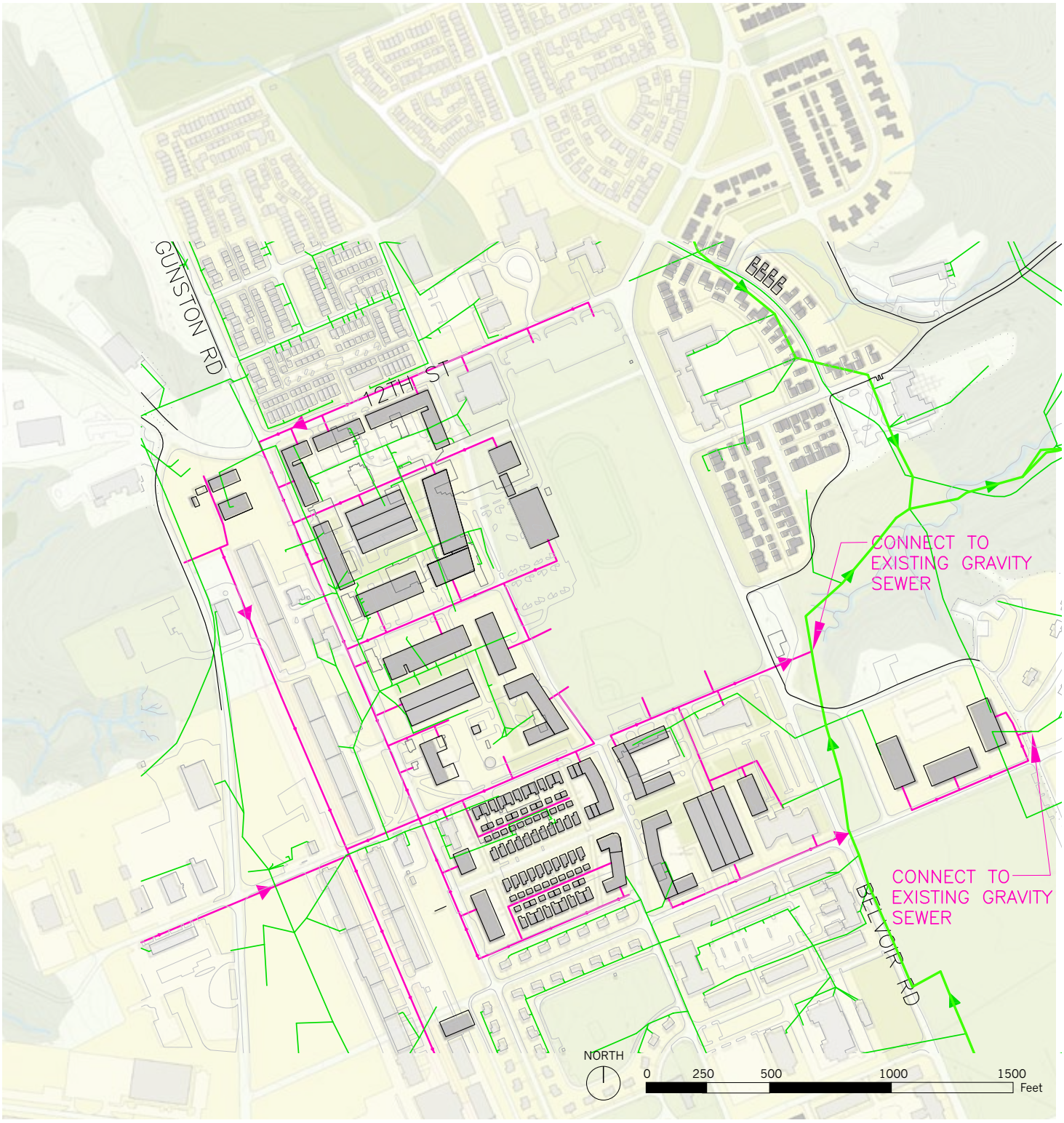
Existing System - Distribution

The current the distribution system is adequate for existing functions. If additional supply is needed in the future, Washington Gas will be able to provide it with additional capacity.



Primary Gas Lines

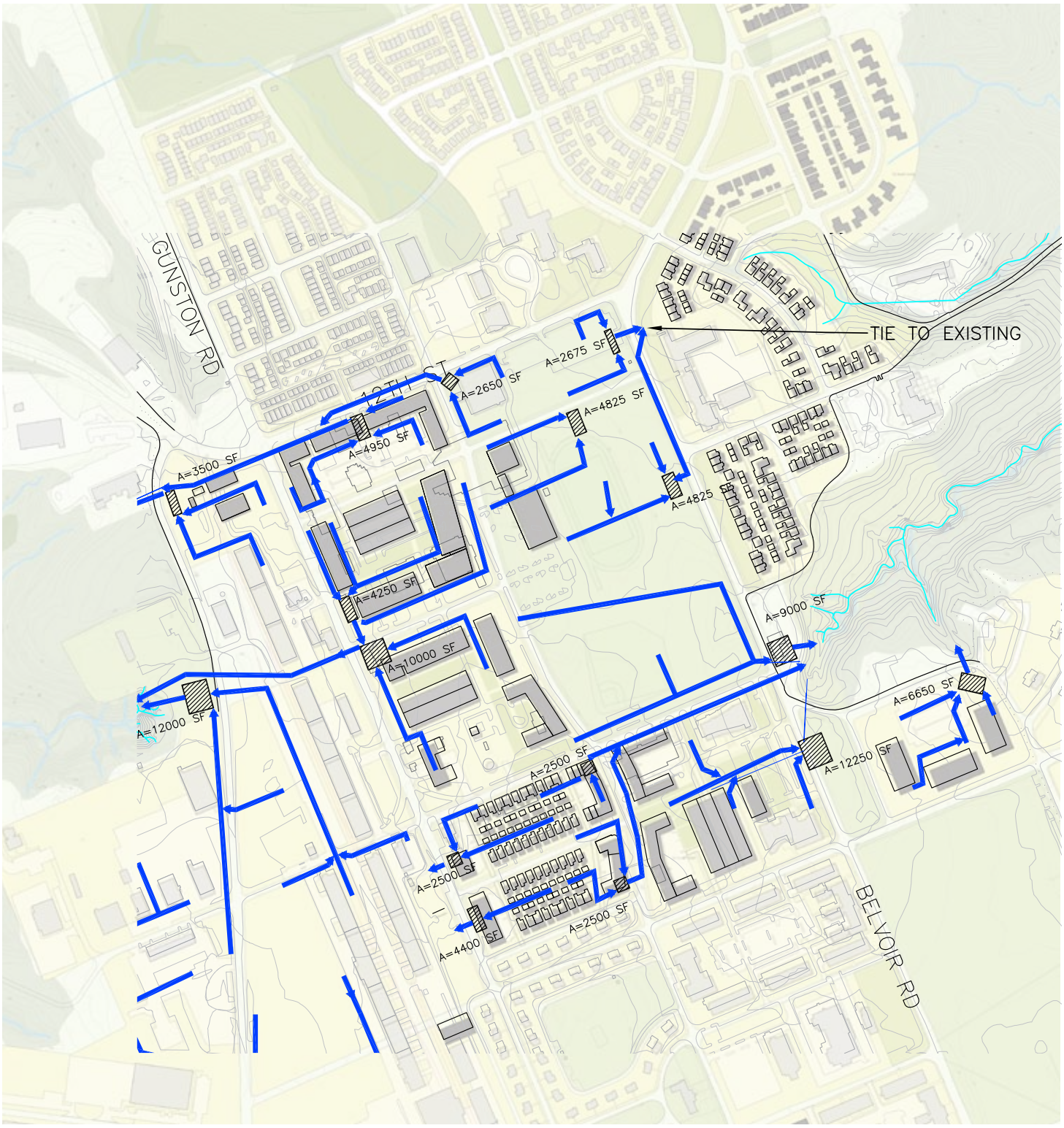
Figure 7–4 Infrastructure Strategies



Fort Belvoir Utilities: Proposed Sanitary Sewer System

Proposed Sanitary Sewer Line

Figure 7–5 Infrastructure Strategies

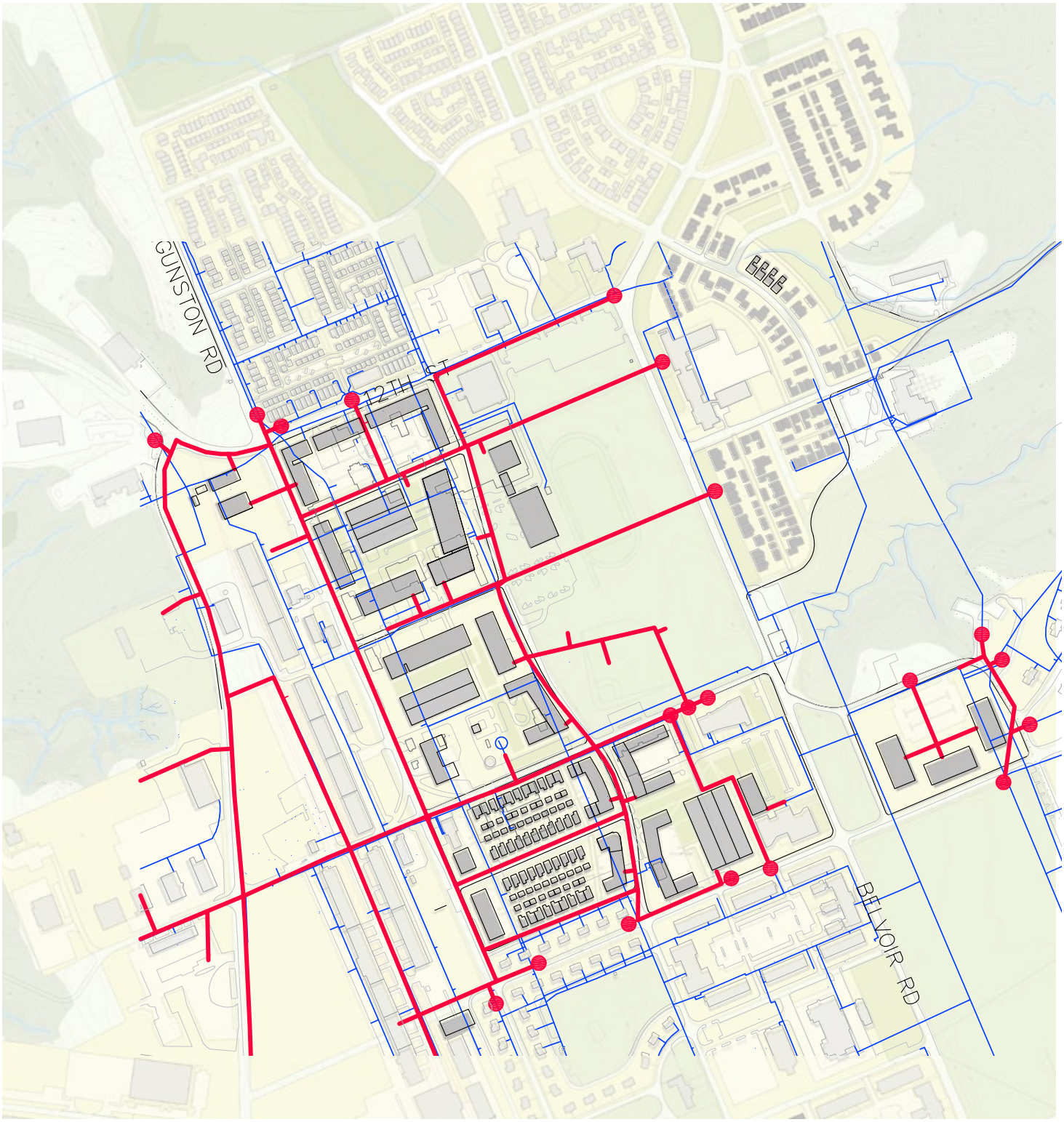


Fort Belvoir Utilities: Proposed Storm Sewer System

Possible Storm Water Management Area (Assumed Typical 5ft Depth)

Possible Future Drainage System (Swale, Channel, or Pipe)

Figure 7–6 Infrastructure Strategies



Fort Belvoir Utilities: Proposed Water System

Proposed Water System Lines

Fort Belvoir Utilities: Full Build out Water System

NORTH

0 250 500 1000 1500 Feet

Circulation Patterns/ Transportation Management

The Master Plan lays out the long term strategy for Fort Belvoir. It includes roadway improvements such as widening, intersection signalization and inclusion of pedestrian/ bicyclist circulation.

Vehicular Circulation

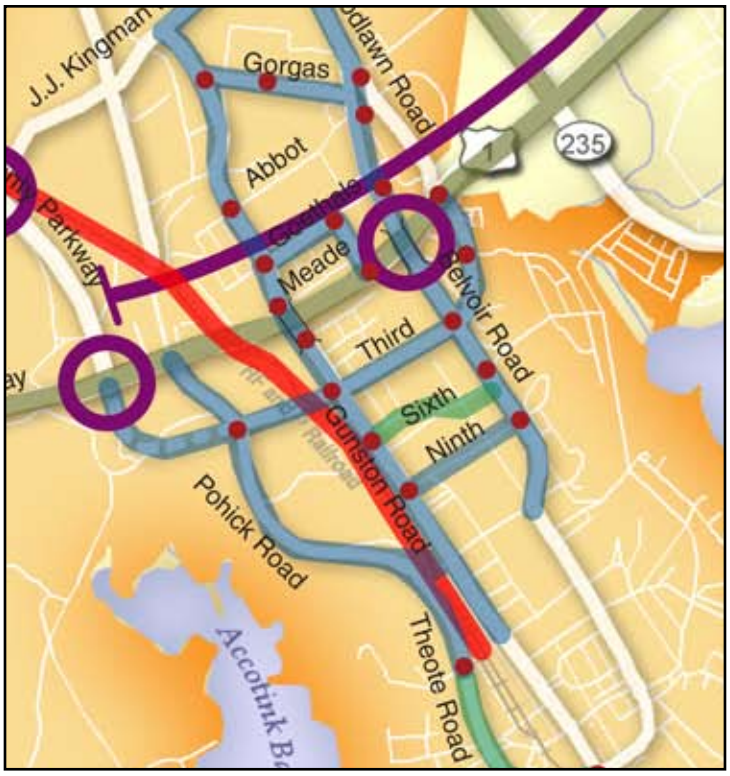
Because roadways are the primary means of transportation around the Post, these significantly impact the visual impression that visitors and Post personnel have of Fort Belvoir. Therefore, it is important that roadway design implement the following objectives:

- Facilitate orientation
- Provide efficient vehicular circulation
- Establish a clear circulation hierarchy to enhance the visual structure of the Post
- Enhance quality of life through greater safety and convenience
- Contribute to the image of Fort Belvoir as a unified, high-quality visual environment
- Improve and expand the present trail/bike path system by linking neighborhoods with schools, recreational areas, and points of interest On-Post
- Develop walking/jogging paths that link urban and natural areas on Post, while taking advantage of important views or vistas
- Enhance the character of streets with appropriate lighting, signage, furnishings, and plantings

Pedestrian Circulation

Strongly defined pedestrian corridors between major Post activity nodes – such as office buildings, and retail, residential and community support functions, etc. – are essential to successful development of a Post. Design considerations that improve pedestrian circulation should also:

- Encourage pedestrian travel and other outdoor activities
- Strongly define open spaces
- Improve the image of developed areas on Post



On-Post Transportation Improvements 2030

To meet these goals for vehicular and pedestrian circulation, the proposed roadway projects in the Town Center include:

- Widening of:
  - Gunston Road to four lanes north of 16th Street
  - Belvoir Road to four lanes north of 12th Street
  - Pohick and Theote Roads to 4 lanes, including the realignment of the intersection of Pohick/Theote to favor traffic flow on Theote Road. The southern limit of the Theote widening is 16th Street, where Theote will transition back to a 2-lane roadway.
- Creation of an internal street grid system within the Town Center
- Inclusion of pedestrian and bicycle facilities as part of roadway improvements, so to provide internal circulation paths for pedestrian and

Figure 7–7 Circulation Strategies

Interconnected network of streets that incorporate walking, bicycling and public transit to promote active mobility for routine daily trips

- Roadway Widening/Extension with 4
- Secondary Roadway
- Local Road / Alleyway
- Potential Transit Corridor
- New Traffic Signal needed

cyclists, and to link the Lower North Post neighborhood to adjacent land uses.

These roadway projects and intersection improvements would improve the traffic circulation, and provide the opportunity for walking and cycling as an alternative to the automobile for short trips on Main Post.

A comprehensive Transportation Management Plan (TMP) has been developed for Fort Belvoir. The TMP outlines various strategies that the Fort Belvoir Employee Transportation Coordinator can use to reduce the rate of single occupancy vehicle trips by encouraging, but not limited to, carpooling/ridesharing, vanpool programs, transit services, and bicycling/walking. Parking strategies, and parking enforcement, can reduce the ratio of number spaces to employee to help promote other modes.

A transitway to the Franconia-Springfield Metrorail station would link Fort Belvoir to the regional transit system, potentially reducing SOV trips. The short-term goal of the TMP is to reduce daily SOV trips to Fort Belvoir by 10 percent. In developing site-specific TMP programs, the nature of the land use of the Town Center should be considered.

Once redeveloped, the Town Center would be a mixed-use area. There will be residential units, office space, retail space to support the campus and recreational facilities. The first two land-uses lend themselves very well to supporting a TMP. Circulator buses (or shuttle buses) would provide for a post-wide access, as well as connect to the transit center to provide connections to points off-post. On-post residents could use transit options, or carpool, to travel to duty stations off-post. By promoting various strategies, workers coming to the Post could shift their

Improve Connectivity and Enhance the character of streets with appropriate lighting, signage, furnishings, and plantings

commuting pattern from the SOV to carpool or transit. The retail would provide services within walking distance of the residential units and office spaces within the Town Center, which will reduce vehicular trips. As some recreational facilities are within the campus, they are within walking distance, which will encourage residents and employees to walk, as opposed to driving to these facilities.

Security Strategy

Fort Belvoir refocused the posture of its security and force protection efforts in response to the terrorist attacks on September 11, 2001. The result of this effort is the current Anti-Terrorism and Force Protection (AT/FP) Plan being used to guide the installation's preparedness posture. Concurrently, Fort Belvoir is being reconfigured to accommodate specific recommendations outlined first by the Base Realignment and Closure Commission Report in 2005, then enacted into public law and implemented through Army direction.

In order to ensure future building and infrastructure projects at Fort Belvoir are planned with appropriate consideration of AT/FP measures, the Long Range Component plan offer planners and decision makers an awareness of how the AT/FP Plan and Fort Belvoir's Real Property Master Plan complement and interrelate with each other.

AT/FP Planning

Because threats change over the life of a facility, building owners and facility managers should be aware that security elements can be more economically integrated within structures during the early planning and design phases of new construction projects than during subsequent additions or renovations.

Renovations to existing buildings can be challenging because the existing building systems must be able to accommodate increased security requirements and may not have the additional space or upgrade capacity. Therefore, it is imperative that AT/FP planning begin at the earliest opportunity. The key to a successful security master plan begins at the initial conception of both new construction and renovation projects and not at the end of the design process. Coordination and effective communication are essential in this process and should start prior to a Planning Charrette. The tenant or user should assemble a Planning Team which may include representative staff from Garrision Directorates: Logistics, Intelligence, Security, Operations, and Public Works. The team then begins the AT/FP planning:

Step 1: Identify and categorize assets
Step 2: Assess asset value
Step 3: Identify aggressors and assess likelihoods
Step 4: Identify tactics and severity
Step 5: Consolidate into design basis threat
Step 6: Determine levels of protection
Step 7: Identify design constraints.

8 Implementation

Phasing and Funding

The near term plan for the Town Center area of Fort Belvoir is that by 2015, in advance of action by BRAC, there are several projects that will be completed. Details for the phasing of the Town Center can be found on the "Proposed Framework Plan" along with the "Strategy for Existing Facilities" and the map showing "Near Term Development - 2015." The dental clinic will be moved to the new hospital area, and expanded; the new child development center will be built in its place. The plan also lays out a plan for between 100 – 150 new residential units; the units will be placed over retail and other services with parking for both residents and retail customers included. MDA is constructing a new facility near the Command Building; with this new construction two little league fields will need to be replaced and moved elsewhere on post. Further south there will be about 100 new residential units near the historic fire station that will remain. Building 238 will be renovated for the relocation of USANCA from EPG.

Updating the Plan

The plan should be modified to show the parts of the plan that have taken place over the past year, then should be completely updated every 5-years.

Near Term Development Strategy

These plans are detailed in Figure 8–2 the "Near-Term Development Strategy" map. Along with this map and its annotations Figure 6–3 "Preferred Block Framework" for the area and its accompanying chart "Strategy for Future Development" on page A-2 detail the plans for the phasing and sizing of the near-term and future growth of the area.

Long Term Development Strategy

The long term strategy for the Town Center includes more residential units; a new fitness center, relocation of more softball fields, new structured parking; renovation of the Sosa Community Center. Details of this strategy are in Figure 8–3 detailing the "Long-Term Development Strategy."

LEED ND Certification

As stated in Chapter 5 Planning Principles it is the intent of the master plan and ADPs to implement best practices in sustainable design by encouraging the principles of the LEED ND pilot program. It is also the intent of the ADP to require each project and capital investment greater than 20 acres within the installation to meet the requirements of LEED ND certification. The full masterplan of Belvoir New Vision is participating in the LEED ND pilot program, and all future projects are expected to participate in the full program, which should launch in early 2009. A LEED ND checklist has been included in appendix A-10 and more information can also be accessed from the U.S. Green Building Council. The numerical rating presented in the checklist is based on the entire installation as one project the actual ratings based on individual projects will vary based on size and use.

Figure 8–1 Future mixed-use Town Center as meeting place

Figure 8–2 Near-Term Development Strategy

Figure 8–3 Long-Term Development Strategy

Figure 8–4 Optional Long-Term Development Strategy (Framework)

Appendices

Strategy for Existing Buildings

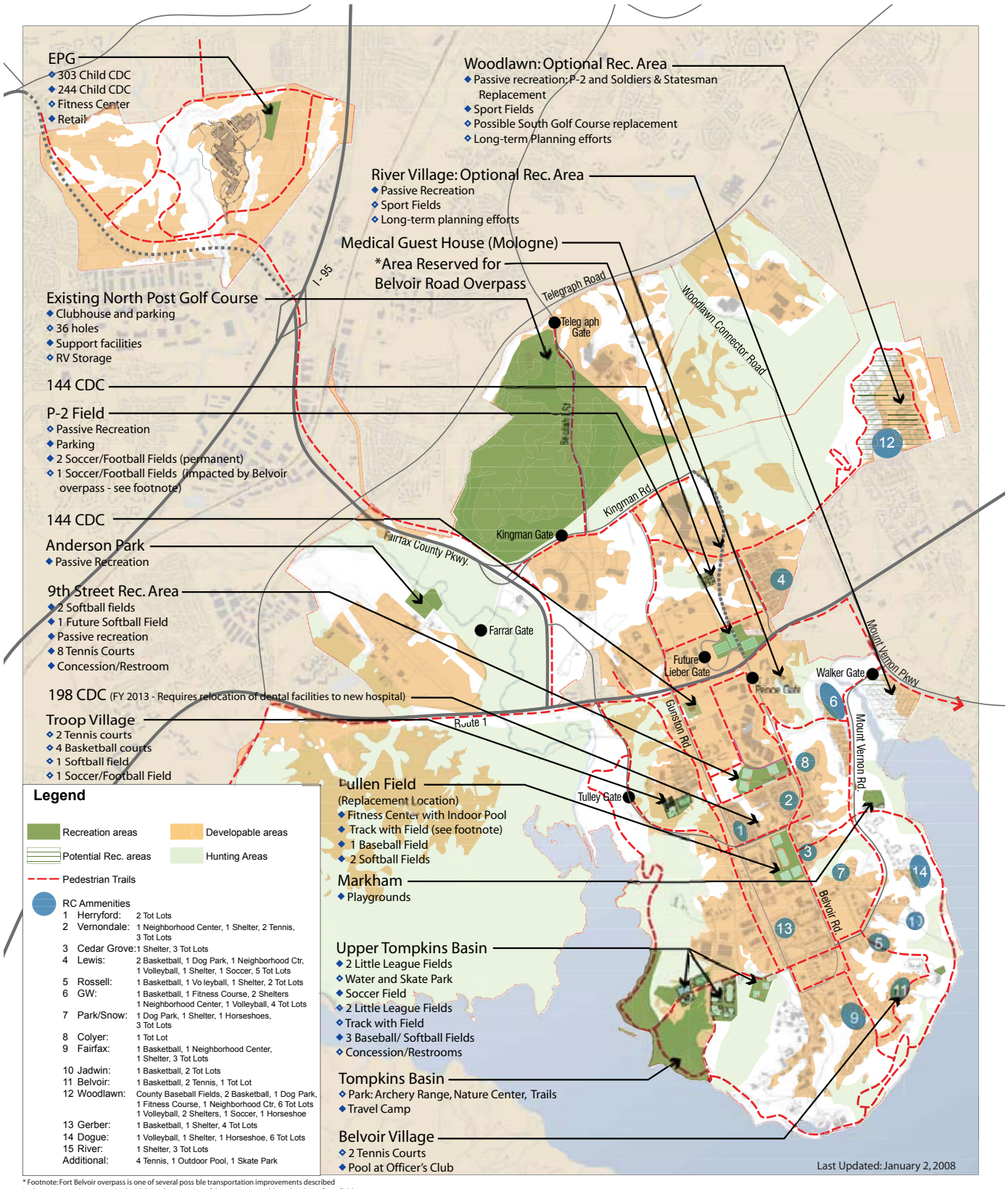
A
APPENDIX

Town Center Existing Buildings

ID	STRUCTURE NAME	GROUND AREA	HEIGHT	LEVELS	BUILT	ISR_ RATING	USE	GSF	ACTIONS	ACTIONS NOTES
186	DISPATCH OFFICE-TMP MOTOR POOL	162 SQFT	17 FT	1	1987		OFFICE	162	Demolish-Near Term	Relocate to Industrial Area
187	ADMIN, GEN PURP, TMP	10,006 SQFT	25.5 FT	1	1940	Q-1	OFFICE	10,006	**Demolish-Near Term**	Relocate to Single Facility in Town Center
188	OVERHEAD WATER TANK						UTILITY			
189	MOTOR POOL	9,928 SQFT	25.5 FT	1	0	Q-1	INDUSTRIAL	9,928	**Demolish-Near Term**	Relocate to Industrial Area
190	VEH MAINT SHOP, ORGN	8,712 SQFT	31.5 FT	1	1939	Q-1	INDUSTRIAL	8,712	**Demolish-Near Term**	
191	SOUTH POST FIRE STATION	5,245 SQFT	45 FT	1	1934	Q-3	CIVIC	7,965	**Renovation**	Relocate Fire Station
200	SOSA COMMUNITY CENTER	24,524 SQFT	50 FT	2	1974	Q-1	CIVIC	49,047	Remain	Long Term Expansion
238	EXCH, CLASS VI, CLOTHING, ETC.	25,558 SQFT	15.5 FT	1	1958	Q-1	RETAIL	25,558	**Demolish-Long Term**	Renovate Near Term for USANCA / Relocate to consolidated office in Town Center
240	WALLACE THEATER	17,565 SQFT	39 FT	2	1950	Q-1	CIVIC	35,130	**Remain**	
259	BATH HOUSE W/WATER TREATMENT	2,470 SQFT	17 FT	1	1980			2,470	**Demolish-Long Term**	Relocate within Town Center
1153	EXCHANGE SVC OUTLET	4,805 SQFT	26 FT	1	1946		RETAIL	4,805	**Demolish-Long Term**	Relocate within Town Center
1154	EXCHANGE SVC OUTLET	3,441 SQFT	23 FT	1	1941		RETAIL	3,441	**Demolish-Long Term**	Relocate within Town Center
1155	EXCHANGE SVC OUTLET	13,917 SQFT	19 FT	1	1980	Q 4	UTILITY	13,917	**Demolish-Long Term**	Relocate within Town Center
1156	SUBSTATION	1,361 SQFT	23 FT	1	1935	Q-3	UTILITY	1,361	**Demolish-Long Term**	Relocate within Town Center
1157	STANDBY GENERATOR W/TANK	692 SQFT	18 FT	1	1929	Q-1	UTILITY	692	Demolish-Long Term	Relocate within Town Center
1158	STANDBY GENERATOR W/TANK	1,324 SQFT	23 FT	1	1943	Q-3	UTILITY	1,324	*Demolish-Long Term*	Relocate within Town Center
1161	RED CROSS	3,370 SQFT	25 FT	1	1955		CIVIC	3,370	Demolish-Long Term	Relocate within Town Center
1163	SNACK BAR	587 SQFT	10 FT	1	1977	Q-1	RETAIL	587	**Demolish-Long Term**	Relocate within Town Center
1169	ELECTRICAL SWITCH STATION						UTILITY		**Demolish-Long Term**	Relocate within Town Center
1182	SPECKER FIELD HOUSE	25,964 SQFT	43.5 FT	1	1947	Q 4	CIVIC	25,964	**Demolish-Near Term**	Relocate fieldhouse to Warren Road
1183	DISTR TRANSFORMER	109 SQFT	11 FT	1	1935		UTILITY	109	**Demolish-Long Term**	Relocate within Town Center
1185	EXCHANGE SVC OUTLET	3,697 SQFT	40 FT	1	1969	Q 4	RETAIL	3,697	**Demolish-Long Term**	Relocate to new PX
1186	FAMILY LIFE CENTER	5,307 SQFT	30 FT	1	1969	Q-2	CIVIC	5,307	**Demolish-Near Term**	Relocate retail to 12th Street new development
1188	EXCHANGE SVC OUTLET	10,419 SQFT	16 FT	1	1968	Q 4	RETAIL	10,419	**Demolish-Near Term**	Relocate to new PX
1189	HOME & GARDEN CENTER	69,220 SQFT	33 FT	1	1969	Q 4	RETAIL	69,220	**Demolish-Near Term**	Relocate to new PX
1194	EAGLE'S ESPRESSO BAR	6,546 SQFT	26 FT	1	1967		RETAIL	6,546	**Demolish-Near Term**	Relocate retail to 12th Street new development
1195	CREDIT UNION	7,471 SQFT	14 FT	1	1969		RETAIL	7,471	**Demolish-Near Term**	Relocate retail to 12th Street new development
1196	EXCH SVC OUTLET, LAUND/DRY CLN	3,211 SQFT	10 FT	1	1964	Q 4	RETAIL	3,211	Demolish-Long Term	Relocate retail to 12th Street new development
1197	EXCH AUTO SVC STATION	3,914 SQFT	23 FT	1	1964	Q 4	RETAIL	3,914	**Demolish-Near Term**	Relocate to Gunston and Pohick
1199	BOWLING ALLEY	24,745 SQFT	26 FT	1	1965	Q-1	RETAIL	24,745	**Demolish-Long Term**	Relocate within Town Center
	TOTALS	294,271						336,359		

NEAR TERM DEMOLITION	**157,649**	SQFT
LONG TERM DEMOLITION	**89,288**	SQFT
RENOVATION	**5,245**	SQFT
REMAIN	**89,423**	SQFT

EXISTING USES		
OFFICE	10,167	SQFT
RETAIL	163,616	SQFT
CIVIC	124,064	SQFT
UTILITY	17,403	SQFT
INDUSTRIAL	18,640	SQFT



* Footnote: Fort Belvoir overpass is one of several poss ble transportation improvements described in the transportation section in the LRC. Implementation of the overpass would result in loss of one field. A replacement soccer field is possible with upgrades to the Pullen Field Track area.

Belvoir

MWR Framework Plan (2030)

Fort Belvoir / EPG
Fort Belvoir, Virginia

0 850 1,700 3,400
Feet

Existing

Town Center

Existing System
The existing central energy plant, Building 1422, contains three (3) Cleaver Brooks steam boilers with an input capacity of 600 BHP each. This steam is distributed to twelve (12) buildings within the Town Center ADP. 1422 also serves Hospital and Troop Area.

The heat loss of steam distribution system is 52% of the total annual steam production per steam plant analysis by Fort Belvoir. The annual cost of heat loss is $724,251 based on $12.91/MBTU.

See Table 5 and 6 for the detail information

NORTH

NTS

Steam/Hot Water Line

Utility Plant

Table 5. Existing Town Center

Central Energy Plant	Type	Capacity	Quantity	Equipment	Owner	Year	SF Served
1422	Steam	600 BHP	3	Cleaver Brooks steam	Pepco Government Services in 2000 as part of NCR ESPC - ECM 12	2000	255,406

* 1422 serves 3 Area Developments : Hospital 202,947 SF
Town Center 255,406 SF
Troop Area 331,670 SF

Table 6. Central Energy Plant for Individual Building of Town Center ADP

Town Center	Total Gross Square Footage	Building ID	Use	Gross Square Footage	Action
Central Energy Plant (CEP) Steam (1422)	**255,406**	1017	CIVIC	46,195	Remain
		1018	CIVIC	18,193	Remain
		1024	CIVIC	18,684	Remain
		1028	CIVIC	29,695	Remain
		1099	CIVIC	14,014	*Renovation*
		1182	CIVIC	25,964	**Demolish-Near**
		1185	RETAIL	3,697	**Demolish-Long**
		1186	CIVIC	5,307	**Demolish-Near Term**
		1188	RETAIL	10,419	**Demolish-Near Term**
		1189	RETAIL	69,220	**Demolish-Near Term**
		1194	RETAIL	6,546	**Demolish-Near Term**
		1195	RETAIL	7,471	**Demolish-Near Term**
Independent Building	**266,839**	129	RESIDENTIAL	2,496	Remain
		131	RESIDENTIAL	2,513	Remain
		133	RESIDENTIAL	2,562	Remain
		135	RESIDENTIAL	2,559	Remain
		137	RESIDENTIAL	2,504	Remain
		139	RESIDENTIAL	2,555	Remain
		141	RESIDENTIAL	2,565	Remain
		186	OFFICE	162	**Demolish-Near Term**
		187	OFFICE	10,006	**Demolish-Near Term**
		189	INDUSTRIAL	9,928	**Demolish-Near Term**
		190	INDUSTRIAL	8,712	**Demolish-Near Term**
		191	CIVIC	5,245	*Renovation*
		193	OFFICE	5,067	Remain
		194	UTILITY	138	Remain
		195	UTILITY	517	Remain
		200	CIVIC	49,047	Remain
		238	RETAIL	25,558	**Demolish-Long Term**
		240	CIVIC	35,130	Remain
		259		2,470	**Demolish-Long Term**
		1000	OFFICE	4,553	Remain
		1023	CIVIC	6,413	Remain
		1146	RETAIL	7,512	*Renovation*
		1147	OFFICE	3,960	*Renovation*
		1148	OFFICE	4,595	*Renovation*
		1150	OFFICE	3,597	*Renovation*
		1151	UTILITY	131	Remain

		1153	RETAIL	4,805	**Demolish-Long Term**
		1154	RETAIL	3,441	**Demolish-Long Term**
		1155	UTILITY	13,917	**Demolish-Long Term**
		1156	UTILITY	1,361	**Demolish-Long Term**
		1157	UTILITY	692	**Demolish-Long Term**
		1158	UTILITY	1,324	**Demolish-Long Term**
		1161	CIVIC	3,370	**Demolish-Long Term**
		1163	RETAIL	587	**Demolish-Long Term**
		1183	UTILITY	109	**Demolish-Long Term**
		1196	RETAIL	3,211	**Demolish-Long Term**
		1197	RETAIL	3,914	**Demolish-Near Term**
		1199	RETAIL	24,745	**Demolish-Long Term**
		3497	CIVIC	4,869	Remain

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LEED ND Checklist

LEED for Neighborhood Development Pilot Project Checklist

Project Name:
Primary Contact:

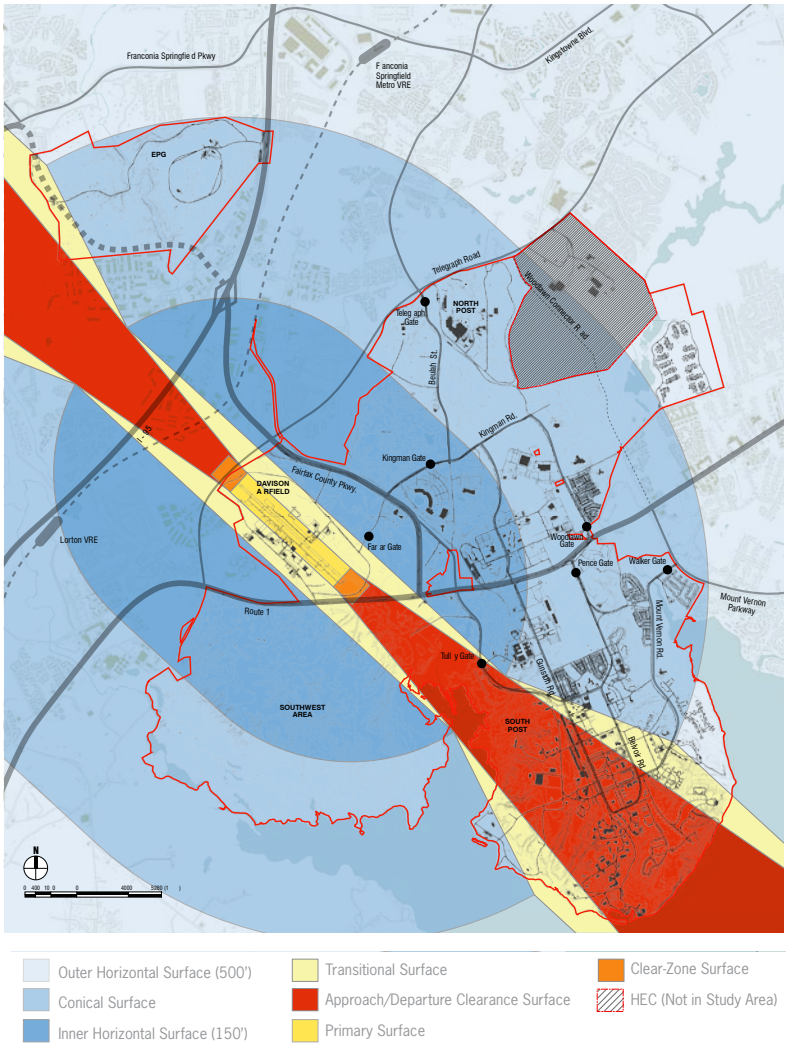
Instructions: In the Points Earned column, enter "Yes," "No," or "Maybe" for prerequisites and the expected number of points earned for credits. For prerequisites with more than one compliance path, enter the compliance path option # in column E, in the row under the prerequisite's name.

Points Earned			
15	**Smart Location & Linkage**	**30** Points Possible	
Yes	Prereq 1	**Smart Location**	Required
1		Option #:	
Yes	Prereq 2	**Proximity to Water and Wastewater Infrastructure**	Required
1		Option #:	
Yes	Prereq 3	**Imperiled Species and Ecological Communities**	Required
2		Option #:	
Yes	Prereq 4	**Wetland and Water Body Conservation**	Required
3		Option #:	
Yes	Prereq 5	**Farmland Conservation**	Required
2		Option #:	
Yes	Prereq 6	**Floodplain Avoidance**	Required
2		Option #:	
2	Credit 1	**Brownfield Redevelopment**	2
1	Credit 2	**High Priority Brownfields Redevelopment**	1
6	Credit 3	**Preferred Location**	10
1	Credit 4	**Reduced Automobile Dependence**	8
1	Credit 5	**Bicycle Network**	1
	Credit 6	**Housing and Jobs Proximity**	3
	Credit 7	**School Proximity**	1
1	Credit 8	**Steep Slope Protection**	1
1	Credit 9	**Site Design for Habitat or Wetlands Conservation**	1
1	Credit 10	**Restoration of Habitat or Wetlands**	1
1	Credit 11	**Conservation Management of Habitat or Wetlands**	1
18	**Neighborhood Pattern & Design**	**39** Points Possible	
Maybe	Prereq 1	**Open Community**	Required
Yes	Prereq 2	**Compact Development**	Required
2	Credit 1	**Compact Development**	7
2	Credit 2	**Diversity of Uses**	4
3	Credit 3	**Diversity of Housing Types**	3
2	Credit 4	**Affordable Rental Housing**	2
	Credit 5	**Affordable For-Sale Housing**	2
1	Credit 6	**Reduced Parking Footprint**	2
4	Credit 7	**Walkable Streets**	8
	Credit 8	**Street Network**	2
	Credit 9	**Transit Facilities**	1
	Credit 10	**Transportation Demand Management**	2
1	Credit 11	**Access to Surrounding Vicinity**	1
1	Credit 12	**Access to Public Spaces**	1
	Credit 13	**Access to Active Public Spaces**	1
1	Credit 14	**Universal Accessibility**	1
1	Credit 15	**Community Outreach and Involvement**	1
	Credit 16	**Local Food Production**	1

22	**Green Construction & Technology**		31 Points Possible
Yes	Prereq 1	**Construction Activity Pollution Prevention**	Required
2	Credit 1	**LEED Certified Green Buildings**	3
1	Credit 2	**Energy Efficiency in Buildings**	3
3	Credit 3	**Reduced Water Use**	3
1	Credit 4	**Building Reuse and Adaptive Reuse**	2
1	Credit 5	**Reuse of Historic Buildings**	1
1	Credit 6	**Minimize Site Disturbance through Site Design**	1
1	Credit 7	**Minimize Site Disturbance during Construction**	1
1	Credit 8	**Contaminant Reduction in Brownfields Remediation**	1
5	Credit 9	**Stormwater Management**	5
	Credit 10	**Heat Island Reduction**	1
	Credit 11	**Solar Orientation**	1
	Credit 12	**On-Site Energy Generation**	1
1	Credit 13	**On-Site Renewable Energy Sources**	1
	Credit 14	**District Heating & Cooling**	1
	Credit 15	**Infrastructure Energy Efficiency**	1
1	Credit 16	**Wastewater Management**	1
1	Credit 17	**Recycled Content for Infrastructure**	1
1	Credit 18	**Construction Waste Management**	1
1	Credit 19	**Comprehensive Waste Management**	1
1	Credit 20	**Light Pollution Reduction**	1
1	**Innovation & Design Process**		6 Points
	Credit 1.1	**Innovation in Design**: Provide Specific Title	1
	Credit 1.2	**Innovation in Design**: Provide Specific Title	1
	Credit 1.3	**Innovation in Design**: Provide Specific Title	1
	Credit 1.4	**Innovation in Design**: Provide Specific Title	1
	Credit 1.5	**Innovation in Design**: Provide Specific Title	1
1	Credit 2	**LEED® Accredited Professional**	1
56	**Project Totals (pre-certification estimates)**		106 Points

Certified: 40-49 points, **Silver:** 50-59 points, **Gold:** 60-79 points, **Platinum:** 80-106 points

Figure 2.43- Airfield Constraints Map



Airfield Facilities

Davison Army Airfield

Davison Army Airfield (DAA) is an operational and training facility. DAA accommodates five operational flying units within the Washington/National Capital Region Military District and a training unit of the District of Columbia Air National Guard. The five operational flying units are:

- 12th Aviation Battalion - Rotary
- Operational Support Airlift Agency (OSAA/OSACOM) - Fixed wing
- DC Air National Guard - Rotary
- Aviation Night Vision Lab - Rotary/ Fixed wing
- Civil Air Patrol - Fixed wing

The operational units are primarily responsible for supporting Post-related missions and operations. Currently DAA supports training and operations by both helicopter and fixed wing aircraft. DAA Air Traffic Services Staff's monthly activity records show that there were a total of 50,181 fixed wing and helicopter operations from April 2005 to April 2006. Helicopter operations account for approximately 60 percent of the total annual flight operations.

DAA is required to comply with guidelines and regulations to meet a Class A airfield as outlined in the Unified Facilities Criteria (UFC) 203-260-01, Airfield and Heliport Planning and Design. The maximum aircraft size which can be safely accommodated at DAA is UC-35 (Citation 560). Operations at the DAA accommodate a helicopter fleet ranging from small OH-6s to large UH-60 Blackhawks and CH-53 Stallions, while fixed wing aircraft operations range from small Cessna 182s to large C-130 Hercules aircraft. Although C-130 operations exceed the design weights and pavement geometry parameters of this Class A regulated airfield, they have occurred frequently and resulted in the rapid deterioration of the airfield pavements. Additionally, the existing facility layout often results in the interaction of helicopter and fixed wing aircraft operations, which reduces the operational safety and capacity of the airfield.

Figure 2.43 maps the imaginary surfaces associated with the runway at DAA. No manmade structures or natural features are allowed on the primary surface and clear zones. Height restrictions are imposed on the development and landscape below the rest of the surfaces. The DAA runway elevation is +74 ft MSL. The associated imaginary surfaces are calculated based on this level.

Maximum allowed height for development on any given parcel is determined by the topography and the imaginary surface the parcel falls under. Figure 2.44 depicts the maximum allowed height for development surrounding the airfield.

Figure 2.44- Maximum Building Heights based on Airfield Imaginary Surfaces Restrictions

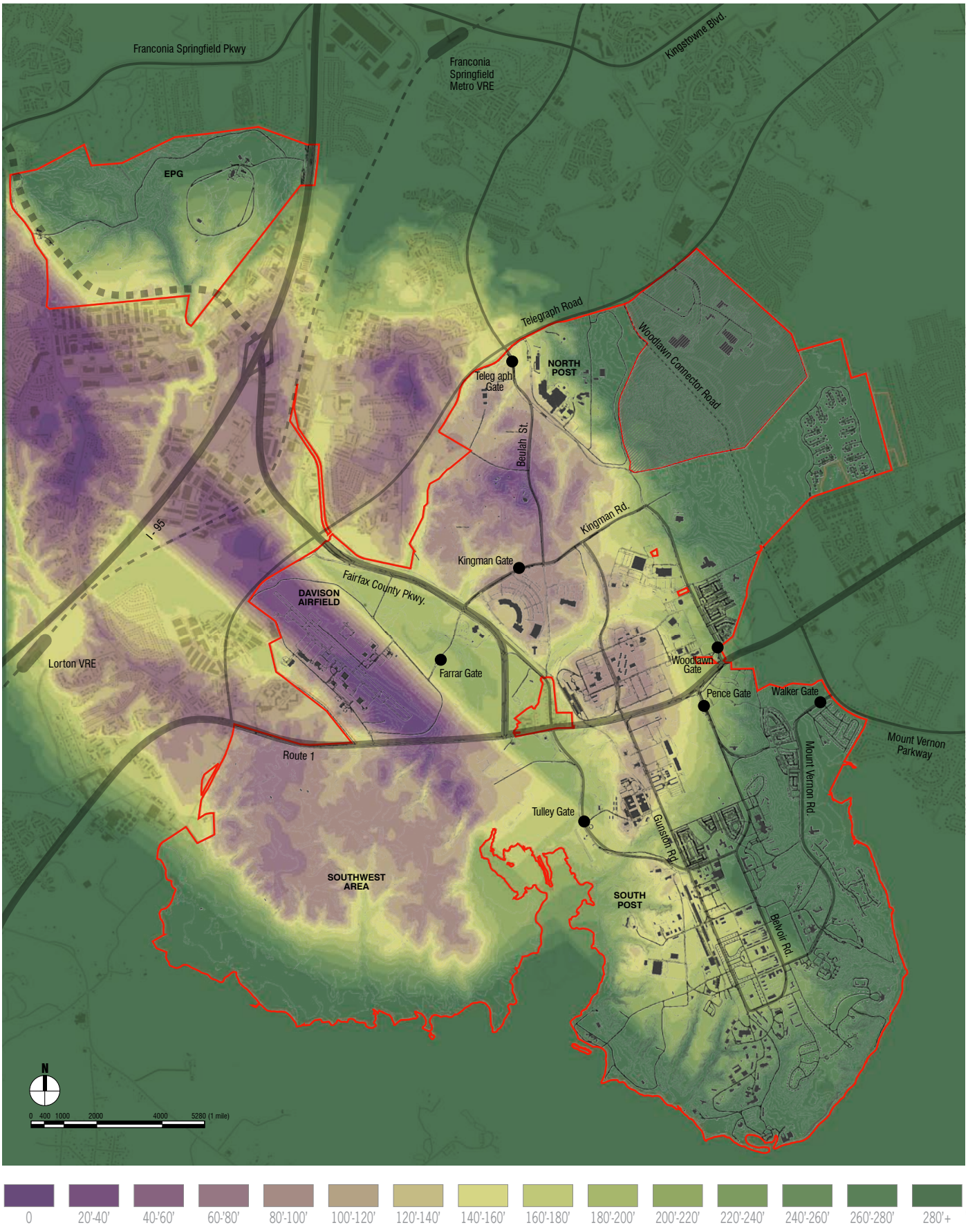


Table 2.21 - DAA Imaginary Surfaces, Existing On-Post Obstructions and Impacts on Development

Imaginary Surface	Definition	Development Impacts and Existing Obstructions*
Primary Surface	A surface longitudinally centered on the runway and extending 200 feet beyond each runway end. The width of the primary surfaces varies depending on the class of runway and coincides with the lateral clearance distance.	No manmade or natural features are allowed. Obstructions include building nos. 3136, 3137, 3138, 3140, 3141, 3230, 3231, 3233, 3234, 3237, and 3239.
Clear Zone (graded area only)	A surface located on the ground at the runway end and symmetrical about the runway centerline extended.	No manmade or natural features are allowed. No obstructions identified.
Approach-Departure Surface	An inclined plane arranged symmetrically about the extended runway centerline. The beginning of the inclined plane starts at the end of the primary surface and the elevation of the centerline at the runway end. The surface flares outward and upward from these points at a uniform slope.	No structure must puncture this surface. No obstructions identified.
Inner Horizontal Surface	An imaginary plane that is oval in shape and is located at a height of 150 feet above the established airfield elevation.	No structure must puncture this surface. Obstructions include building no. 2462.
Conical Surface	An imaginary surface that extends from the periphery of the inner horizontal surface outward and upward at a slope of 20 to 1 for a horizontal distance of 7,000 feet and a height of 500 feet above the established airfield elevation.	No structure must puncture this surface. Obstructions include building nos. 2901, 2902, 2903, 2905, and 2907.
Outer Horizontal Surface	An imaginary plane located at a height of 500 feet above the established airfield elevation, extending outward from the edge of the conical surface a horizontal distance of 30,000 feet.	No structure must puncture this surface. No obstructions identified.
Transitional Surface	An imaginary surface that extends outward and upward at right angles to the runway centerline at a slope of 7 to 1 and connects the primary and approach departure surfaces to the inner horizontal, conical and outer horizontal surfaces.	No structure must puncture this surface. No obstructions identified.

Note: * Existing Obstructions were calculated based on Fort Belvoir GIS data provided. Field investigations are required to verify these conclusions.

Planning Considerations

Current and future facilities should not penetrate the imaginary surfaces which are detailed in Figure 2.43, so that DAA may operate at its full capacity. Table 2.21 lists the existing facilities which conflict with the imaginary surfaces. While height restrictions apply to the entire Post and EPG, restrictions of 100 ft or lower only apply to parts of the North Post and Southwest area (Figure 2.44). Severe restrictions of 40 ft or lower apply to small areas within the North Post Golf Course and the eastern portion of the Southwest area. It is extremely important that existing obstructions are removed and potential future obstructions are prohibited. This will help DAA regain lost operational capacity and protect against further loss of overall airfield functionality.

DAA plays a key role in the National Emergency Response plan. In the event of a National Emergency, Andrews Air Force Base (AFB) will be used to launch fighter aircraft and the Presidential Command Control Berth. Andrews AFB will be locked down to all other operations. DAA will provide for simultaneous operations, such as evacuation of the Secretary of Defense and other key personnel. DAA's assets will be used primarily within the DC area Beltway. During a National Emergency, DAA will be in "lockdown", restricting personnel from leaving or accessing the airfield until the Emergency has passed. These National Emergency Response plans must be considered during land-use development planning.

Airfield Facilities

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