



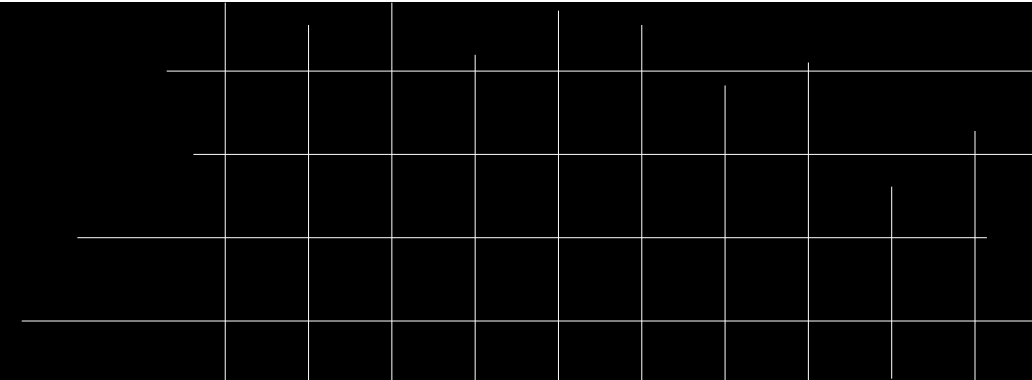
**CONNECTICUT  
TRAINING CENTER**

**FINAL SUBMITTAL  
SEPTEMBER 2018**



**CONNECTICUT ARMY NATIONAL GUARD**

# **INSTALLATION MASTER PLAN**





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# INSTALLATION MASTER PLAN



**CONNECTICUT  
TRAINING CENTER**

FINAL SUBMITTAL  
SEPTEMBER 2018





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**T**he Connecticut Training Center (CTC) comprises three installations: Stones Ranch Military Reservation, Camp Niantic, and East Haven Rifle Range. All three sites are located in southern Connecticut. The CTC is an important enduring installation serving the Connecticut Army National Guard (CTARNG) and many other tenants. This installation master plan (IMP) establishes a long-term plan for the site as well as a process to achieve the vision of a mission-focused, personnel-friendly, and resilient installation.

### **PURPOSE**

This IMP lays out the existing state of and vision for the CTC in a comprehensive and graphic format that can be referenced when expansion or reconfiguration is necessary. The report establishes a planning framework and a long-range vision with specific recommended solutions for identified issues, and it outlines planning standards to help create an installation that provides world-class facilities and world-class customer service.

### **PROCESS**

During a weeklong charrette process, representatives of the CTARNG, tenants, and other stakeholders developed a vision, identified issues, and created requirements- and vision-based development alternatives. From all of these activities, a preferred plan was proposed, briefed to and approved by leadership, and incorporated into this IMP.

# ORGANIZATIONAL STRUCTURE

## CONNECTICUT ARMY NATIONAL GUARD

### MISSION

Provide ready units, organized, manned, trained and equipped to protect life and property in order to preserve peace, order and public safety.

### VISION

The CTARNG is a ready force comprised of interoperable, disciplined, ready, predictably resourced units with competent Leaders of Character. We will be organized, equipped and trained in order to fight and win in the complex Operational Environment of tomorrow. At home, the CTARNG fully postures leaders and units to respond to a complex catastrophe on the worst night in Connecticut. Woven into the fabric of our communities, CTARNG Citizen Soldiers are a vital link between the residents of the State of Connecticut and their Army.

## CONNECTICUT TRAINING SITE

### MISSION

Provide the necessary personnel, facilities, and equipment to conduct training, logistical, and limited administrative support to using organizations in support of their federal and state missions. On order, conduct sustained operations in support of federal or state declared emergencies.

### UNIT REPRESENTATIVES

There are a number of units that use facilities at the CTC. Represented during the charrette, the following units played a significant role in shaping the future plan for the CTC:

- + Connecticut Training Center
- + Construction and Facilities Management Office (CFMO)

## CONNECTICUT TRAINING CENTER INSTALLATION MASTER PLAN

### SENIOR LEADERSHIP VISION

- + Examine and validate previous planning efforts.
- + Enhance training facilities.
- + Consider scoring process for federal funding.
- + Develop solutions to work with constraints.

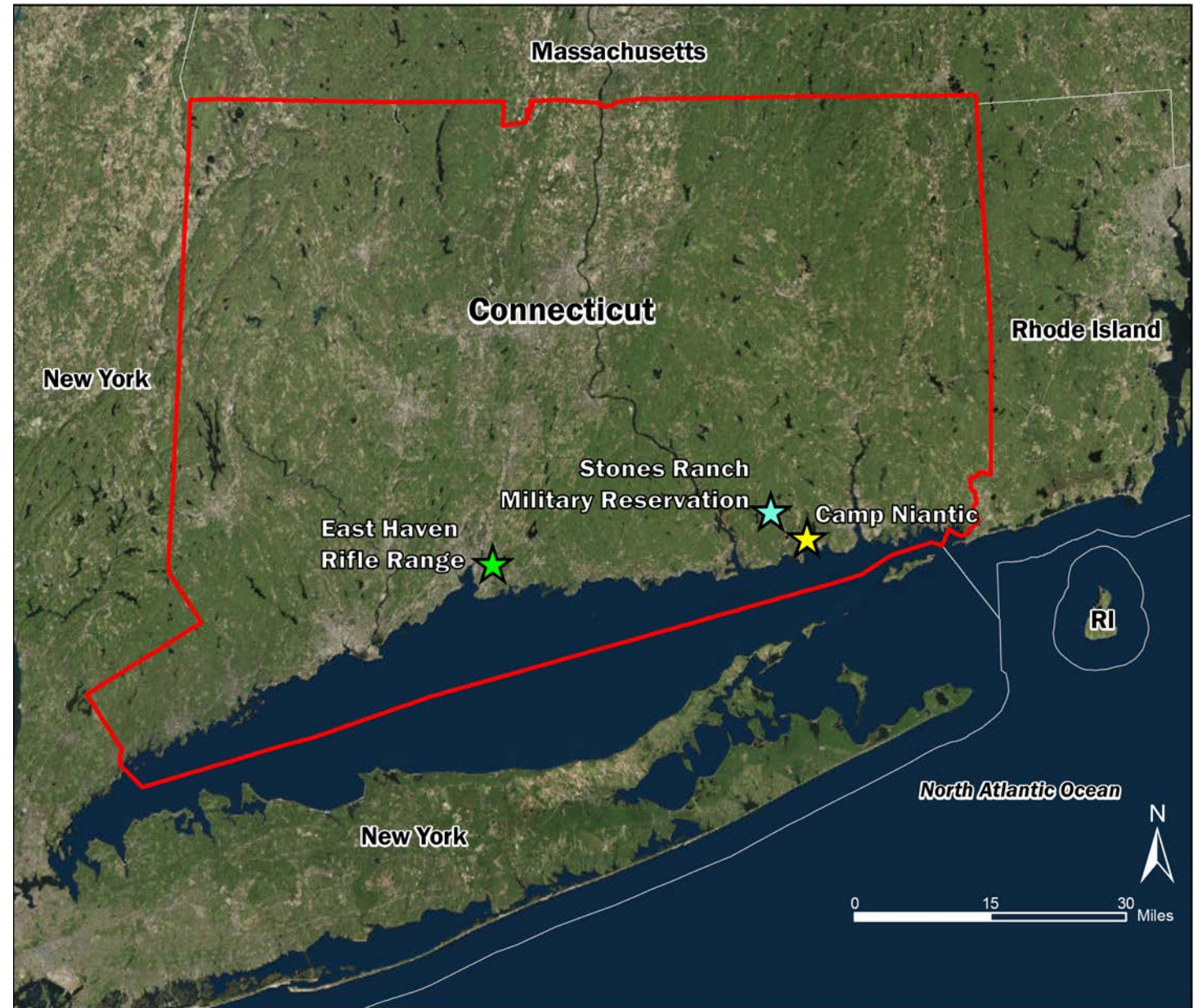
### SENIOR LEADERSHIP PLANNING CRITERIA

- + The mission at the CTC is enduring.
- + Consider requirements to maintain status as a Level IV Garrison Training Center.
- + Consider off-base and on-base significant spatial constraints of the CTC.
- + Consider facilities needed to support the mission of the CTC.
- + Continue to support major facility users.

### VISION

“The CTC is a premier, joint-service, multi-echelon training destination of choice with adaptable, all encompassing, fully resourced, state-of-the-art facilities that enable all readiness model training requirements.”

- + Joint Force Headquarters (JFHQ-CT)
- + 169th Regional Training Institute (RTI)
- + Medical Detachment (MED DET)
- + Unit Training Equipment Site (UTES)
- + US Property and Fiscal Office (USPFO)
- + 85th Troop Command
- + 192nd Military Police (MP) Battalion (BN)
- + 192nd Engineer BN



- ★ East Haven Rifle Range
- ★ Camp Niantic
- ★ Stones Ranch Military Reservation
- Connecticut

**FIGURE 1:  
REGIONAL MAP**



## CAPACITY VS. REQUIREMENTS PLANNING

### CAPACITY PLANNING

This IMP includes one alternative that was a full-capacity build-out scenario. This is used as a way to demonstrate what future development is feasible on the installation. Many of the buildings are notional and would only be constructed based on a new or expanded mission or need. The preferred plan is not based on the full buildout scenario, but rather an alternative based on requirements.

### REQUIREMENTS PLANNING

In addition to capacity planning, requirements planning plays a key role in determining what should be included in the preferred plan to support current and future mission requirements. For CTC, the primary shortfalls are Troop Medical Clinic (TMC) and barracks space.

As part of the planning charrette, requirements of the CTARNG and other tenants were determined based on both documented and perceived need. These are described in Appendix C.

During the charrette a requirements analysis was conducted that utilized Real Property Planning and Analysis System (RPLANS) requirement data to determine, by category code, the existing area and the excess or surplus of each area. The requirement analysis table is included in Appendix C.

## IMPLEMENTATION

Implementation of this plan creates the desired campus-like and walkable community area on Camp Niantic while maintaining a mission-focused environment at all three sites that is consistent with the overall vision developed with the participation of stakeholders. Because this plan was designed to show a requirements-based buildout, future construction or reuse projects will be based on funding availability.

## RECOMMENDATIONS

The combined existing facility square footage located on all three bases is 372,202 square feet (SF). If the requirements-based buildout scenario was ever implemented in total, the square footage, combined across the three bases, would be a maximum of 867,666 SF. Details of the alternative scenarios are listed in Appendix B. The preferred plan is based on requirements, not the full-capacity buildout.

The preferred plan includes elements in each of the following categories:

- + **TRANSIENT UNIT FACILITIES.** Facilities for transient units are some of the most in-demand at CTC. Transient units require space for training, administrative functions, billeting, mess, and headquarters activities.
- + **MAINTENANCE.** Ongoing maintenance of government vehicles and areas for parking and storing vehicles. A new UTES has been proposed as the current UTES is 7,445 SF short of the requirement.
- + **READINESS CENTER.** There is demand for a new readiness center and associated facilities, and the proposed location is at Stones Ranch. This includes infrastructure upgrades at Stones Ranch to support new development.
- + **ACCESS CONTROL POINT.** A significant upgrade of the current access control point (ACP) at Stones Ranch is included in the preferred plan.
- + **CIRCULATION.** In order to create a more pedestrian-friendly and efficient transportation system at Camp Niantic, improvements to the transportation system have been proposed.
- + **TRAINING.** Five simulators, four at Stones Ranch and one at East Haven, have been proposed in the preferred plan. The ammunition supply point (ASP) at Stones Ranch is proposed to move to the training area, and Range Control has also been proposed to relocate to the training area at Stones Ranch.
- + **MEDICAL.** A new TMC is proposed for Camp Niantic, with the current location being converted into the Soldier Readiness Processing (SRP) building.

## ILLUSTRATIVE PLAN

*Top. Rendering of the proposed pedestrian walkway at Camp Niantic.*

*Bottom. Through the use of a strengths, weaknesses, opportunities, and threats (SWOT) analysis during the charrette week, specific needs and wants of the users of the CTC were identified and implemented into the illustrative plan.*



# ILLUSTRATIVE PREFERRED PLAN

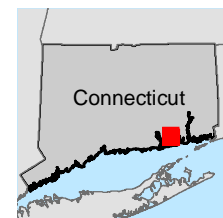
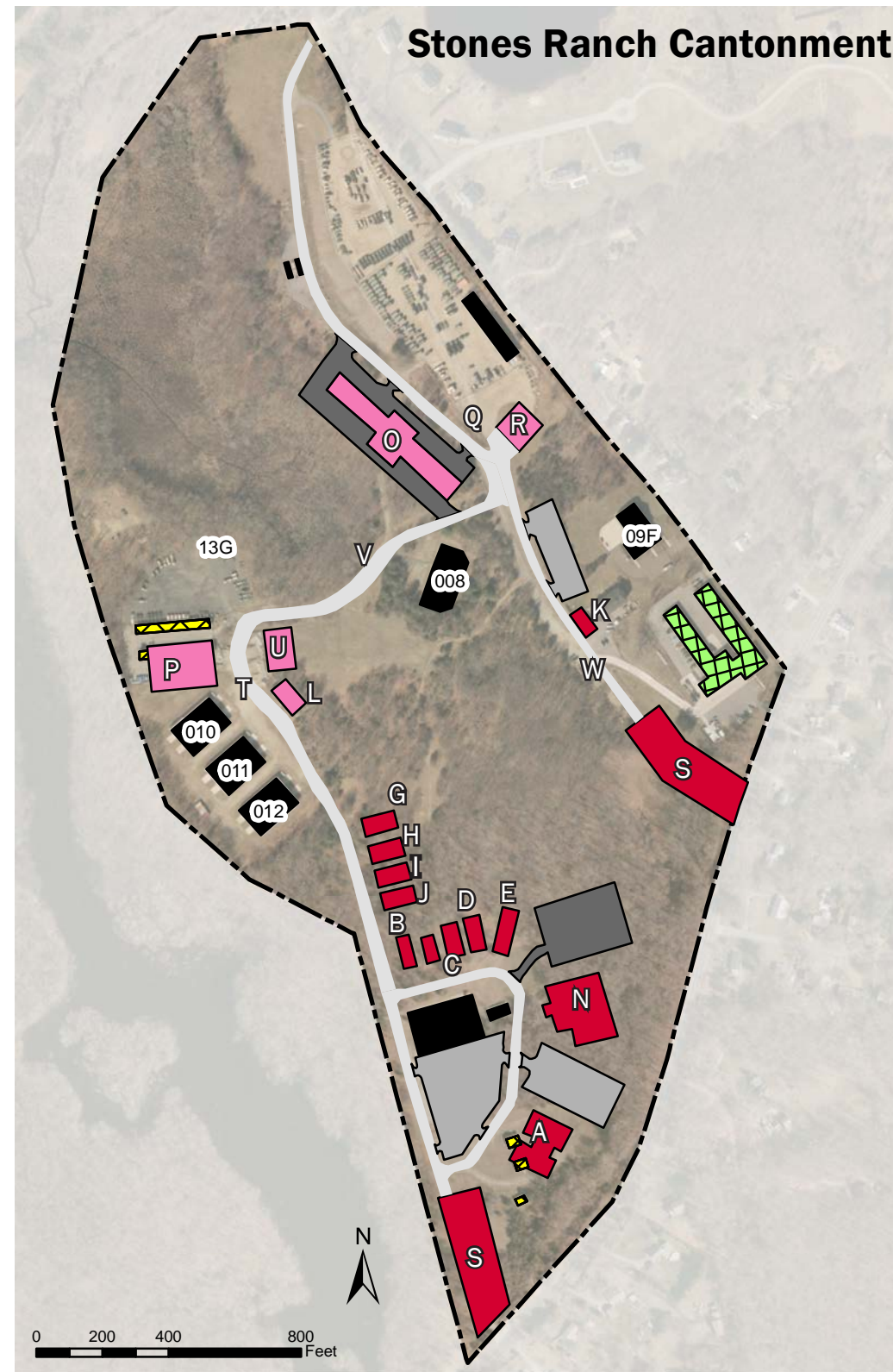
The illustrative preferred plan shows one potential way of developing the site based on the regulating plan and the requirements set forth during the charrette.

**TABLE 1: PREFERRED PLAN PROJECTS**

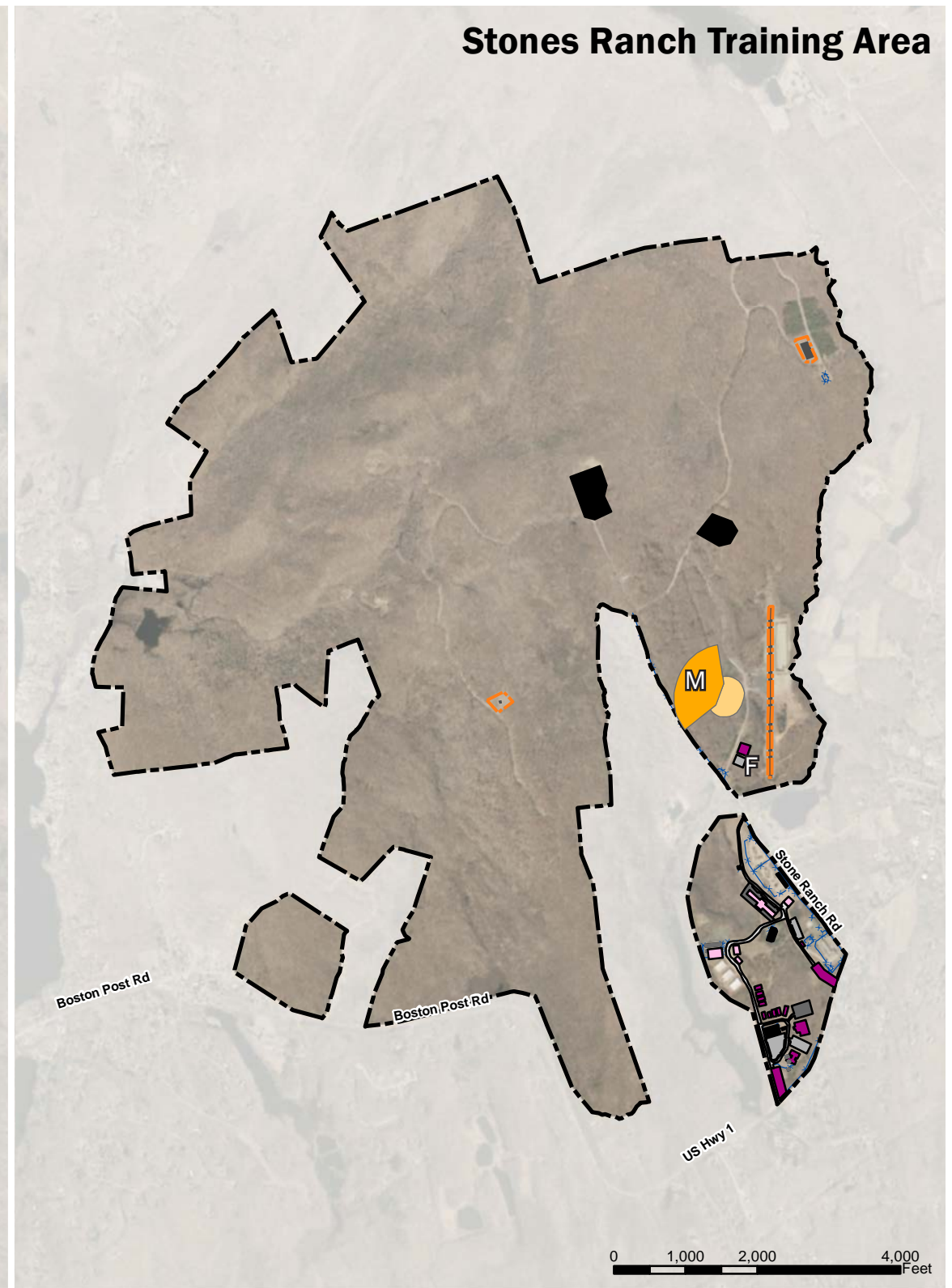
**STONES RANCH MILITARY RESERVATION**

PROJECT NUMBER	PROJECT DESCRIPTION
A	Enlisted Barracks - Transient (200 PN)
B	Battalion HQ - Transient
C	Company HQ - Transient
D	Battalion Support/Ration Breakdown
E	Battalion Maintenance Shelter
F	Range Operations
G	Simulator
H	Simulator
I	Simulator
J	Simulator
K	General Instruction
L	DPW Maintenance/Admin
M	Ammunition Supply Point
N	Readiness Center - 250th Multi-Role Bridge CO
O	UTES
P	General Purpose Instruction - 3,000 SF to BNHQ
Q	Loading Ramp
R	Wash Rack
S	Access Control Point
T	DPW Roads and Grounds
U	Vehicle Maintenance Canopy
V	Traffic Circulation (Pave Roadways)
W	Stones Ranch Infrastructure Update

PN: personnel; CO: company; HQ: headquarters; DPW: Directorate of Public Works; GP: general purpose; MVP: military vehicle parking



- Existing
- Proposed GOV
- Proposed POV
- Proposed Required
- Proposed Project
- Remove
- Remove/Convert to Parking
- Traffic Circulation
- Explosive Safety Quantity Distance
- Military Landing Zone



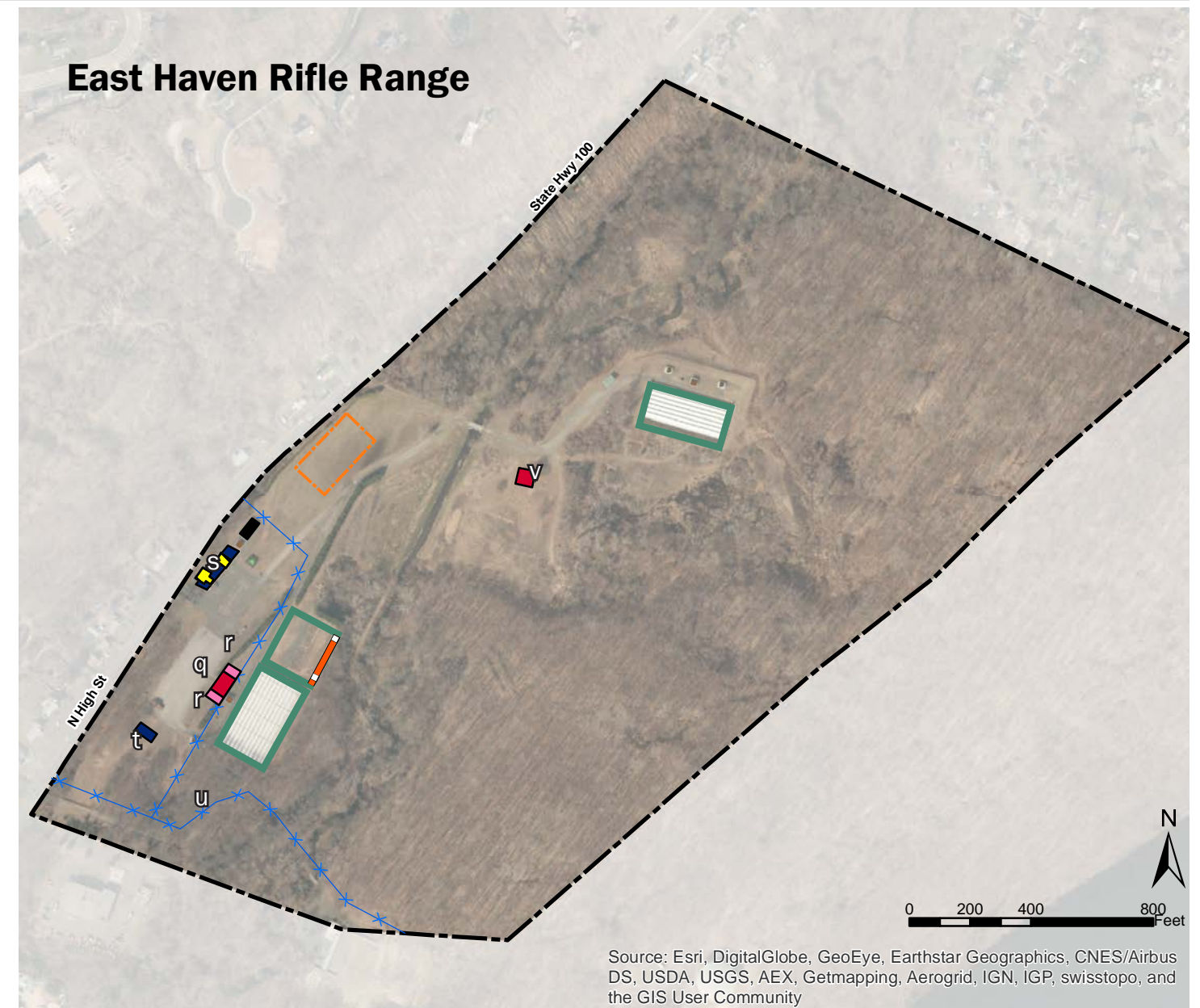
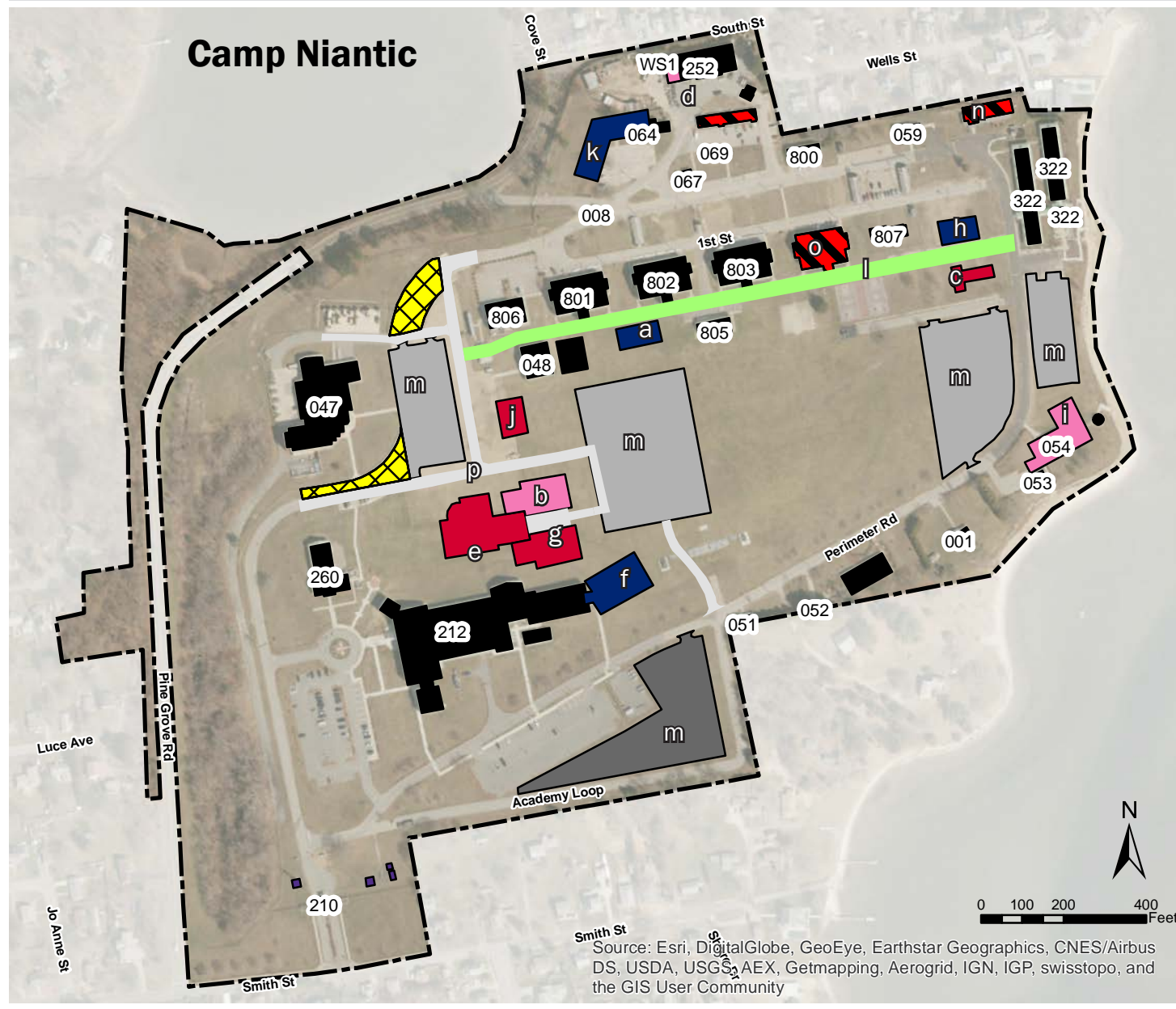
**FIGURE 2:  
STONES RANCH  
PREFERRED PLAN**

CAMP NIANTIC	
PROJECT NUMBER	PROJECT DESCRIPTION
a	Company HQ – Transient
b	Troop Dispensary/Medical Clinic
c	Chapel
d	DPW – Canopy Bldg/renovate existing
e	Readiness Center – DET MED DET

CAMP NIANTIC	
f	RTI Billets
g	Exam Space
h	Dining Facility – Transient (400 PN)
i	General Instruction (The Point)
j	Post HQ
k	Post Exchange (PX)

CAMP NIANTIC	
l	Pedestrian Way
m	POV/MVP Parking
n	Physical Fitness Center
o	804 Renovate back to Barracks
p	Roadway Realignment

EAST HAVEN RIFLE RANGE	
PROJECT NUMBER	PROJECT DESCRIPTION
q	Simulator
r	Range Instruction Canopies (2)
s	Range Operations
t	Grounds Maintenance Building
u	Perimeter/Compound Fencing
v	Ammunition Holding Area



**Legend:**

- Current Plan
- Existing
- Proposed Required
- Proposed Project
- Remove
- Proposed GOV
- Proposed POV
- Pedestrian Pathway
- Static Display
- Traffic Circulation

**FIGURE 3:  
CAMP NIANTIC  
PREFERRED PLAN**

**Legend:**

- Current Plan
- Existing
- Proposed Required
- Proposed Project
- Remove
- x— Proposed Fence
- Range Berm
- Military Landing Zone
- Military Training Location

**Legend:**

- Current Plan
- Existing
- Proposed Required
- Proposed Project
- Remove

**FIGURE 4:  
EAST HAVEN  
PREFERRED PLAN**

**Legend:**

- x— Proposed Fence
- Range Berm
- Military Landing Zone
- Military Training Location

**TABLE 2: PROJECT PRIORITY LIST BY FUNDING**

PROJECT PRIORITY LIST – MILCON				
PRIORITY RANKING	LOCATION	PREFERRED PLAN MAP ID	PROJECT DESCRIPTION	ROM COSTS
1	Camp Niantic	e	Readiness Center – DET MED DET <sup>1</sup>	\$5,433,848
2	Camp Niantic	g	Exam Space <sup>1</sup>	\$4,363,775
3	Stones Ranch	N	Readiness Center - 250th Multi-Role Bridge CO <sup>2</sup>	\$19,070,279
4	Stones Ranch	S	ACP (Full) <sup>3</sup>	\$3,413,507
5	Stones Ranch	A	Enlisted Barracks – Transient (200 PN)	\$15,048,530
6	Stones Ranch	E	Battalion Maintenance Shelter	\$3,730,816
7	Camp Niantic	f	RTI Billets	\$16,009,201
8	Stones Ranch	P	DPW Warehouse	\$3,161,825
9	Stones Ranch	C	Company HQ – Transient	\$2,563,693
10	Stones Ranch	B	Battalion HQ – Transient	\$2,043,710
11	Camp Niantic	j	Post HQ	\$2,637,530
12	Stones Ranch	D	Battalion Support/Ration Breakdown	\$1,276,965
13	Stones Ranch	O	UTES	\$8,269,821
14	Camp Niantic	h	Dining Facility - Transient (400 PN)	\$8,017,475
15	Camp Niantic	c	Chapel	\$2,116,517
16	Camp Niantic	b	Troop Dispensary/Medical Clinic <sup>1</sup>	\$4,361,896
PROJECT PRIORITY LIST - MILCON/OTHER MONEY				
1	Camp Niantic	k	PX	\$2,637,530

1. It is the intent of this plan to provide space for the MED DET Readiness Center, Exam Space (SRP), and TMC either collocated or in proximity. The area on Camp Niantic where each function is located is flexible enough to either contain a single building to locate all functions or build in three separate phases.
2. Some parking will be part of and funded with a Military Construction (MILCON) project.
3. The ACP for Stones Ranch is included in both the MILCON and Sustainment, Restoration, and Modernization (SRM) lists. ACP (Full), included with the MILCON list, indicates a complete ACP buildout that features all physical infrastructure needed to control access along with the development of a visitors center and other associated buildings. ACP (Basic), included in the SRM list, references development of an ACP that provides only the critical, physical aspects of an ACP needed to ensure controlled access.
4. When TMC is moved to the Readiness Center, the intent is to renovate 804 and utilize it as a barracks.

**PROJECTS PRIORITY LIST – SRM**

PRIORITY RANKING	LOCATION	PREFERRED PLAN MAP ID	PROJECT DESCRIPTION	ROM COSTS
1	East Haven	t	Grounds Maintenance Building	\$5,532,337
2	East Haven	s	Range Operations	\$815,593
3	Stones Ranch	Q	Loading Ramp	\$228,581
4	Stones Ranch	W	Stones Ranch Infrastructure Update	\$4,547,000
5	Stones Ranch	S	ACP (Basic) <sup>3</sup>	\$450,708
6	East Haven	u	Perimeter/Compound Fencing	\$100,811
7	Stones Ranch	F	Range Operations	\$2,676,610
8	Stones Ranch	M	Ammunition Supply Point	See Appendix G
9	Camp Niantic	d	DPW – Canopy Building/Renovate Existing Warehouse	\$1,293,911
10	Stones Ranch	L	DPW Maintenance/Admin	\$3,094,355
11	Camp Niantic	m	POV/MVP Parking	\$3,747,472
12	Stones Ranch	T	DPW Roads and Grounds	\$2,501,471
13	Stones Ranch	V	Traffic Circulation (Pave Roadways)	\$220,602
14	Camp Niantic	p	Roadway Realignment	\$673,419
15	Camp Niantic	o	804 – Renovate Back to Barracks <sup>4</sup>	\$1,607,206
16	East Haven	q	Simulator	\$2,506,449
17	Camp Niantic	i	General Instruction (The Point)	\$2,625,508
18	Camp Niantic	l	Pedestrian Way	\$71,018
19	Stones Ranch	U	Vehicle Maintenance Canopy	\$849,821
20	East Haven	r	Range Instruction Canopies (2)	\$279,672
21	Camp Niantic	n	Physical Fitness Center	\$706,366
22	Stones Ranch	K	General Instruction	\$1,004,159
23	Camp Niantic	a	Company HQ – Transient	\$1,901,018
24	Stones Ranch	R	Wash Rack	\$793,288
25	East Haven	v	Ammunition Holding Area	See Appendix G
26	Stones Ranch	G	Simulator	\$2,506,449
27	Stones Ranch	H	Simulator	\$2,506,449
28	Stones Ranch	I	Simulator	\$2,506,449
29	Stones Ranch	J	Simulator	\$2,506,449
30	Stones Ranch	P	General Purpose Inst. 3,000 SF add to BNHQ (B)	\$831,221

## CAPITAL INVESTMENT STRATEGY

During the charrette, potential projects were identified through a requirements analysis and issues discussion. The resulting projects identified during the charrette are listed above. Most do not currently have funding and are part of a long-range development plan, although a few are part of approved projects. This is not all inclusive of a full-capacity buildout, but includes projects that had requirements that could be identified by the proponent as well as projects that enhance the mission.



Shown above is the entrance to the RTI for the CTARNG, located at Camp Niantic.



Pictured above is the Niantic Readiness Center for the CTARNG, which is an enduring mission of the CTC. The Niantic Readiness Center features red-brown brick with white accents and a green roof. The design is consistent with new development at Camp Niantic.

# PURPOSE AND SCOPE

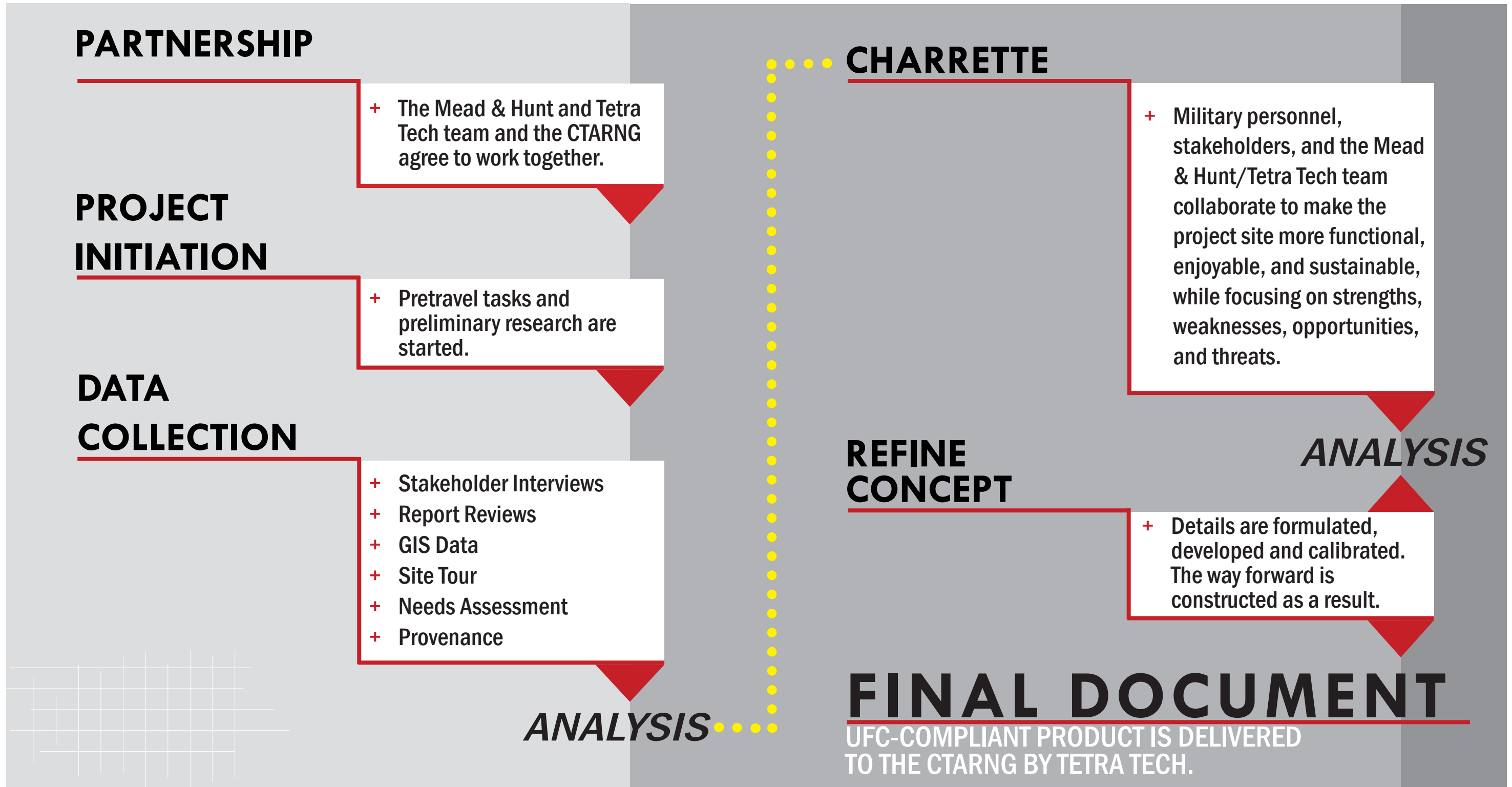
The IMP process is designed to provide a 5-year (short-term), 6 to 10-year (mid-term), and 11 to 20-year (long-term) look at facilities requirements for the CTC. In addition to a review of the requirements, a requirements and needs based plan is provided, as well as an illustrative siting of future facilities. The IMP also provides a suggested phasing for logical growth at the CTC for the primary mission of Readiness Model Training.

## UNIFIED FACILITIES CRITERIA

In May 2012, a new Unified Facilities Criteria (UFC) was issued for Department of Defense (DOD) planning. It was a major departure from the way DOD planning has been done in the past. One primary difference is that a full-capacity buildout plan must be developed for each installation. As part of this effort, the requirements of the installation are considered; however, these requirements then become a portion of the full-capacity build-out plan.

*This section presents the purpose, methodology, vision, and planning assumptions for the CTC IMP.*

PLAN ALIGNMENT



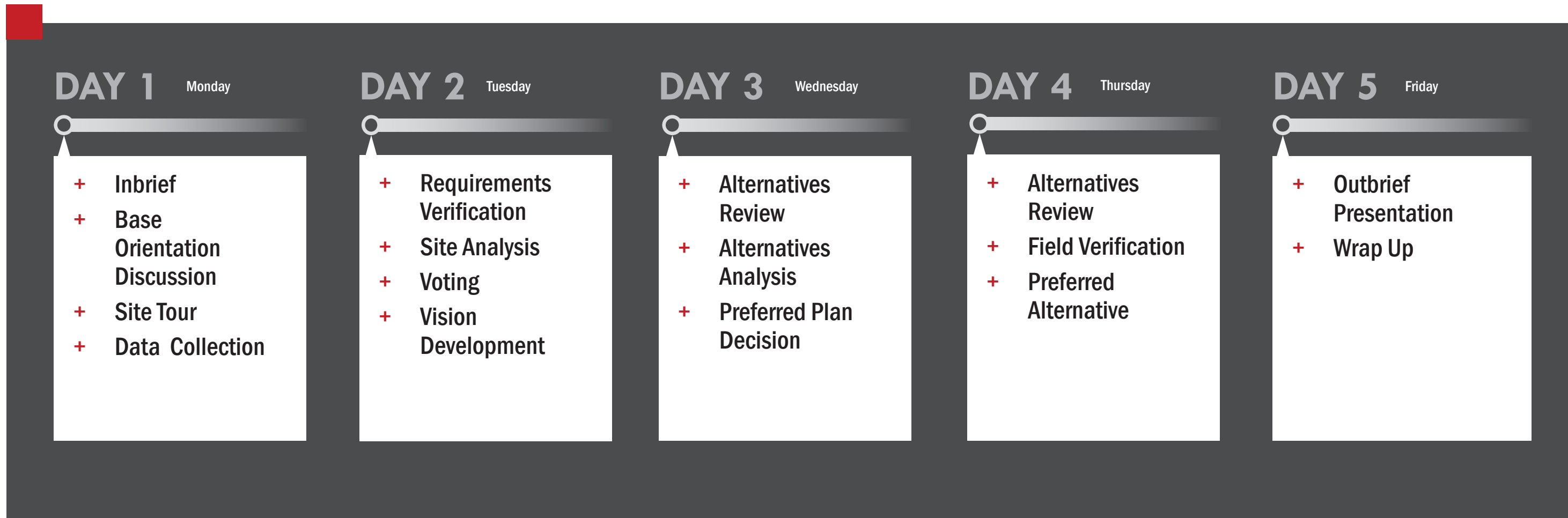
# PLANNING PROCESS

# METHODOLOGY

The methodology used to develop the alternatives is based on three possible future scenarios, each considering the pressures on the mission and facilities in the current funding environment, and incorporating a full-capacity buildout scenario. The alternatives and the vision, goals, and phasing were developed during a 5-day on-site charrette that documented the physical environment and improvement possibilities for the site.

## ORIGIN OF THE WORD 'CHARRETTE'

*The term "charrette" comes from the French word for "cart," according to the National Charrette Institute. The word is often used to describe the final, intense work effort expended by art and architecture students to meet a project deadline. This use of the term is said to originate from the École des Beaux Arts in Paris during the 19th century, where proctors circulated a cart, or "charrette," to collect final drawings while students frantically put finishing touches on their work.*



## UNIT REPRESENTATIVES

There are a number of units that use facilities at the CTC. Represented during the charrette, the following units played a significant role in shaping the future plan for the CTC:

- + CTC
- + CFMO
- + JFHQ
- + 169th RTI
- + MED DET
- + UTES
- + USPFO
- + 85th Troop Command
- + 192nd MP BN
- + 192nd Engineer BN

## SWOT ANALYSIS

During the visioning charrette, stakeholders categorized aspects of the installation into strengths, weaknesses, opportunities, and threats in a SWOT analysis. Participants then voted on the top-priority issues. After this discussion, the stakeholders worked together to develop the vision and goals for future development.

Based on the top-priority SWOT issues and the vision, a weighted matrix was developed and used to rank the three alternatives, resulting in one preferred alternative.



# VISION

*“The CTC is a premier, joint-service, multi-echelon training destination of choice with adaptable, all encompassing, fully resourced, state-of-the-art facilities that enable all readiness model training requirements.”*





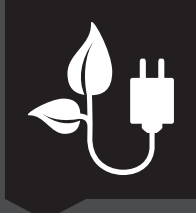
**MISSION**

- + Modernize or replace substandard facilities
- + Build out facilities to meet training center requirements
- + Increase training relevance and depth of CTC



**COMMUNITY**

- + Improve multi-modal travel throughout CTC
- + Improve antiterrorism/force protection (AT/FP) and security
- + Maintain and foster relationships with our local partners



**UTILITIES/  
FACILITIES**

- + Increase CTC resiliency
- + Build out facilities to meet training center requirements
- + Address building resiliency through site planning



**SUPPORT**

- + Draw more Mobile Training Teams (MTT) to CTC
- + Develop alternate federal sources of funding

# MASTER PLAN PLANNING GOALS

**TABLE 3: CTC MASTER PLANNING GOALS AND OBJECTIVES**

CATEGORY	ID	OBJECTIVE
Mission	<i>Goal 1.1</i>	<i>Modernize or replace substandard facilities.</i>
	1.1.1	Access current and future training requirements to determine capacity and facility needs to support training.
	1.1.2	Convert current TMC location at building 804 back to barracks space.
	1.1.3	Develop compliant exam space and soldier readiness processing facilities.
	1.1.4	Upgrade sewer and utility infrastructure at Stones Ranch.
	1.1.5	Implement green infrastructure plan and stormwater management plan at Camp Niantic and Stones Ranch.
	<i>Goal 1.2</i>	<i>Build out facilities to meet training center requirements.</i>
	1.2.1	Develop MED DET Readiness Center at Camp Niantic.
	1.2.2	Develop 250th Multi-Role Bridge Company Readiness Center and associated transient support facilities.
	1.2.3	Develop simulator and general instruction space at Stones Ranch.
	<i>Goal 1.3</i>	<i>Increase training relevance and depth at CTC.</i>
	1.3.1	Develop and construct modern range operations facilities at East Haven Rifle Range and Stones Ranch.
	1.3.2	Develop simulator space at Stones Ranch and East Haven.
	1.3.3	Continue support of current missions and training requirements.
	Community	<i>Goal 2.1</i>
2.1.1		Implement circulation plan featuring one-way road circulation and protected pedestrian path at Camp Niantic.
2.1.2		Improve current road conditions at Stones Ranch including the development of a detached sidewalk network.
2.1.3		Locate simulator buildings near transient facilities at Stones Ranch to improve walkability.
2.1.4		Develop pedestrian walkway at Camp Niantic to provide pedestrian connection between barrack space and readiness centers.
<i>Goal 2.2</i>		<i>Improve antiterrorism/force protection (AT/FP) and security</i>
2.2.1		Improve ACPs at Stones Ranch to support Level IV installation.
2.2.2		Evaluate new building material and design for all future developments to comply with latest AT/FP standards.
2.2.3		Relocate UTES at Stones Ranch to a location within the AT/FP boundary.
<i>Goal 2.3</i>		<i>Maintain and foster relationships with our local partners</i>
2.3.1		Collaborate with East Lyme, Old Lyme, and Lyme and actively participate in joint land use study (JLUS) implementation.
2.3.2		Work with East Lyme to connect Stones Ranch to East Lyme's wastewater infrastructure.
2.3.3		Maintain positive relationship with neighbors sharing access at Camp Niantic.
2.3.4		Limit height of new development along coastal area of Camp Niantic to comply with local zoning.

CATEGORY	ID	OBJECTIVE	
Utilities/ Facilities	<i>Goal 3.1</i>	<i>Increase CTC resiliency.</i>	
	3.1.1	Work with local utility providers to improve utility connections and efficiency of service.	
	3.1.2	Implement green infrastructure plan at Camp Niantic and sustainable planning strategies at all three sites.	
	3.1.3	Utilize permeable pavers and continue to use low-impact development (LID) stormwater drainage concepts.	
	<i>Goal 3.2</i>	<i>Build out facilities to meet training center requirements.</i>	
	3.2.1	Develop MED DET Readiness Center at Camp Niantic.	
	3.2.2	Develop 250th Multi-Role Bridge Company Readiness Center and associated transient support facilities.	
	3.2.3	Develop simulator and general instruction space at Stones Ranch.	
	3.2.4	Improve ACPs at Stones Ranch to support Level IV installation.	
	<i>Goal 3.3</i>	<i>Address building resiliency through site planning.</i>	
	3.3.1	Ensure that UFC-compliant site planning techniques and strategies are applied to all future development.	
	3.3.2	Consider design and location of new building to allow for efficient and equitable access to all transportation modes.	
	3.3.3	Utilize green infrastructure techniques to treat and manage stormwater runoff and to provide open space.	
	Support	<i>Goal 4.1</i>	<i>Draw more mobile training teams to CTC.</i>
		4.1.1	Develop transient area at Stones Ranch to provide state of the art transient support facilities for mobile training teams.
4.1.2		Improve existing barracks and dining facilities to support mobile training team needs.	
4.1.3		Improve current training and classroom space along with developing required new training and classroom space.	
4.1.4		Develop pedestrian circulation plan at Camp Niantic to foster a more pedestrian-friendly environment.	
<i>Goal 4.2</i>		<i>Develop alternate federal sources of funding.</i>	
4.2.1		Utilize SRM funding to improve existing infrastructure.	
4.2.2	Develop techniques to combine facility development with utility development.		

# MASTER PLAN PLANNING OBJECTIVES



The natural environment of Camp Niantic.

# SUSTAINABILITY STRATEGIES

Sustainable planning leads to lasting development that meets present mission needs without compromising the needs of future generations. The goals of such development is to make the most effective use of limited resources, reduce fossil fuel consumption, increase the use of renewable and alternate energy sources, and create more compact and sustainable communities that still meet the safety and security requirements of the installation.

Strategies employed to accomplish these goals are indicated throughout the plan. Elements identified to accomplish a sustainable installation include:

- + Compact, walkable core designs with infill development and building reuse at Camp Niantic and at Stones Ranch
- + Multi-story mixed use development
- + Sustainable landscaping
- + Repurposing the road network to include safer walkable pedestrian routes

LID, stormwater management, and undeveloped open space are other features highlighted to lessen the impact of the built environment across the installation.

Energy conservation should be applied across the installation, and all new and renovated facilities should explore opportunities to improve energy efficiency and reduce greenhouse gas emissions. The building design will incorporate energy-efficient equipment, reducing lighting/energy power consumption and using advanced controls.

Each building will include building automation controls to allow for the installation to manage energy consumption. All new lighting shall be light-emitting diode (LED) with appropriate lighting-control devices to maximize energy efficiency. Water-efficient fixtures should also be utilized to reduce water consumption.

### KEY FACTS

- + The mission of the CTC is enduring.
- + The CTC will maintain status as a Level IV Garrison Training Center.
- + CTC will continue to utilize existing ranges in their capacity

### KEY ASSUMPTIONS

- + CTC will address infrastructure needs to build up the cantonment area at Stones Ranch.
- + CTC will continue to utilize the landing zones located at Stones Ranch, Camp Niantic, and East Haven.
- + Ranges located at East Haven and Stones Ranch will continue to be utilized in their current function.
- + Support for transient activities will continue at the CTC.



# PLANNING ASSUMPTIONS

During the charrette, the team documented assumptions that help guide the planning principles of this IMP. The assumptions listed at left summarize the understandings established with the key stakeholders and describe the guidelines under which this plan's analysis and recommendations were developed.



*This stone wall and dense forested land is typical of the land that comprises and surrounds CTC installations.*



*The entrance to East Haven Rifle Range with homes located across the street from the range.*



*A statue located at Stones Ranch.*

# AREA PROFILE

The CTC comprises three installations in Connecticut. The region consists of low-lying coastal plains, river valleys, and inland areas that are moderately sloped and forested. New Haven frames the region to the west and New London frames the region to the east. The region is serviced by Interstate 95 (I-95) and AMTRAK.

## STONES RANCH MILITARY RESERVATION

Stones Ranch is located within the towns of East Lyme, Lyme, and Old Lyme. Stones Ranch is located in a rural and mostly forested area and is surrounded by multiple lakes and ponds. To the northeast of Stones Ranch is the Nehantic State Forest and to the northwest is the Beckett Hill State Park Reserve. The entrance to the cantonment area is located on Boston Post Road. The entrance to the training area is located off Stone Ranch Road. Stone Ranch Road is also used to access the privately owned parcels that bisect the Stones Ranch site between the cantonment area and the training area.

## CAMP NIANTIC

Camp Niantic is located on a coastal peninsula on the west bank of the Niantic River in the town of East Lyme. The site is approximately 45 miles east of East Haven. Camp Niantic is bordered by residential areas to the north and south. To the west of Camp Niantic is a wooded area owned by the state of Connecticut that serves as a buffer between Camp Niantic and a residential area. Camp Niantic grants an access through the camp to two privately owned parcels abutting the camp on the southeast side.

## EAST HAVEN RIFLE RANGE

East Haven is located 45 miles west of Camp Niantic in East Haven, Connecticut. It is located off High Street. Much of the East Haven property is located within the Farm River floodplain. Saltonstall Mountain borders the site to the east.

EXISTING CONDITIONS

*This section presents the area profile and installation existing conditions and determines the developable areas for the CTC.*

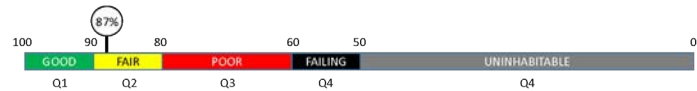
# EXISTING FACILITIES

## STONES RANCH MILITARY RESERVATION

Stones Ranch contains primarily training center facilities except for the UTES complex also located on site. Stones Ranch contains several different facility types to support the training requirements of units utilizing the site with some dating back as early as 1934. With different types of facilities, years constructed and varying levels of quality, it is important to understand existing facility condition of the Real Property Inventory (RPI) so the organization can prioritize their SRM and MILCON efforts in support of the IMP.

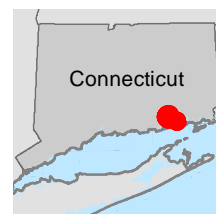
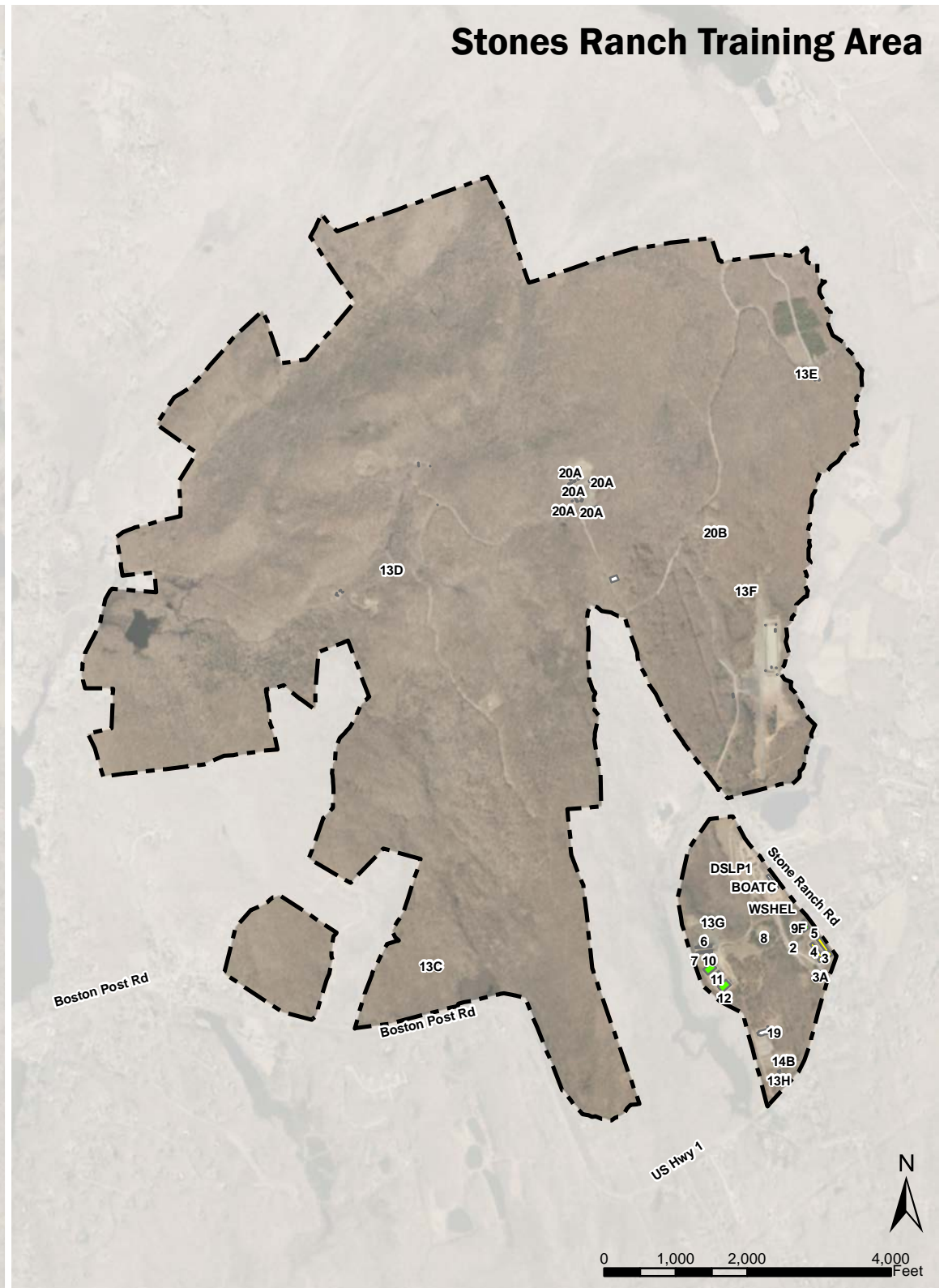
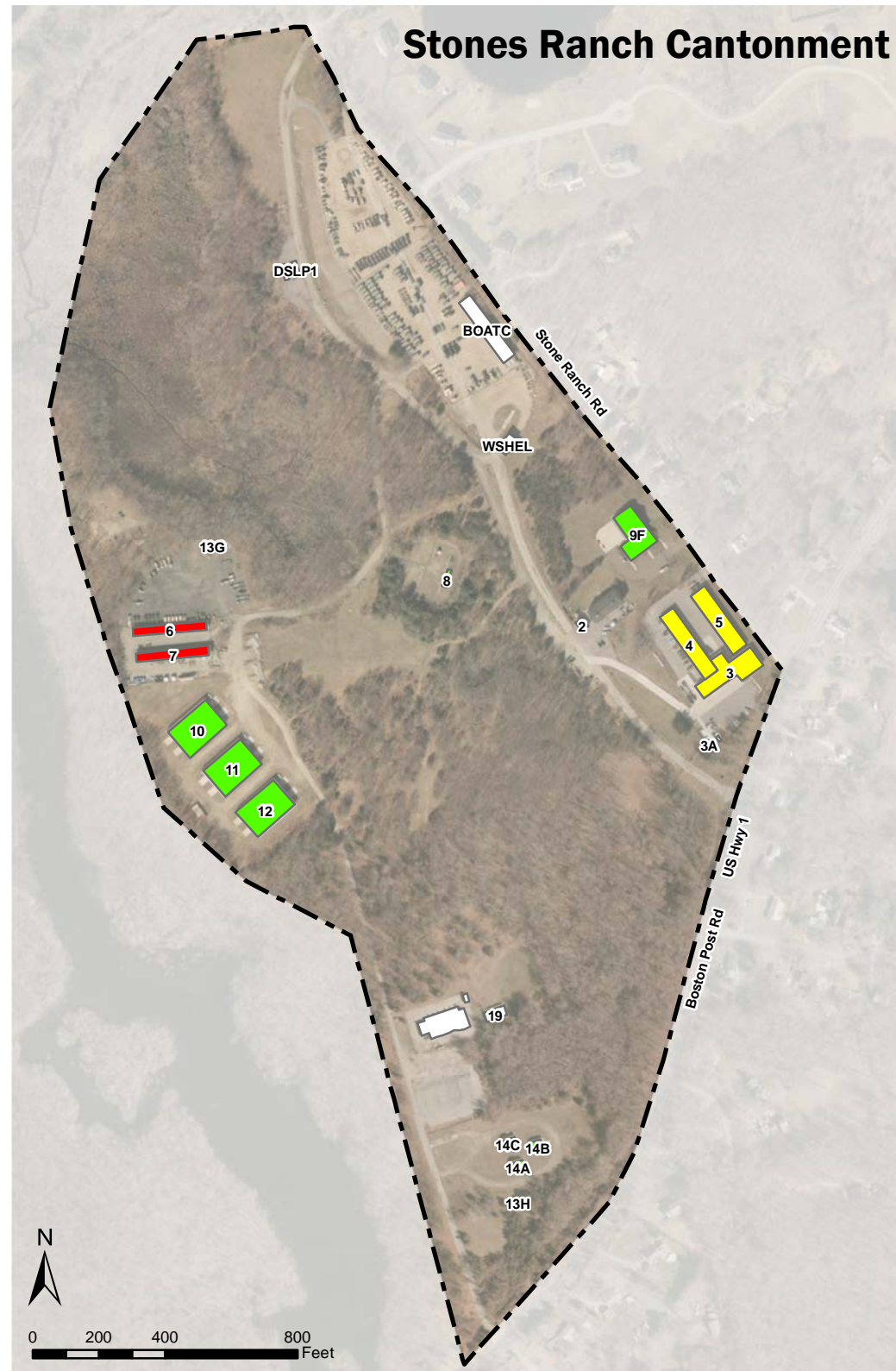
The map on the right contains the DOD Installation Status Report (ISR) ratings for all facilities located on Stones Ranch. The corresponding Quality or "Q" rating indicates the quality of assessed facility components and systems conducted on an annual basis. The final "Q" rating is based on a ratio of improvement costs to replacement value as a percentage of dollars. Current National Guard Bureau (NGB) funding supports a rating of "Q2" for sustainment goals.

Condition Index for evaluated Stones Ranch Facilities



## FACILITY CONDITION INDEX

The Facility Condition Index (CI) is a measure of the physical condition of an asset on a 0 – 100 point scale. The CI for an installation can be calculated as an average of the different RPI evaluated based on a specific facility "Q" rating as indicated above. The higher the CI for an installation, the better it can support the RPI requirements generated as part of the vision and mission of the installation. Averaging the RPI evaluated in the ISR with a generic value of 95 given for "Q1" facilities, 85 for "Q2" facilities, 70 for "Q3" facilities and 55 for "Q4" or failing facilities, we are able to calculate and overall installation CI average for all facilities assessed.



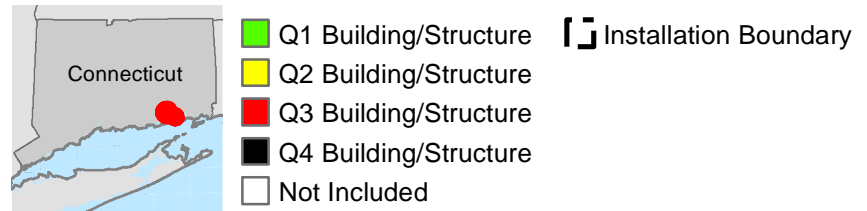
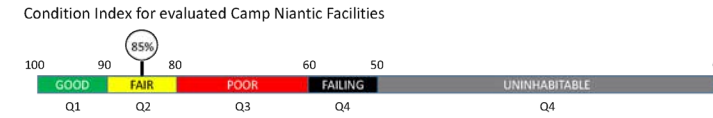
- Q1 Building/Structure
- Q2 Building/Structure
- Q3 Building/Structure
- Q4 Building/Structure
- Not Included
- Installation Boundary

**FIGURE 5:  
STONES RANCH  
EXISTING  
FACILITIES**

### CAMP NIANTIC

Camp Niantic contains a broad range facilities dating to 1926 when multiple original buildings were constructed to meet the training needs of the CTARNG. Although most the facilities on Camp Niantic are training center requirements, the camp also hosts non-training center requirements for the 85th Troop Command, 192nd MP, 169th RTI and JFHQ MED DET.

The map below contains the DOD ISR ratings for all facilities located on Camp Niantic.

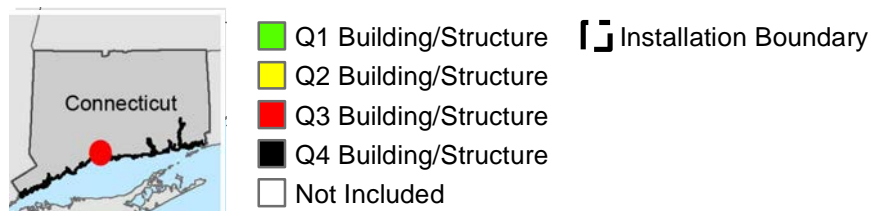
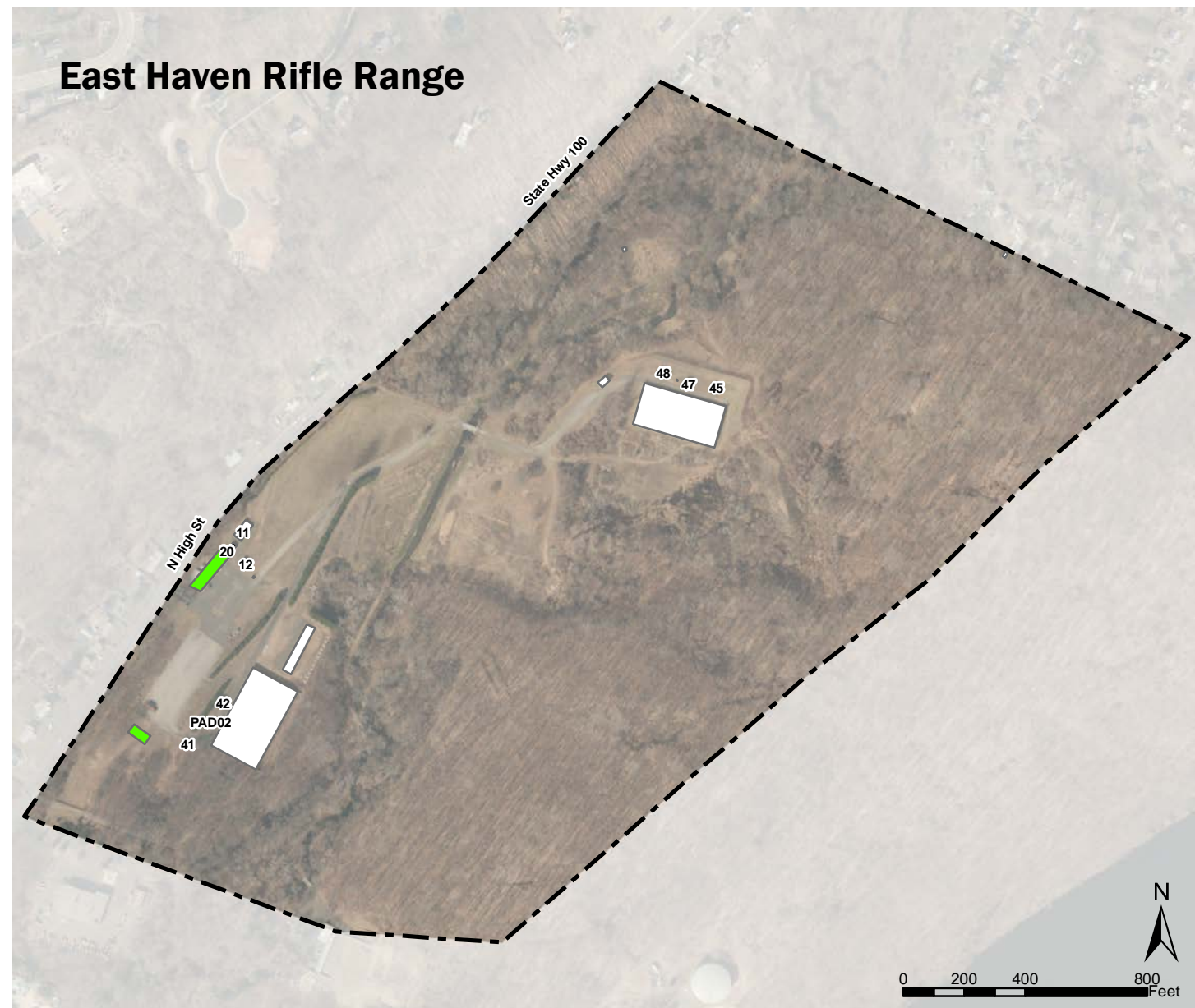
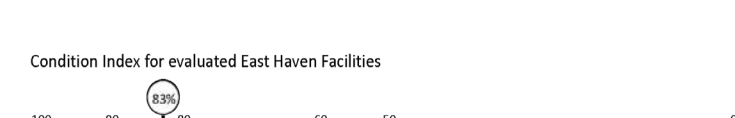


**FIGURE 6: CAMP NIANTIC EXISTING FACILITIES**

### EAST HAVEN RIFLE RANGE

East Haven Rifle Range consists only of training center requirement facilities, and serves as the only live-fire complex for the CTARNG. The primary facility on site dates to 1939, and East Haven Rifle Range has the lowest CI of the three individual sites that constitute the collective CTC. With only live-fire training conducted at this site, East Haven Rifle Range continues to be a vital requirement for Connecticut and meets the goal of NGB with an overall CI of "Q2".

The map below contains the DOD ISR ratings for all facilities at East Haven Rifle Range.



**FIGURE 7: EAST HAVEN EXISTING FACILITIES**



UTES, Stones Ranch



Range Control Building, Stones Ranch

**TABLE 4: STONES RANCH MILITARY RESERVATION EXISTING BUILDINGS SQUARE FOOTAGE**

BUILDING NUMBER	USE	SQUARE FOOTAGE	Q RATING
00002	RANGE OPERATIONS BUILDING	850	Q1
00003	VEHICLE MAINTENANCE SHOP	12,565	Q2
00004	VEHICLE MAINTENANCE SHOP	11,875	Q3
00005	STORAGE GENERAL PURPOSE	10,028	Q2
00006	STORAGE GENERAL PURPOSE	5,800	Q3
00007	STORAGE GENERAL PURPOSE	5,800	Q3
00008	HIGH EXPLOSIVE MAGAZINE	700	Q4
0009F	FIRE STATION	10,745	Q1
00010	CONTROLLED HUMIDITY WAREHOUSE	15,000	Q1
00011	CONTROLLED HUMIDITY WAREHOUSE	15,000	Q1
00012	CONTROLLED HUMIDITY WAREHOUSE	15,000	Q1
0013H	SEPARATE TOILET/SHOWER	622	Q1
0014A	SEPARATE TOILET/SHOWER	984	Q1
0014B	SEPARATE TOILET/SHOWER	984	Q1
0014C	SEPARATE TOILET/SHOWER	984	Q1
00015	SEPARATE TOILET/SHOWER	150	Q3
00024	STORAGE SHED GENERAL PURPOSE	288	Q1
00025	STORAGE SHED GENERAL PURPOSE	360	Q1



**TABLE 5: CAMP NIANTIC EXISTING BUILDINGS SQUARE FOOTAGE**

BUILDING NUMBER	USE	SQUARE FOOTAGE	Q RATING
00001	TRANSIENT TRAINING OFFICER QUARTERS	1,200	Q1
00008	ACCESS CONTROL BUILDING	70	Q4
00029	DINING FACILITY TRANSIENT TRAINING	1,300	Q4
00047	88 TROOP COMMAND/192 MP READINESS CENTER	49,336	Q1
00048	SIMULATION BUILDING	5,005	Q1
00051	SEPARATE TOILET/SHOWER	1,240	Q1
00052	RECREATION SUPPORT FACILITY	1,280	Q1
00053	TRANSIENT TRAINING OFFICER QUARTERS	900	Q1
00054	GENERAL INSTRUCTION BUILDING	1,280	Q3
00058	PHYSICAL FITNESS CENTER	3,750	Q3
00059	BATTALION HEADQUARTERS BUILDING TRANSIENT TRAINING	1,080	Q1
00064	EXCHANGE BRANCH	2,500	Q3
00065	ADMIN GENERAL PURPOSE	3,670	Q1
00067	ADMIN GENERAL PURPOSE	225	Q3
00210	ACCESS CONTROL FACILITY	180	Q4
00212	RTI	55,876	Q1
00212	RTI BARRACKS	19,783	Q1
00212	RTI DINING FACILITY	5,412	Q1
00252	ENGINEERING/HOUSING MANAGEMENT	10,508	Q1
00260	ORGANIZATIONAL CLASSROOM TRANSIENT TRAINING	6,932	Q1
00322	TRANSIENT TRAINING OFFICERS' QUARTERS	13,642	Q1
00613	HAZMAT STORAGE	100	Q1
00800	TROOP MEDICAL CLINIC	2,250	Q2
00801	ENLISTED BARRACKS TRANSIENT TRAINING	22,551	Q2
00802	ENLISTED BARRACKS TRANSIENT TRAINING	22,551	Q2
00803	ENLISTED BARRACKS TRANSIENT TRAINING	22,551	Q2
00804	JFHQ MED DET READINESS CENTER	18,250	Q2
00805	BN HQ TRANSIENT TRAINING	2,750	Q1
00806	SIMULATOR BUILDING	6,386	Q1



Niantic Readiness Center

**TABLE 6: EAST HAVEN RIFLE RANGE EXISTING BUILDINGS SQUARE FOOTAGE**

BUILDING NUMBER	USE	SQUARE FOOTAGE	Q RATING
00002	RANGE OPERATIONS BUILDING	1,761	Q3
00006	RANGE SUPPORT FACILITY	288	Q2
00008	RANGE SUPPORT FACILITY	1,200	Q3
00020	SEPARATE TOILET/SHOWER	289	Q4
00041	RANGE OPERATIONS BUILDING	120	Q2
00042	RANGE SUPPORT FACILITY	281	Q1
00045	RANGE OPERATIONS BUILDING	120	Q1
00047	RANGE OPERATIONS BUILDING	281	Q1
00048	RANGE OPERATIONS BUILDING	120	Q1



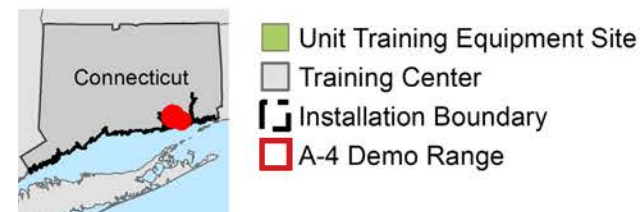
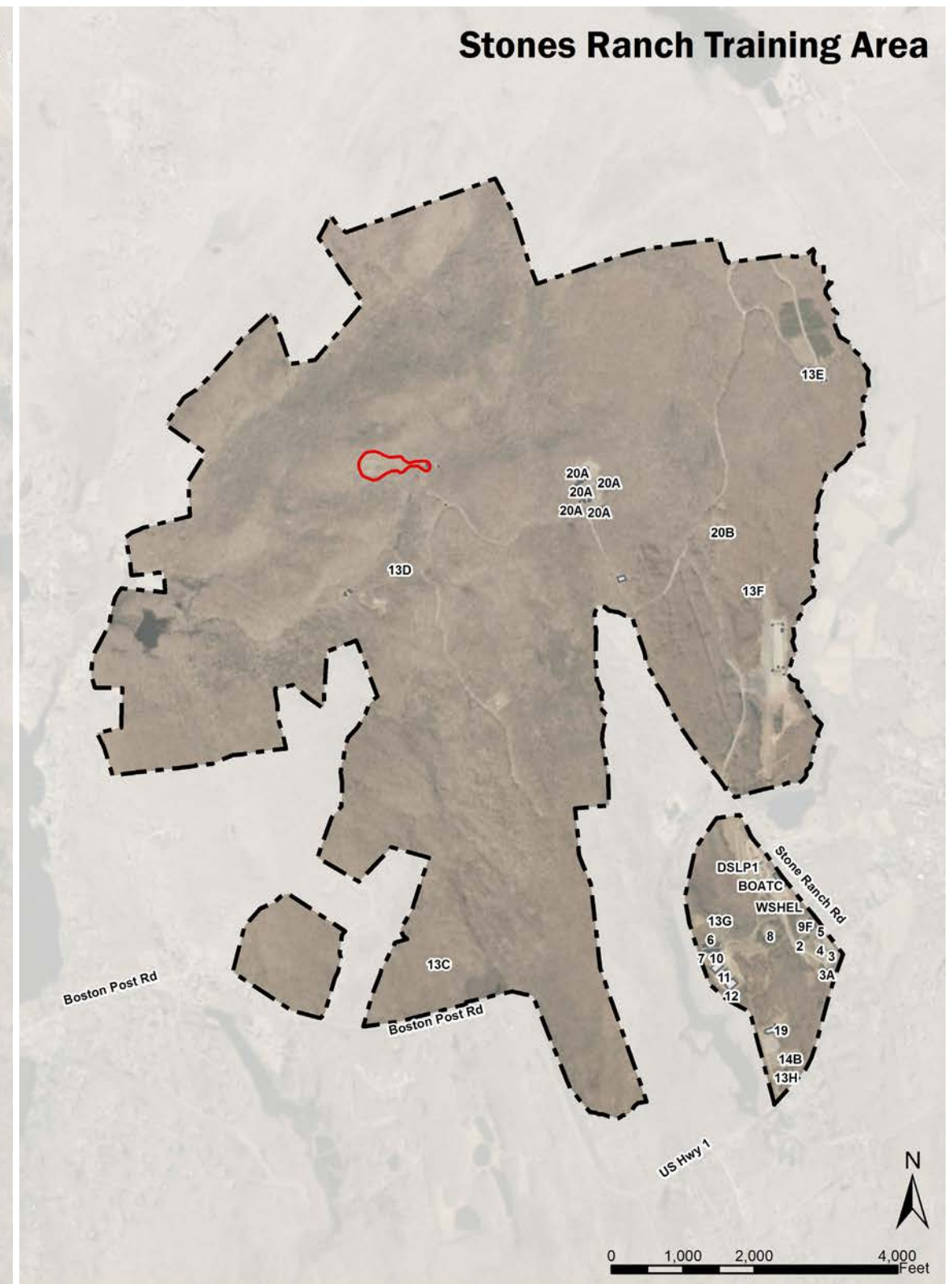
Range Operation Building, East Haven Rifle Range

# TRAINING CENTER ACTIVITY/USAGE

The CTC is classified as a Level IV Garrison Training Center that supports individual and collective training up to a battalion level. The CTC consists of three individual locations: Stones Ranch, Camp Niantic, and East Haven Rifle Range. The primary utilization is for training CTARNG units at the individual and collective level to support both their federal and state mission. The CTC is also home for five other non-training center related requirements and activities which include the UTES, 85th Troop Command, 192nd MP, 169th RTI and the JFHQ MED DET.

## STONES RANCH MILITARY RESERVATION

Stones Ranch is the largest of the three individual training locations and is the primary CTARNG location for collective training at the battalion level. Stones Ranch comprises two individual parcels of land separated into a cantonment area and training area. The cantonment area hosts a variety of training facilities to support the training requirements of CTARNG units to include a Range Control Building, multiple storage facilities, fire station, toilet and shower facilities, and three controlled-humidity warehouses. The training area at Stones Ranch does not support live fire for individual or crew served weapons; however, there is a 5-pound demolition range used by combat engineer units assigned to the state. Other training areas supported at Stones Ranch include Military Operations in Urban Terrain (MOUT) Training (now recognized as Urban Warfare [UO] Training), a Forward Operating Base (FOB), rappel tower, and multiple areas for individual and collective training. The other non-training center activity located at Stone Ranch is the UTES primarily established for the engineer battalion located in the state. The UTES operates in a 24,440-square-foot (SF) facility and has an associated storage lot that contains engineer equipment for the engineering unit located in other areas of the state.



**FIGURE 8:  
STONES RANCH  
SITE ACTIVITY  
AND USAGE**

### CAMP NIANTIC

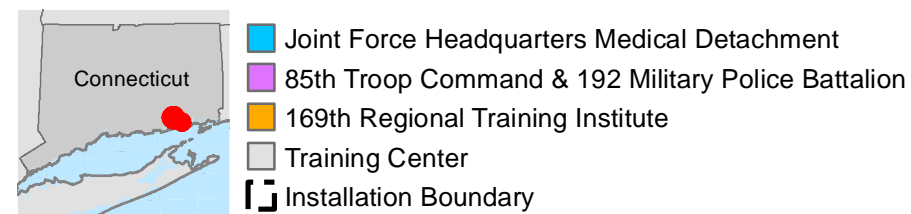
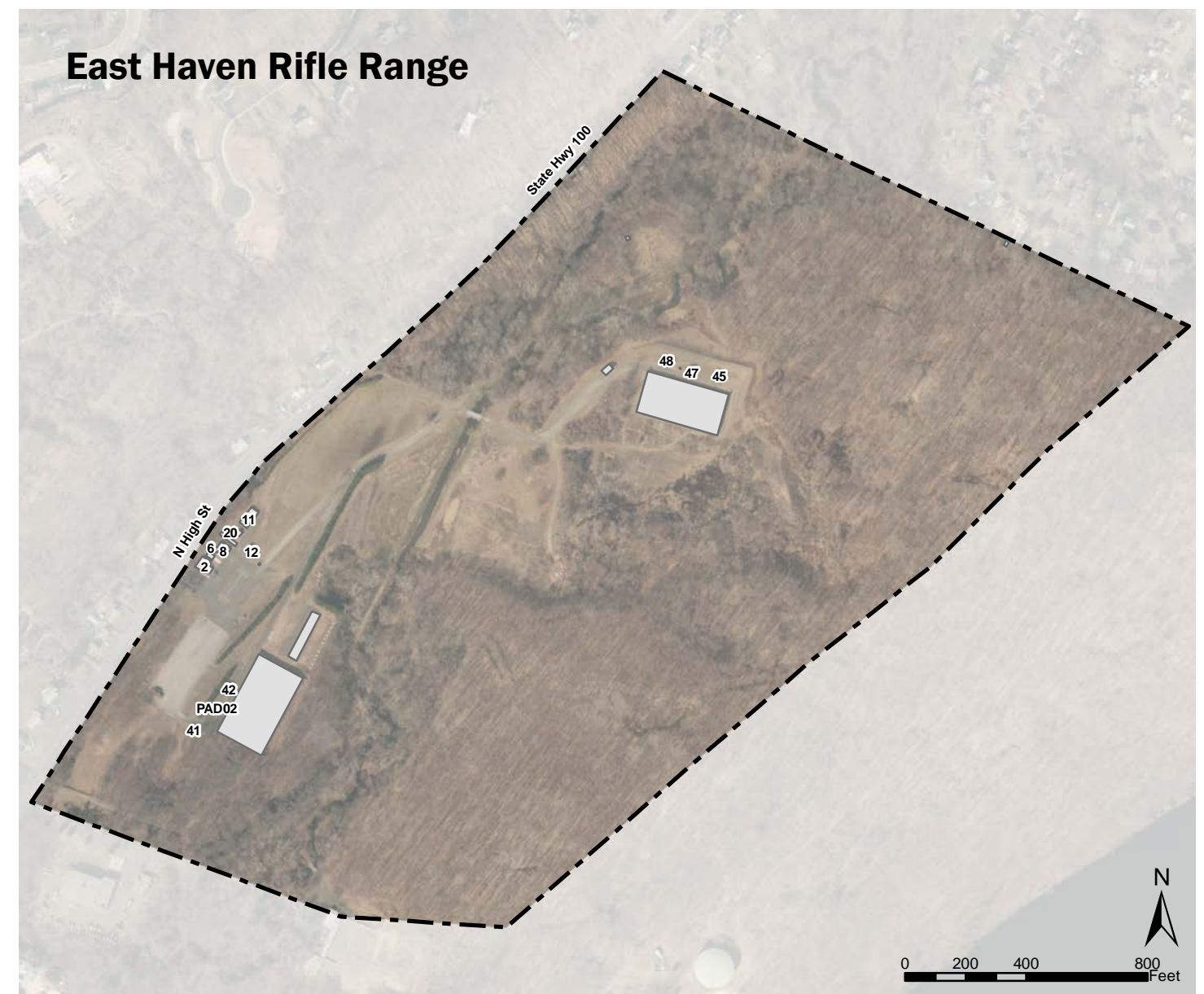
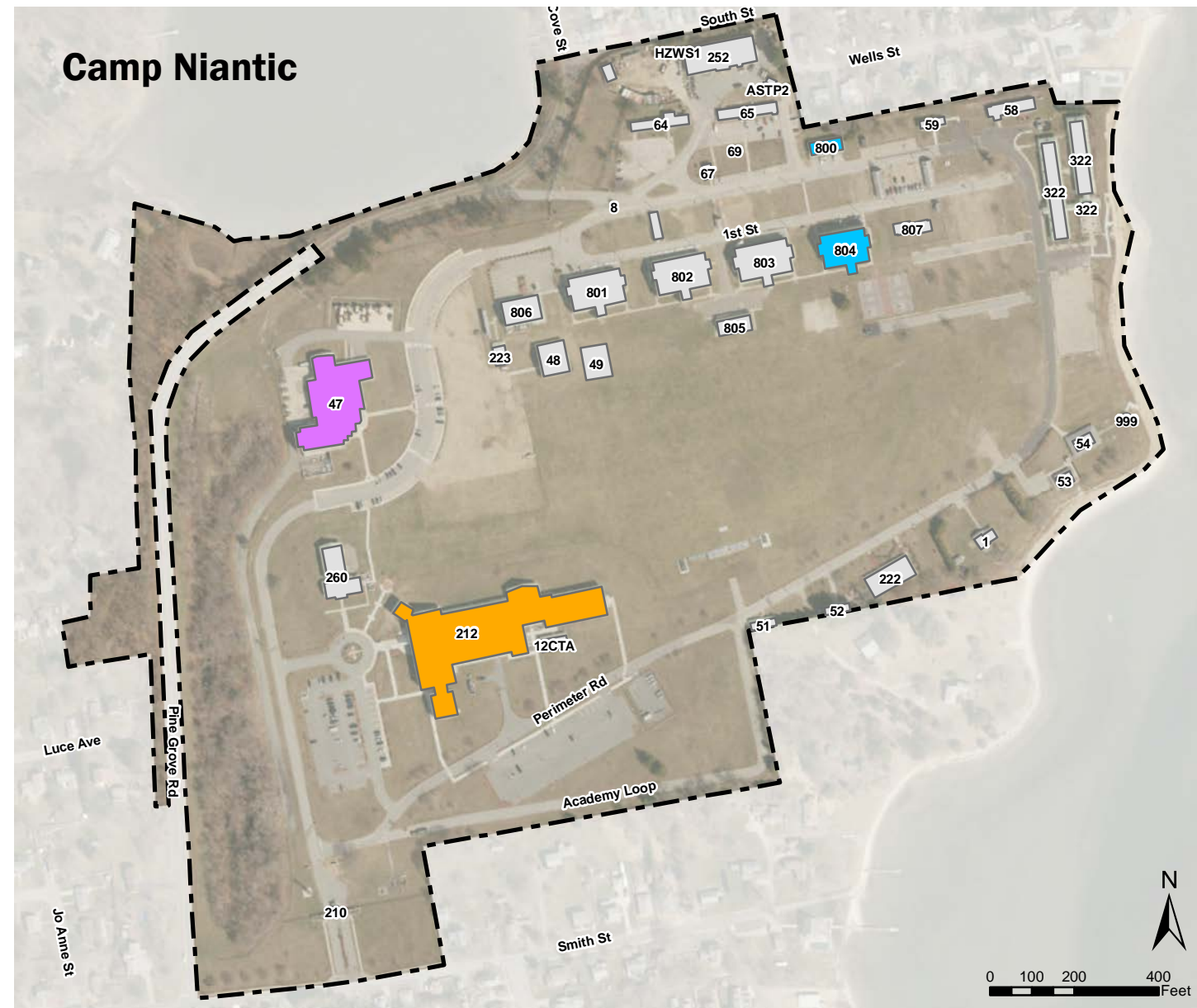
Camp Niantic serves as the Garrison Command for the CTC and hosts the largest number of facilities for the CTARNG. Primary facilities found on Camp Niantic include barracks, dining facilities, medical treatment facility, classrooms, transient headquarters, post headquarters, and other support facilities. The DPW is also located on Camp Niantic and provides support to the entire CTC. There are four non-training center activities located on Camp Niantic. The 85th Troop Command and the 192nd

MP BN share a readiness center on Camp Niantic and conduct unit-level requirements separate from the Level IV training requirements of the camp. The 169th RTI also resides on Camp Niantic and provides Program of Instruction (POI) for assigned courses. The JFHQ MED DET, another non-training center activity on the installation, provides medical support requirements to the CTC along with other medical requirements for the state.

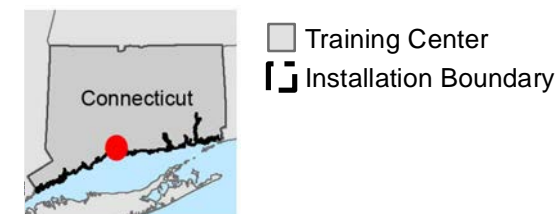
### EAST HAVEN RIFLE RANGE

East Haven Rifle Range is the CTARNG's only in-state location for live-fire training at the individual level. While the East Haven Rifle Range does not have any non-training center activities, it does provide the CTARNG with multiple range opportunities for individual weapons training. Ranges at East Haven include an eight-lane, baffled, automated Combat Pistol Qualification Course (CPQC) with 56 mechanized standard infantry target silhouette risers; a baffled 20-lane zero/ALT-C qualification range

with both 10 and 25 meter targets; and a 12-lane tubular 25M zero/ALT-C qualification range. Primary CTC facilities at East Haven include range control, covered mess, toilets and shower facility and multiple range support buildings.



**FIGURE 9: CAMP NIANTIC SITE ACTIVITY AND USAGE**



**FIGURE 10: EAST HAVEN SITE ACTIVITY AND USAGE**

# ELECTRICAL

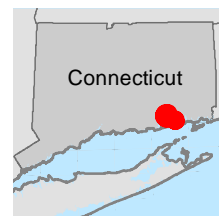
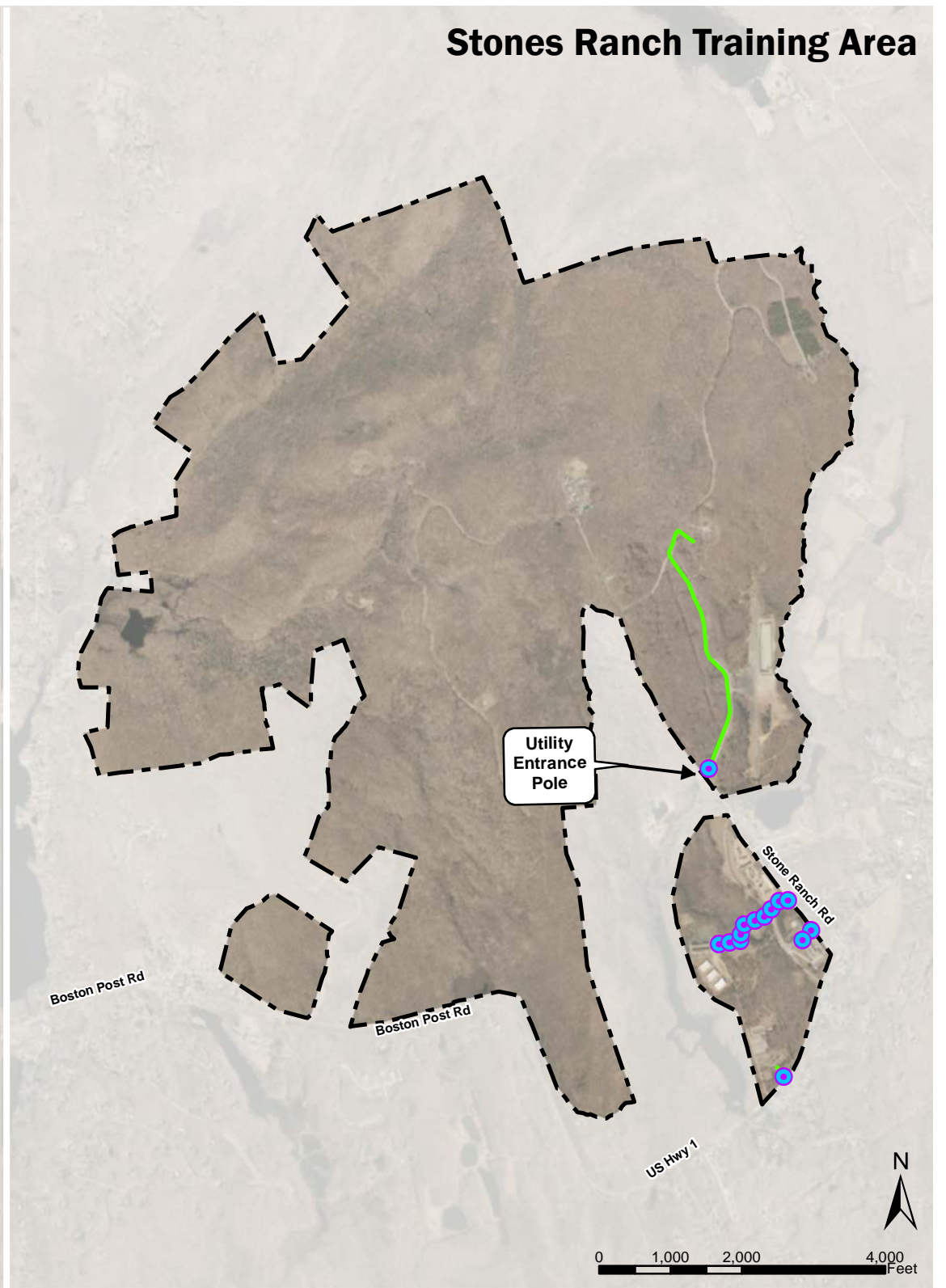
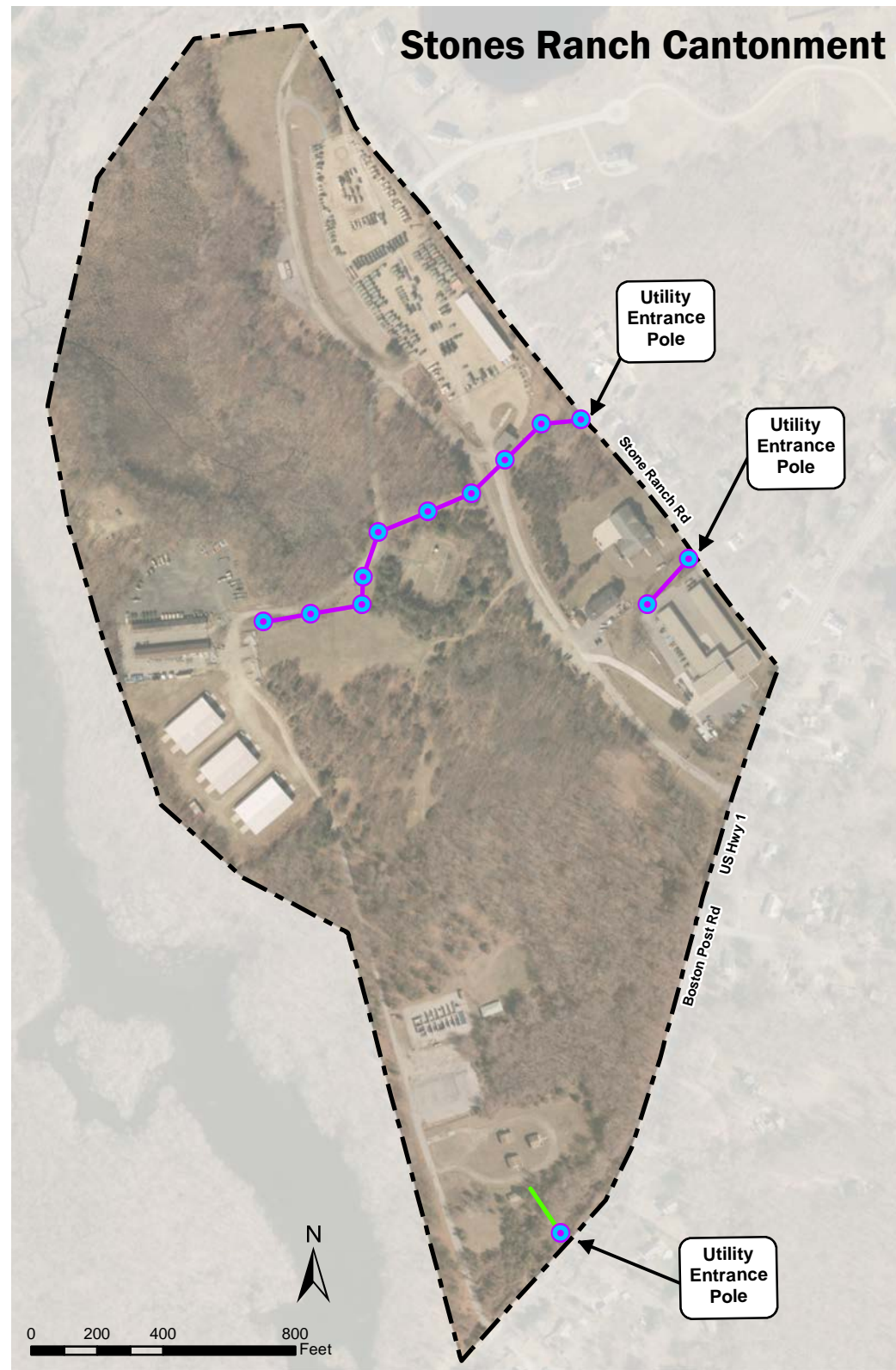
## STONES RANCH MILITARY RESERVATION

Stones Ranch's 10 electrical services are fed overhead from Eversource Energy at three separate locations. All the overhead distribution is owned by Eversource Energy. Electrical Utility Feed #1 (4.8 kilovolts [kV]) is fed from a utility pole on Stone Ranch Road and serves the milk house, fire station, and maintenance shop. Electrical Service Utility Feed #2 (4.8 kV) is fed from a utility pole on Stone Ranch Road and serves the five storage buildings on the western part of the site. Electrical Utility Feed #3 (23 kV) is fed from a utility pole on Boston Post Road and serves a pad-mounted transformer by the toilet and shower complexes. The overall demand load on all three utility feeds are minimal; however, the current installations do not allow for any significant additional load to be added.

There is currently a fourth utility feed (4.8 kV), which is routed underground along the service road and serves the police station radio tower in the training area.



Electrical infrastructure at Stones Ranch



- Power Pole
- Overhead Electrical Distribution
- Underground Electrical Distribution
- Installation Boundary

**FIGURE 11:  
STONES RANCH  
ELECTRICAL**

### CAMP NIANTIC

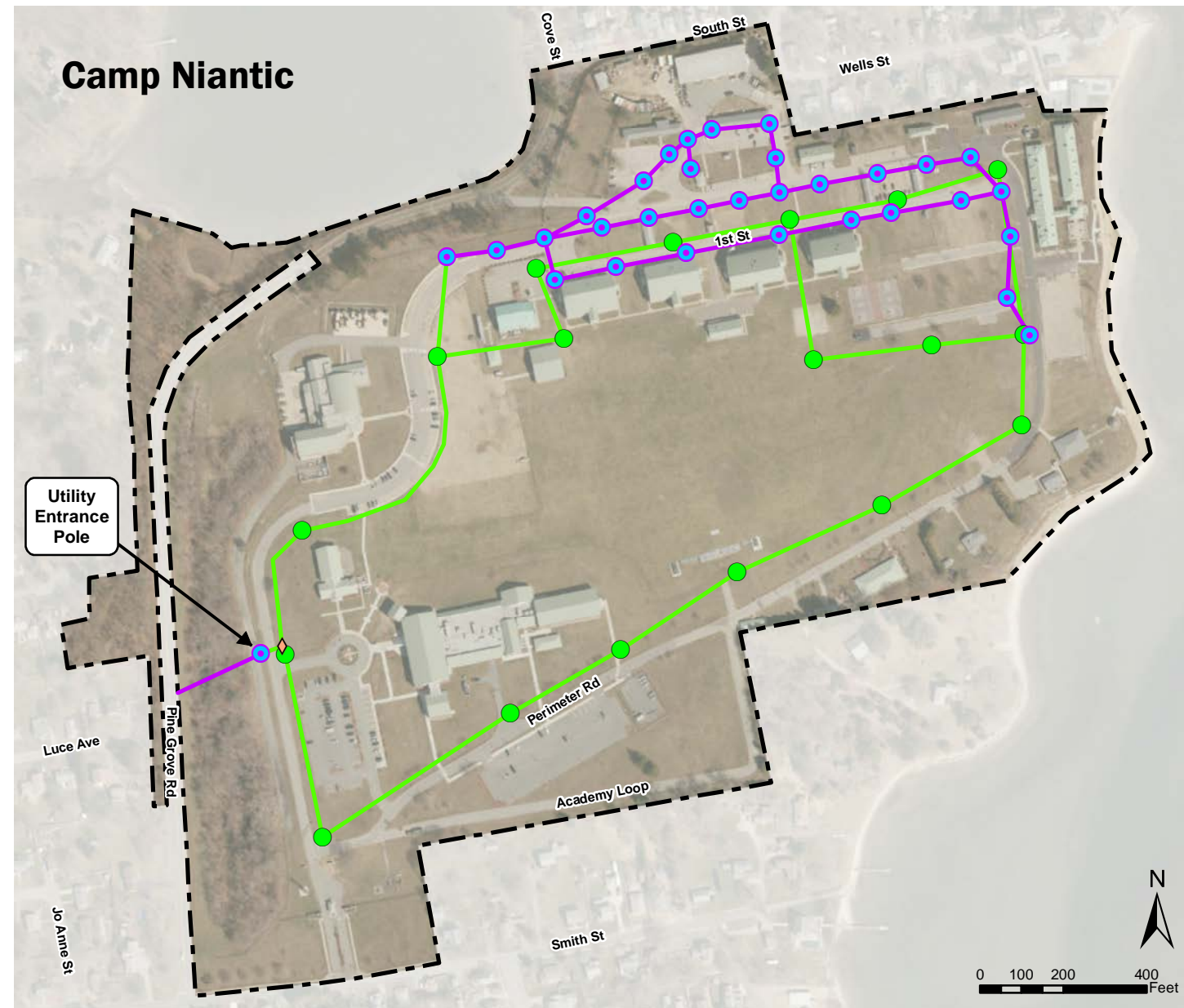
Camp Niantic's electrical service is fed overhead from Ever-source Energy at a single point over Pine Grove Road. Ever-source owns three 500 kilovolt-ampere (kVA), pole-mounted, step-down transformers (total of 1,500 kVA) on Pine Grove Road that lower the voltage from 23 kV to 4.8 kV. The feed terminates in a piece of pad-mounted, medium voltage switchgear owned by CTARNG. Current peak demand load for the site is 757 kVA (50.4 percent of capacity). Camp Niantic owns all of the medi-

um voltage distribution, both overhead and underground downstream of the medium voltage switchgear. A recently installed concrete-encased, underground ductbank system consisting of four 5-inch conduit loops around the camp. The southern portion of the loop contains #350 kcmil, 25 kV medium voltage cable to allow for the future voltage upgrade to 23 kV. By increasing the voltage, the utility-owned transformer capacity limit of 1,500 kVA will be eliminated. All transformers on the south side of the camp have been upgraded to dual voltage to allow for this. The northern portion of the recently installed ductbank sys-

tem is empty. This portion of the camp still utilizes the existing #1/OAWG, 5 kV overhead distribution. This existing overhead cable limits the capacity of the northern portion of the camp to 150 amps (A) or roughly 1,200 kVA.

### EAST HAVEN RIFLE RANGE

East Haven's electrical service is fed overhead from United Illuminating at a single point over High Street. The overhead utility feed terminates on a utility pole west of the range control maintenance shop where the primary metering is located. From this point, CTARNG owns the medium-voltage distribution both overhead and underground. Several pole-mounted step-down transformers serve the support buildings on the west side of the range; two pad-mounted step-down transformers serve the two range control towers.



**FIGURE 12: CAMP NIANTIC ELECTRICAL**

- MV Switchgear
- Electrical Manhole
- Power Pole
- Overhead Electrical Distribution
- Underground Electrical Distribution
- Installation Boundary

MV: medium voltage



**FIGURE 13: EAST HAVEN ELECTRICAL**

- Power Pole
- Overhead Electrical Distribution
- Underground Electrical Distribution
- Installation Boundary

# WATER AND FIRE

## WATER DISTRIBUTION AND FIRE PROTECTION

### STONES RANCH MILITARY RESERVATION

The East Lyme Water Department provides wholesale water to the Stones Ranch water distribution system. The water distribution system is limited to the toilet/shower buildings, fire station, UTES, and range control building. The toilet/shower building's distribution system is fed by a service off the 16-inch water main on Boston Post Road. The fire station, UTES, and range control building distribution system is fed by a different service off the 16-inch water main on the Boston Post Road. There is a master meter for both services. One nonpotable well supplies water to the existing equipment wash rack at Stones Ranch.

Fire protection is limited to hydrants on the Boston Post Road 16-inch water main. The system serves a single-pressure zone.

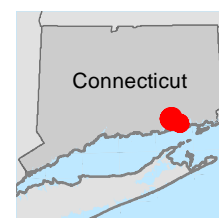
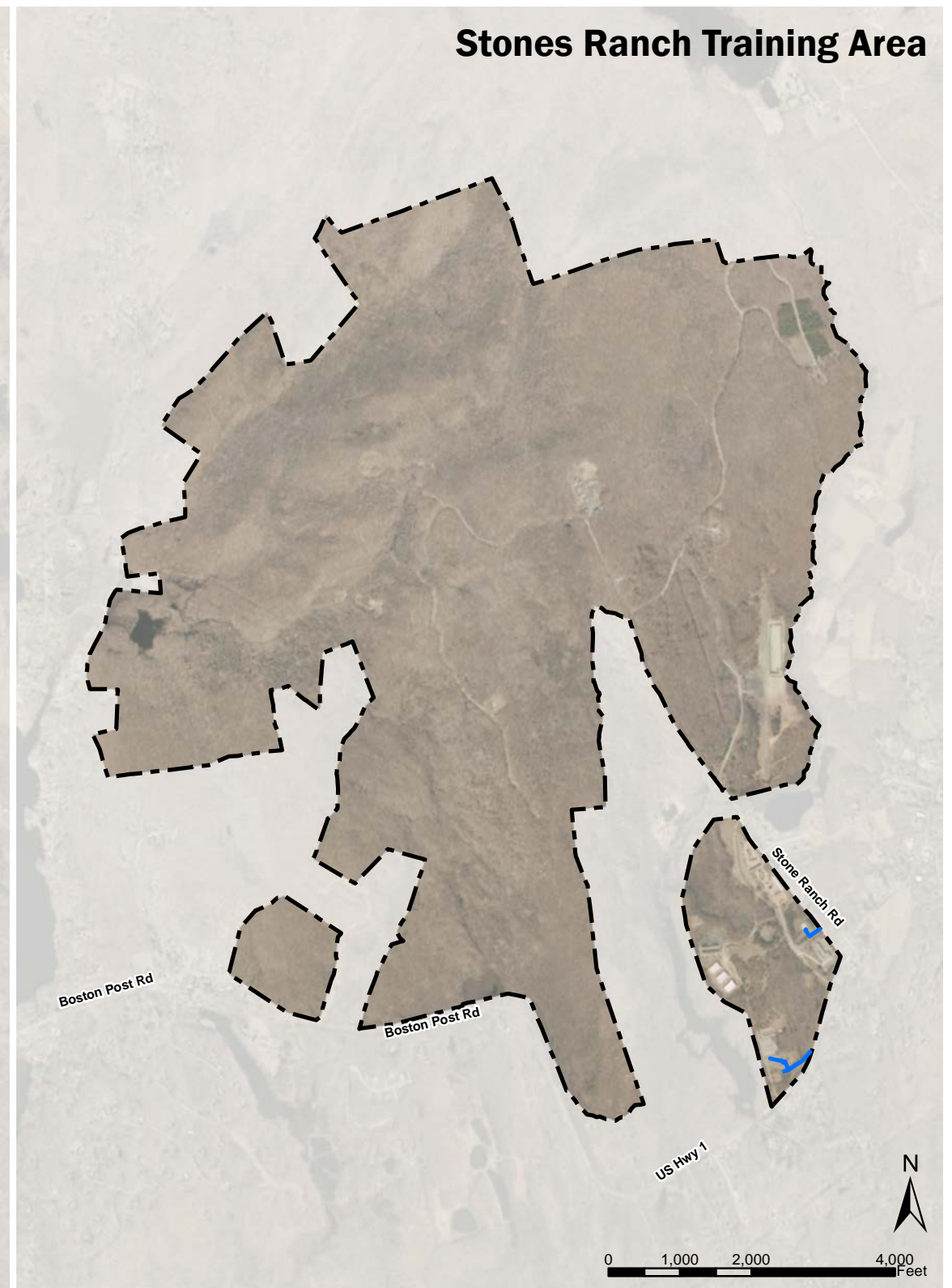
Average water use from October 2016 through September 2017 was 440 gallons per day (gpd), or 0.3 gallons per minute (gpm). Water conservation fixtures should be used in new construction and rehabilitation of existing facilities. Peak domestic demand is three to five times the average domestic demand. Peak capacity of the 16-inch main at the point of service is roughly 3,000 gpm, which provides over 1,000 times the average demand, resulting in significant available domestic capacity.

Fire protection flows are supplied by the domestic system. Total fire flow demands for low hazard (office and maintenance) buildings range from 500 to 1,000 gpm (combined hose stream and sprinkler demand). The 3,000 gpm capacity of the 16-inch water main on Boston Post Road can support a single fire event for those building types. Because hazard classification drives fire flow demands, it is anticipated that development of future, similar low hazard facilities can be supported by an appropriately sized service.

### CAMP NIANTIC

The East Lyme Water Department provides wholesale water to Camp Niantic's water distribution system. The distribution system is fed by a single 10-inch ductile iron water main. There is a master meter at the main service. Main service was installed in 2011. Prior to that, the camp was supplied by wells. The original water distribution system consisted of a loop of 6-inch cast iron water mains installed in the 1930s. Part of this distribution system has been replaced with 10-inch ductile water main as part of the construction of the readiness center and the RTI.

The distribution system supplies potable water fire protection and serves as a single-pressure zone with no potable storage



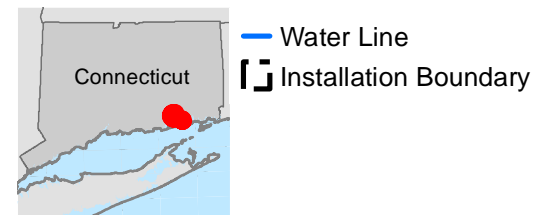
— Water Line  
 [Dashed Line] Installation Boundary

**FIGURE 14:**  
**STONES RANCH**  
**WATER AND FIRE**

on site. The average water use from October 2016 through September 2017 was 7,239 gpd, or 5 gpm. Conservation efforts, including replacement of plumbing fixtures with low-flow fixtures when buildings are renovated, have been implemented to reduce water use. Water conservation fixtures should be used in new construction and rehabilitation of existing facilities. Peak domestic demand is generally three to five times the average domestic demand. The peak capacity of the 10-inch main at the point of service is roughly 1,300 gpm, which provides over 260 times the average demand, resulting in significant available do-

mestic capacity.

Generally, fire flow demands for low hazard (office and maintenance buildings) range from 500 to 1,000 gpm (combined hose stream and sprinkler demand). The 1,300 gpm capacity of the 10-inch service demonstrates that the current system can support a single fire event for those building types. Hazard classification, not building size, drive fire flow demands. Development of future similar low hazard facilities can be supported by the existing service and distribution system.



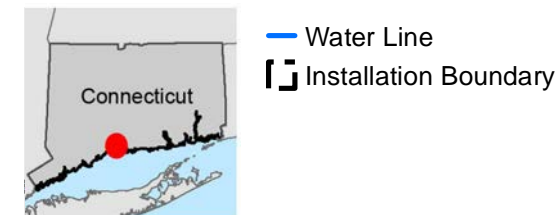
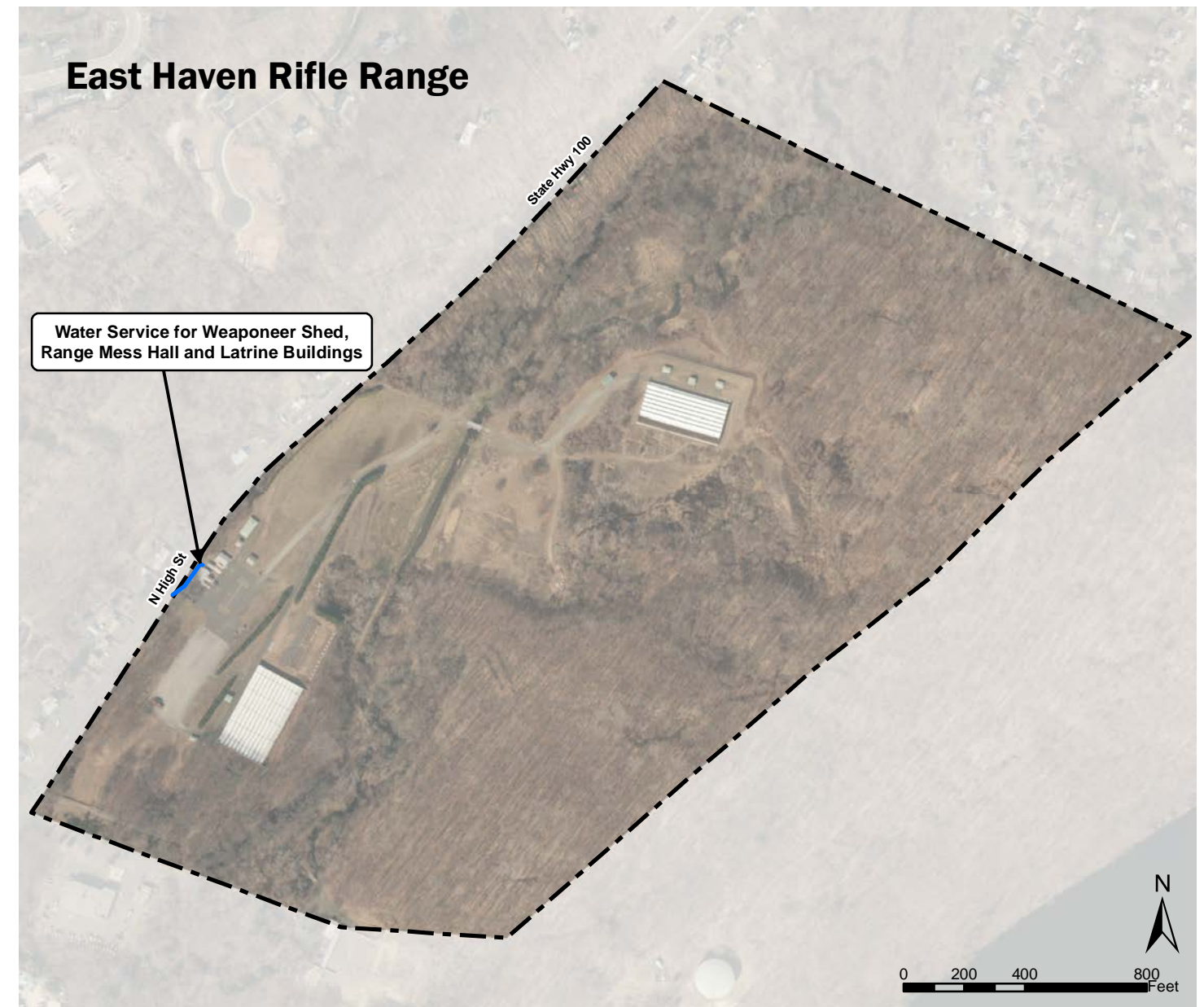
**FIGURE 15:  
CAMP NIANTIC  
WATER AND FIRE**

**EAST HAVEN RIFLE RANGE**

The South Central Connecticut Water Authority provides water to the East Haven water distribution system. The system is limited to the range control maintenance shop, weaponeer shed, range mess hall, and toilet/shower buildings. The system is fed by an 8-inch water main on North High Street.

Fire protection is limited to hydrants on the North High Street water main. Average water use in 2017 was unavailable. Peak

domestic demand is generally three to five times the average domestic demand. The peak capacity of the 8-inch main at the point of service is roughly 1,000 gpm. Fire protection flows are supplied by the water main on North High Street. Total fire flow demands for low hazard buildings range from 500 to 1,000 gpm (combined hose stream and sprinkler demand). The 1,000 gpm capacity of the 8-inch water main can support a single fire event for these buildings. Hazard classification drives fire flow demands, and it is anticipated that development of low hazard facilities can be supported by an appropriately sized service.



**FIGURE 16:  
EAST HAVEN  
WATER AND FIRE**

## WASTEWATER AND STORMWATER DISTRIBUTION

### STONES RANCH MILITARY RESERVATION

Stones Ranch is not connected to a public sewer system. Wastewater disposal is provided by three septic systems. One septic system serves the toilet/shower buildings, one system serves the UTES, and one system serves the fire station and range control buildings. Publicly owned sanitary sewer is located near the intersection of Boston Post and Plum Hill Roads and is owned by the East Lyme Sewer Department.

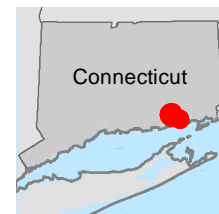
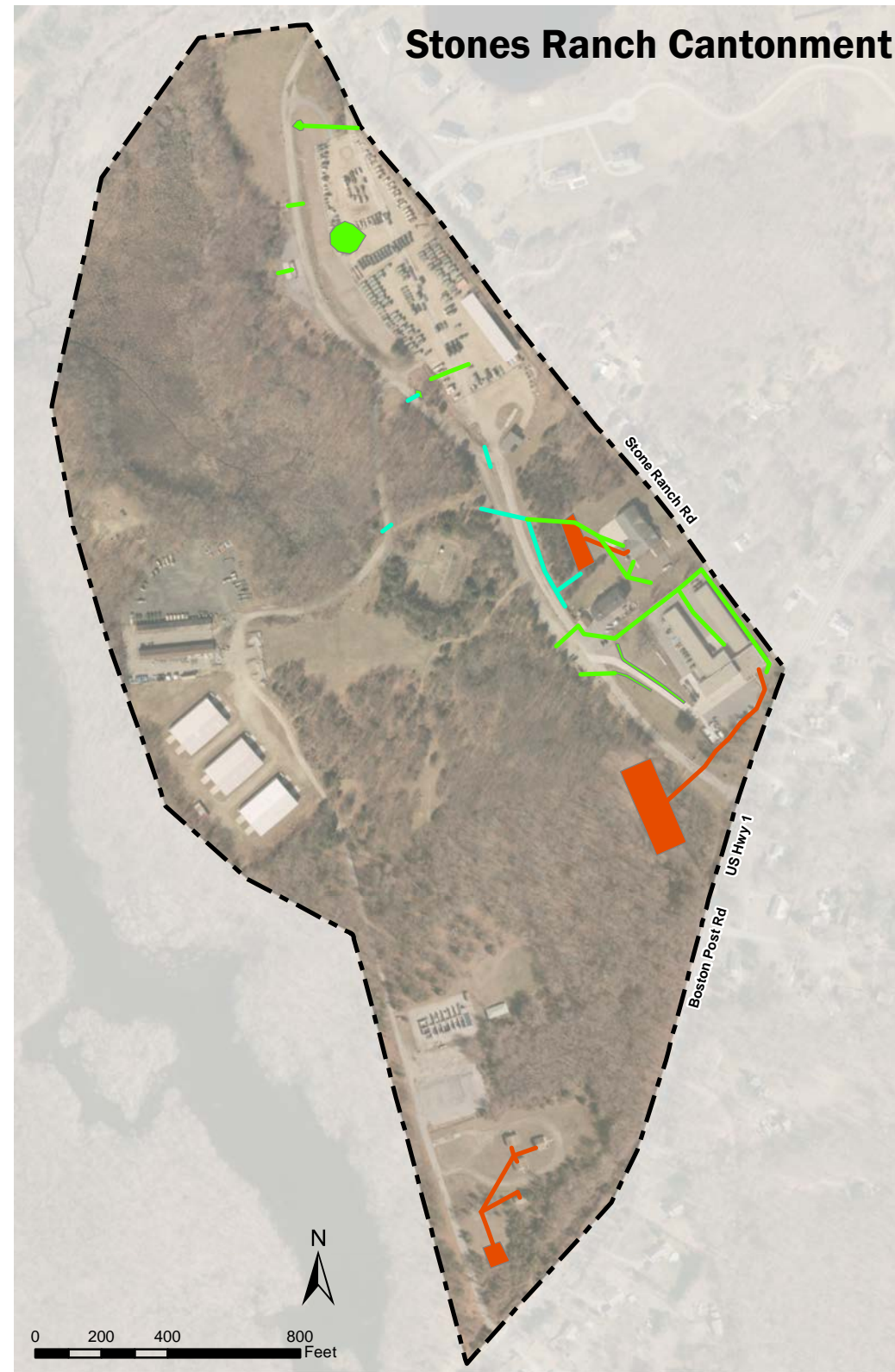
The stormwater collection system consists primarily of open ditches. There are storm inlets and associated storm sewer pipes in the parking area near the range control building. These inlets drain to an open ditch. Drainage in the cantonment is to Fourmile River, which flows south, bisecting the facility. There are no stormwater treatment facilities.

### CAMP NIANTIC

Camp Niantic owns and operates a sanitary sewer collection system but does not own or operate a wastewater treatment plant. Domestic wastewater flows generated on Camp Niantic are collected and discharged through a 12-inch sewer located approximately 200 feet east of the main entrance. Once wastewater flows leave the site, they are conveyed through a collection system owned and operated by the East Lyme Sewer Department. Treatment of the wastewater is at a regional wastewater treatment plant in Groton, Connecticut. Wastewater flow is estimated based on potable water meter readings. Wastewater flow from the adjacent Pine Grove subdivision flows through Camp Niantic in the gravity sewer collection system.

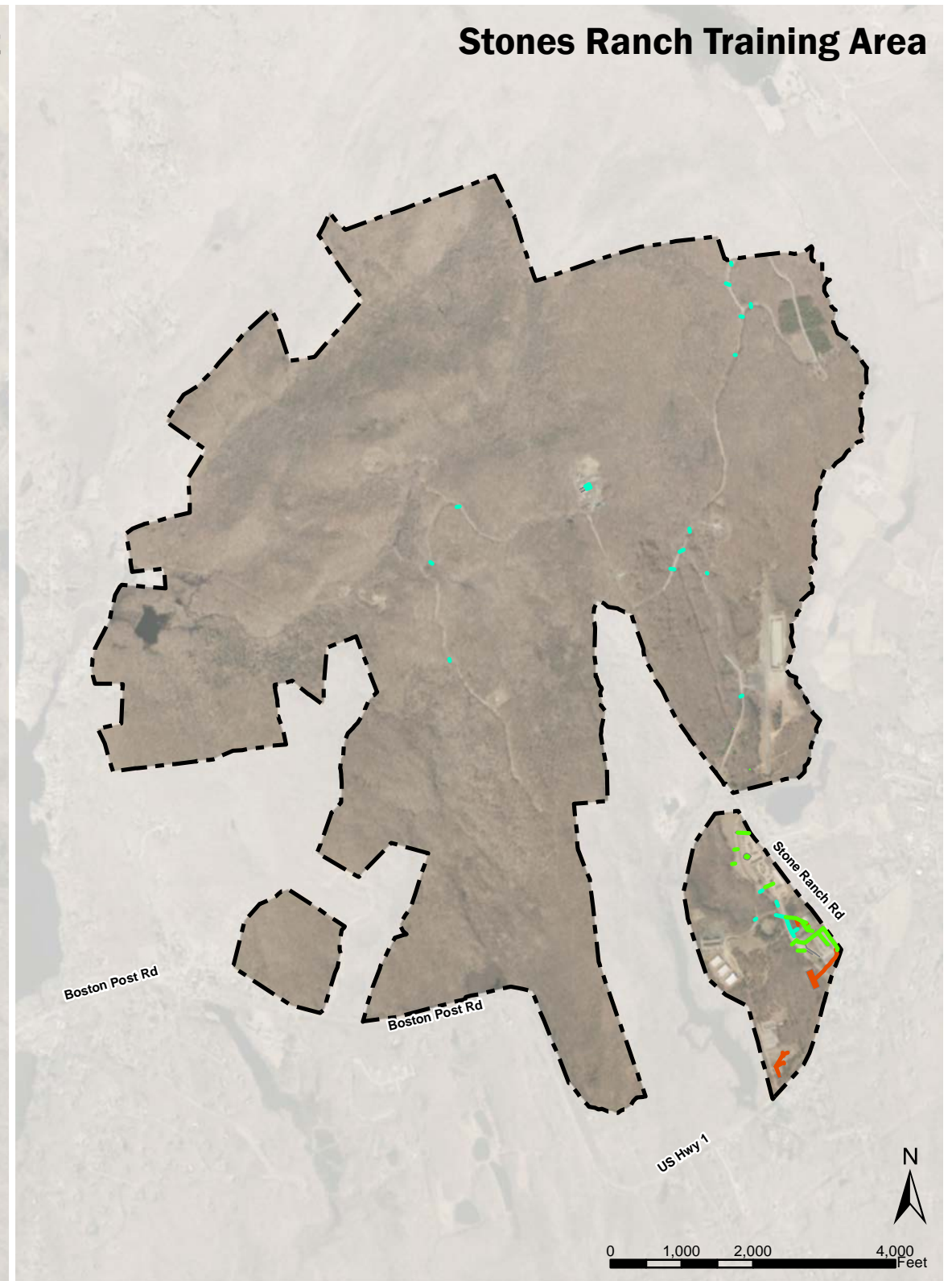


Stormwater culvert at Camp Niantic.



- Stormwater Line
- Wastewater Line
- Culvert
- Stormwater Open Drainage Area
- Septic Tank and Drain Field

Installation Boundary



**FIGURE 17:  
STONES RANCH  
WASTEWATER AND  
STORMWATER**



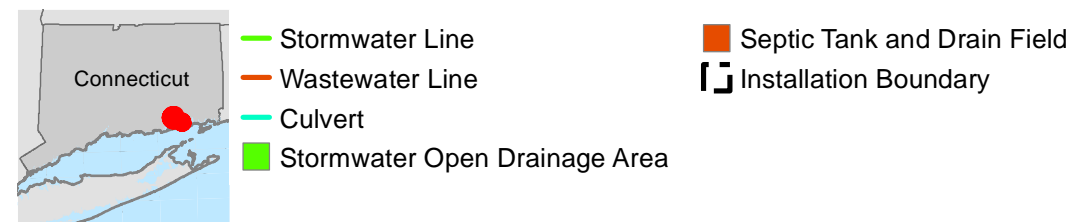
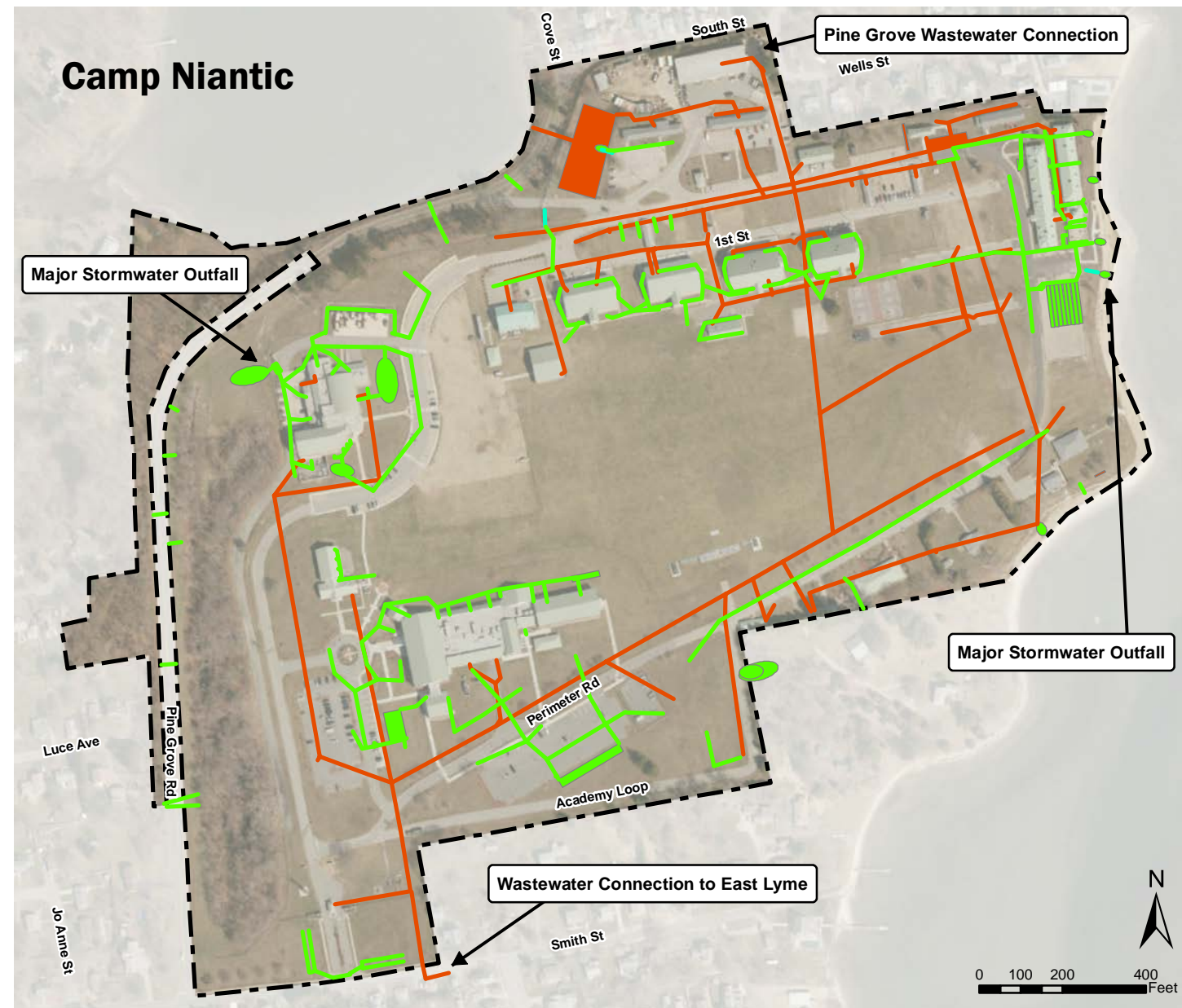
The Camp Niantic stormwater collection system includes a combination of storm sewer pipes and open ditches. Stormwater treatment is provided in swirl separators and infiltration basins. Swirl separators are located near the parking lots for the RTI, west of the readiness center, and east of the parade grounds. Infiltration basins are located near the swirl separators and southeast of the readiness center. Permeable pavers are also installed in some parking areas along Perimeter Drive.

There are two main stormwater outfalls at Camp Niantic. One outfall is located on the west side of the camp near the readiness center. This is a 15-inch high-density polyethylene (HDPE) pipe that discharges into a wetland after stormwater treatment. The second outfall is located on the east side of the camp near the Transient Training Officers Quarters. This is a 15-inch HDPE pipe that discharges into the Niantic River after treatment.

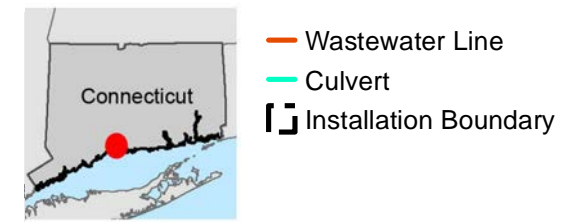
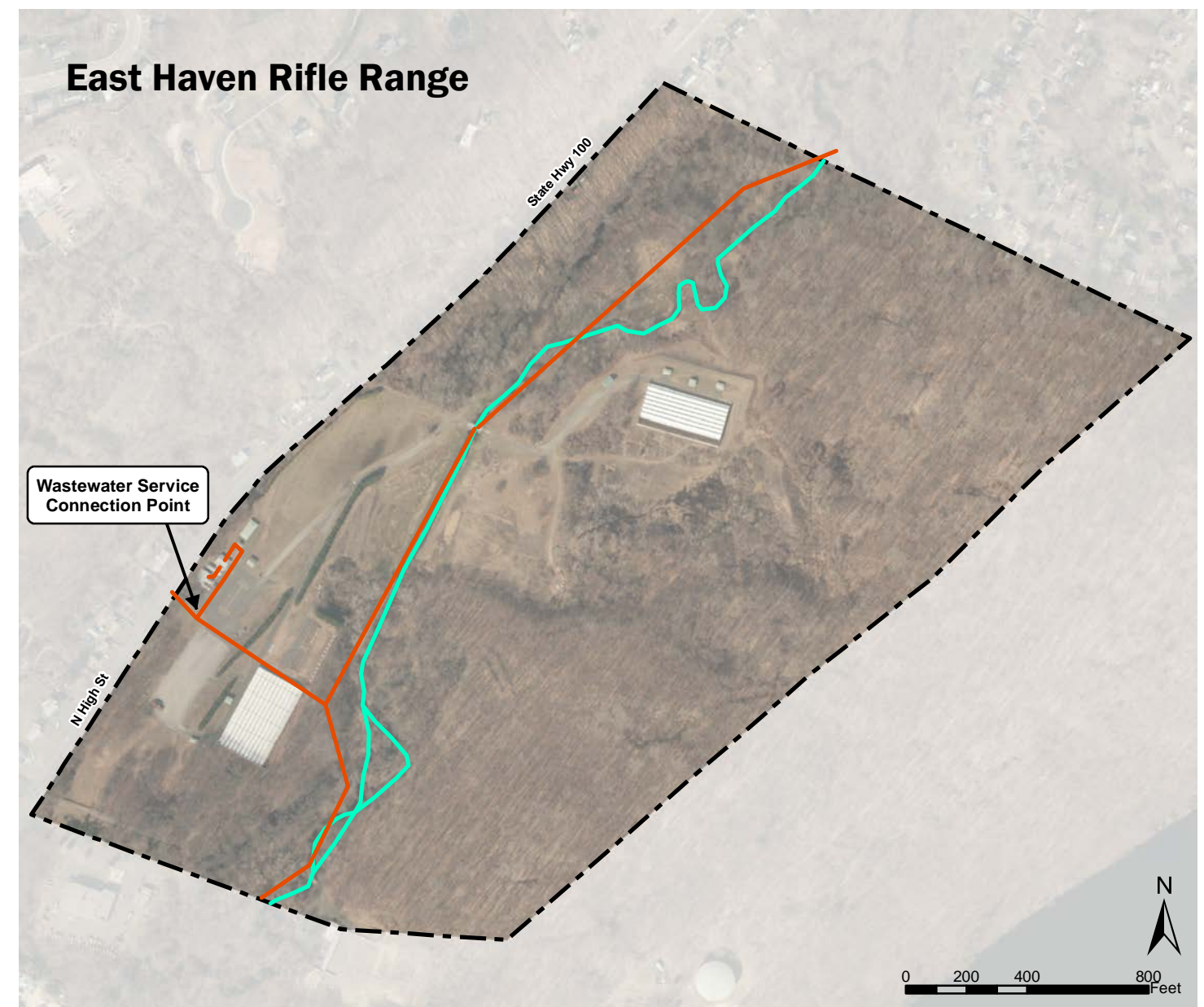
### EAST HAVEN RIFLE RANGE

East Haven receives wastewater service from the Greater New Haven Water Pollution Control Authority. There is one sewer connection serving the administration building and toilet/shower buildings. The publicly-owned gravity sewer main is located approximately 100 feet southwest of the administration building. This sewer flows eastward to a regional gravity sewer main that runs north-south through East Haven Rifle Range. Wastewater flow rate is estimated based on potable water meter readings.

The East Haven Rifle Range stormwater collection system consists of open ditches. Drainage flows to Farm River, which runs north to south through East Haven Rifle Range. There are no stormwater treatment facilities at East Haven Rifle Range.



**FIGURE 18:  
CAMP NIANTIC  
WASTEWATER AND  
STORMWATER**



**FIGURE 19:  
EAST HAVEN  
WASTEWATER AND  
STORMWATER**

# COMMUNICATION

## STONES RANCH MILITARY RESERVATION

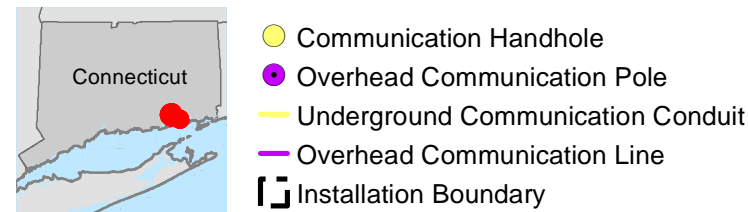
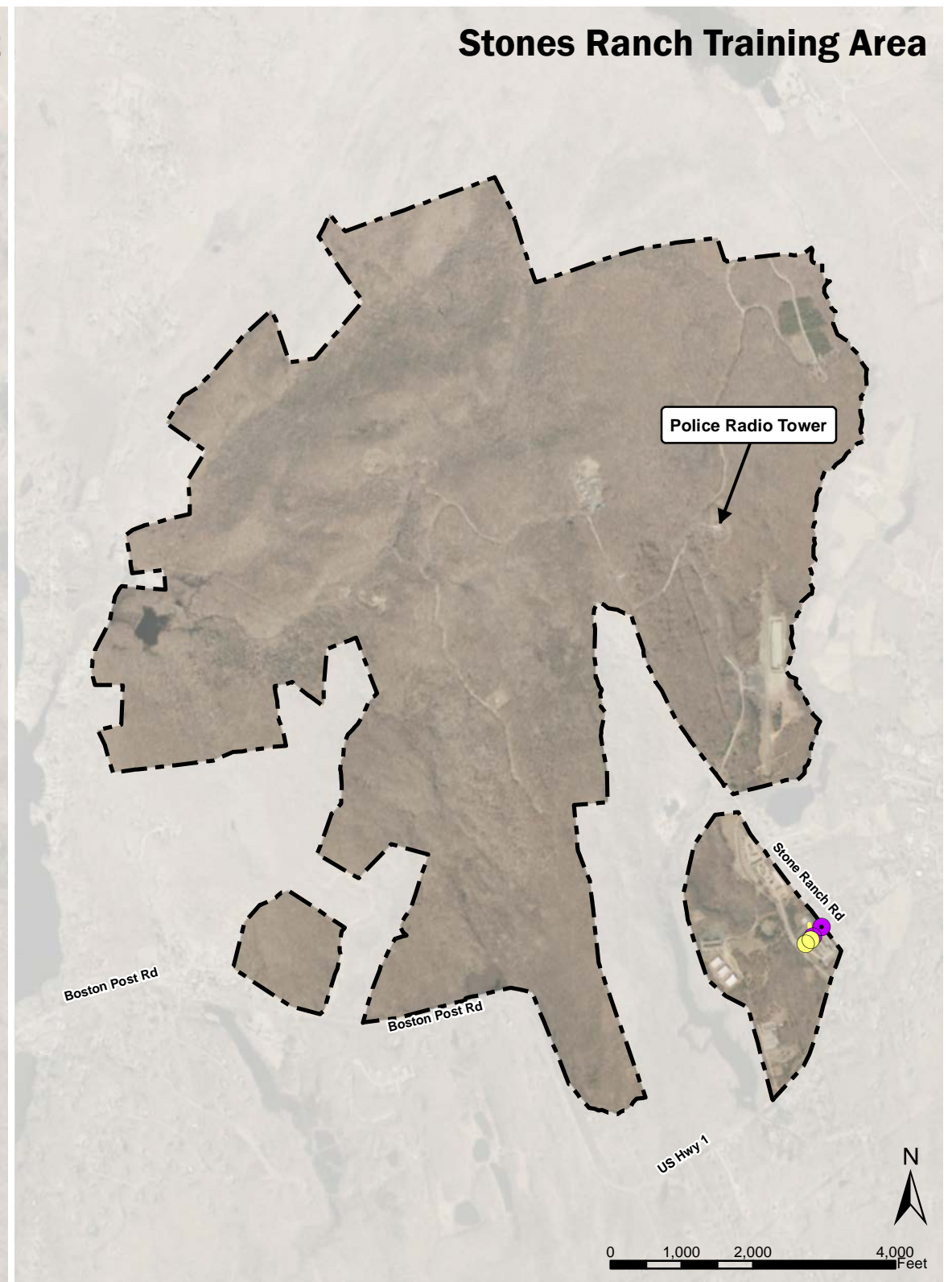
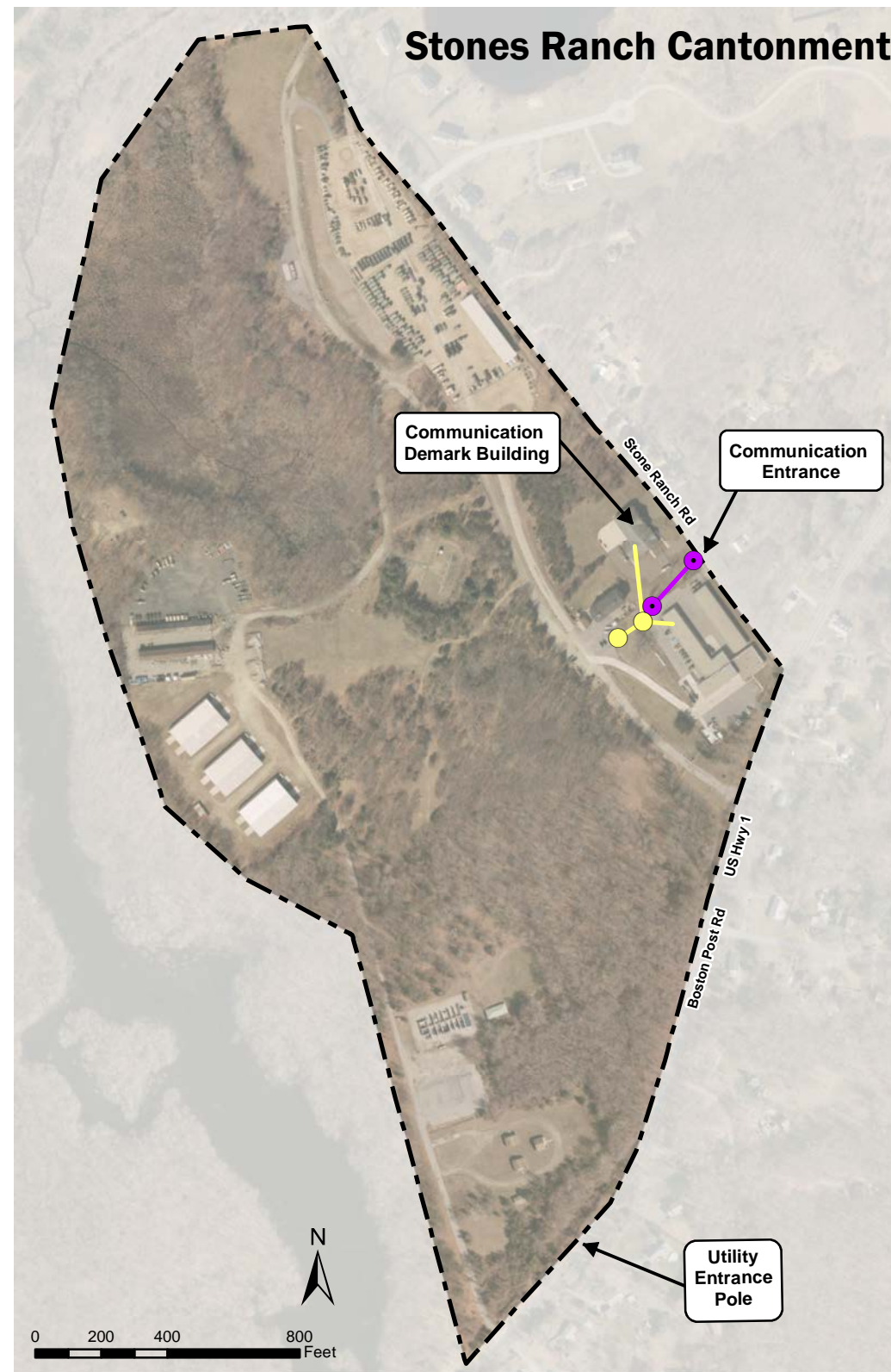
Stones Ranch's telecommunications service is fed overhead at a single point over Stone Ranch Road. The site's demarcation point is in the fire station. Existing fiber is routed underground to the milk shop and the maintenance shop via a series of hand-holes.

There are no telecommunication services by the unheated storage buildings, the latrine/showers facilities, or in the training area.

There is an existing police radio tower within the training area. Further investigation will be required to see if the police department will allow for the co-use of this tower to provide communication infrastructure within the training area.



State police communications tower.



**FIGURE 20:  
STONES RANCH  
COMMUNICATION**

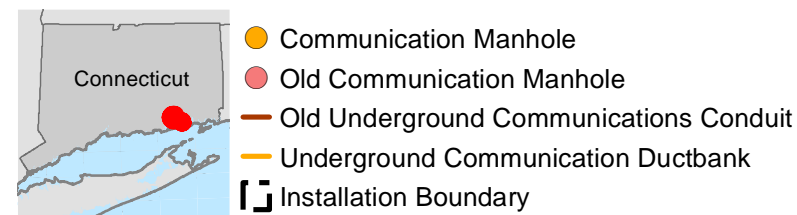
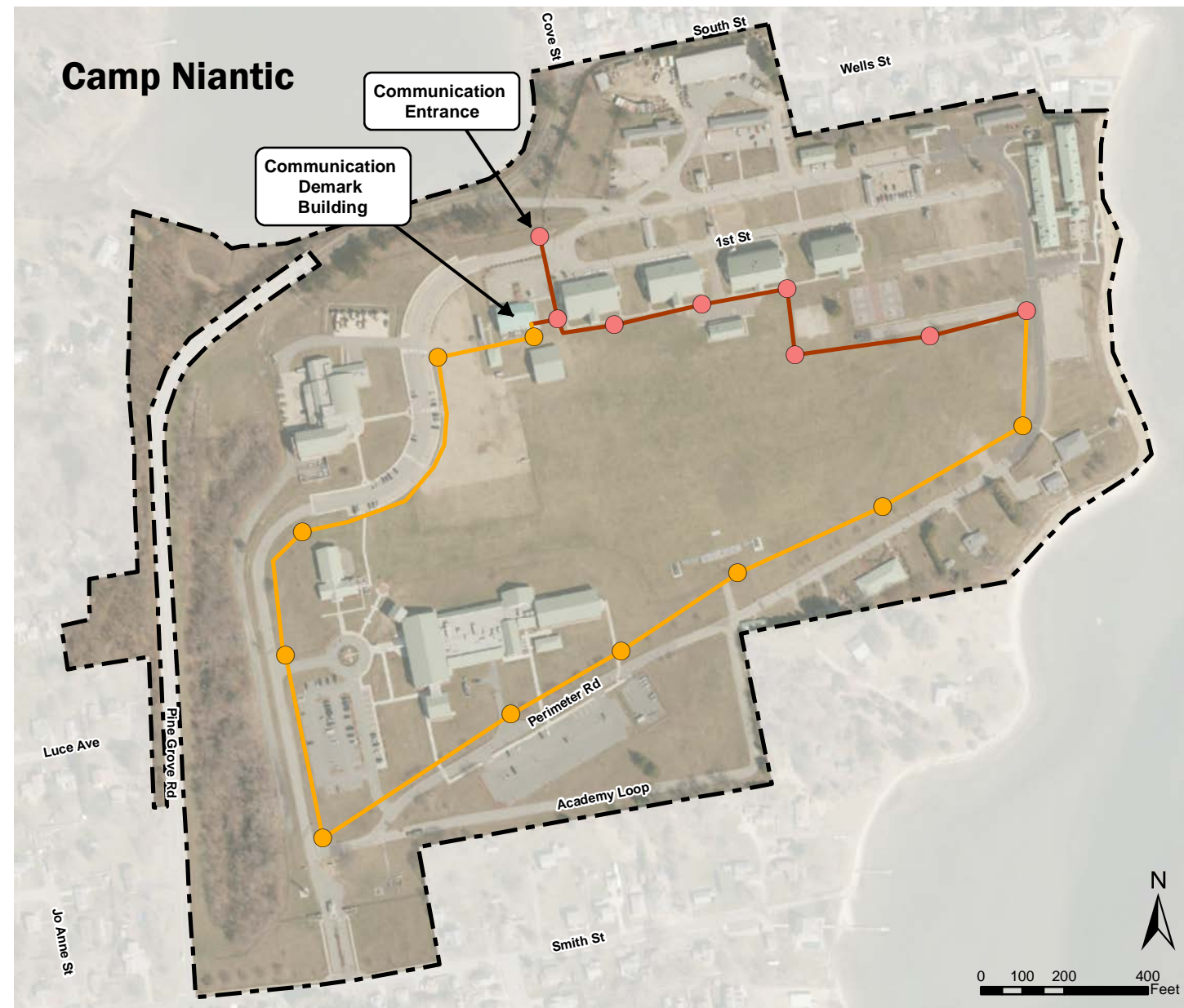
### CAMP NIANTIC

Camp Niantic's telecommunications service is fed from a single point off Pine Grove Road. The site's demarcation point is in the simulator building. From this point, fiber is routed around the camp utilizing a combination of the original underground conduit system and the new concrete encased duct bank system.

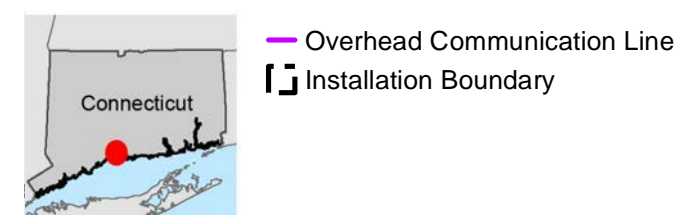
The map below indicates the original communications conduit/manhole system along with the new concrete-encased ductbank system. The new concrete-encased ductbank system is composed of four 4-inch conduits.

### EAST HAVEN RIFLE RANGE

East Haven's telecommunications service is fed overhead at a single point over North High Street. The site's demarcation point is in the range control maintenance shop. Existing fiber is routed underground to each remote range control tower.



**FIGURE 21:  
CAMP NIANTIC  
COMMUNICATION**



**FIGURE 22:  
EAST HAVEN  
COMMUNICATION**

# CIRCULATION

## STONES RANCH MILITARY RESERVATION

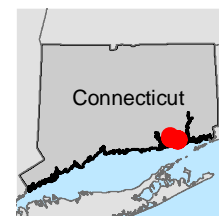
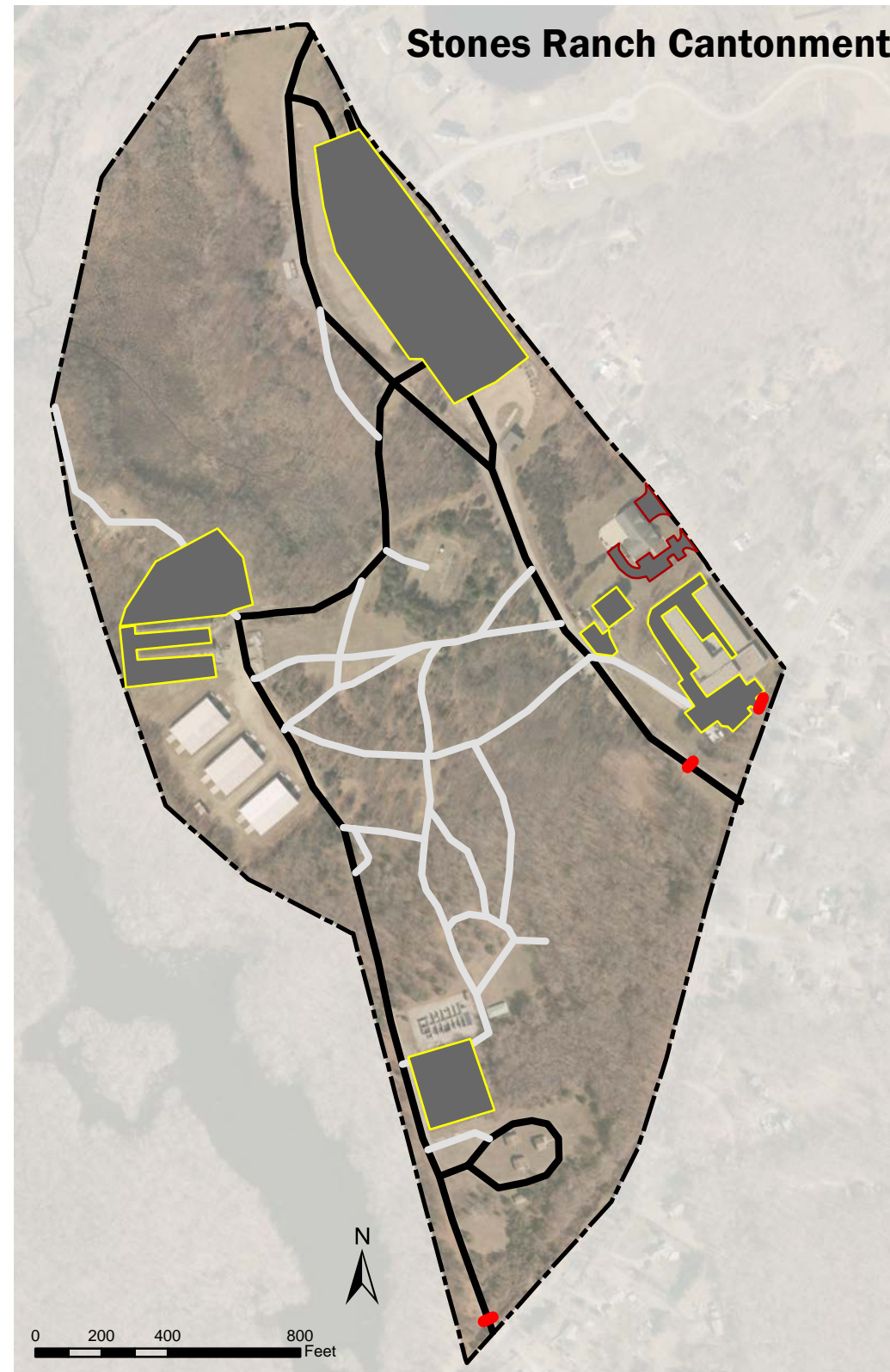
Stones Ranch features four classifications of roads: training roads, MOU site roads, cantonment roads, and firehouse roads. Cantonment roads are paved in some areas and are gravel/roadbase in other areas. Training roads and MOU site roads are largely gravel/road base. Firehouse roads are functional to the firehouse training area located along Stone Ranch Road and are not used by the rest of the installation. The circulation network also includes a number of GOV and POV parking lots. The pedestrian sidewalk network is disconnected and limited to the cantonment area near the UTES facility. The cantonment area connects to the training area via Stone Ranch Road, a shared access between the installation and neighboring properties. This shared access, which includes a bridge, requires Soldiers traveling between the cantonment area and training area to leave Stones Ranch property to access the other site.

### Issues and Recommendations

The separated access between cantonment and training areas was identified as a threat during the planning charrette. The bridge is weight limited, and bridge access is limited to non-tracked vehicles. As Stones Ranch expands to include barracks, readiness centers, and transient facilities, pedestrian connections should be considered in order to improve the affective connectivity of the site. As more Soldiers are introduced to Stones Ranch, an increase in signage and lighting will also be needed.



The access gate to the Stones Ranch training area as seen from the shared access road between Stones Ranch and the surrounding neighbors.



- |                    |                        |                         |
|--------------------|------------------------|-------------------------|
| <b>Road Type</b>   | — Firehouse            | ■ GOV Parking           |
| — Cantonment Roads | — MOU Site Roads       | ■ POV Parking           |
| — Training Roads   | ● Access Control Point | □ Installation Boundary |



**FIGURE 23:  
STONES RANCH  
CIRCULATION**

### CAMP NIANTIC

The transportation network features paved roads, sidewalks, and parking lots. The sidewalk network is disjointed with some areas being well connected. Two-way traffic is allowed on all streets. Perimeter Road forms an approximately 1.08-mile loop around the installation. Camp Niantic is served by a main ACP off Smith Street in the southwest corner. Secondary access is provided near the PX. Private access to two residences located southeast of the camp is provided by Perimeter Road.

### Issues and Recommendations

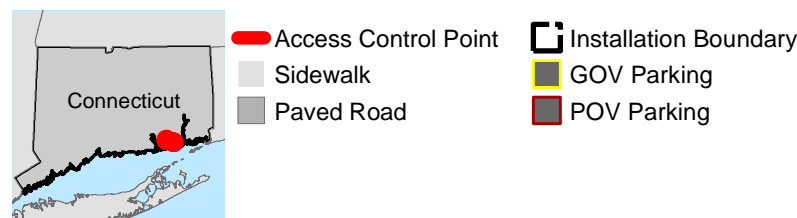
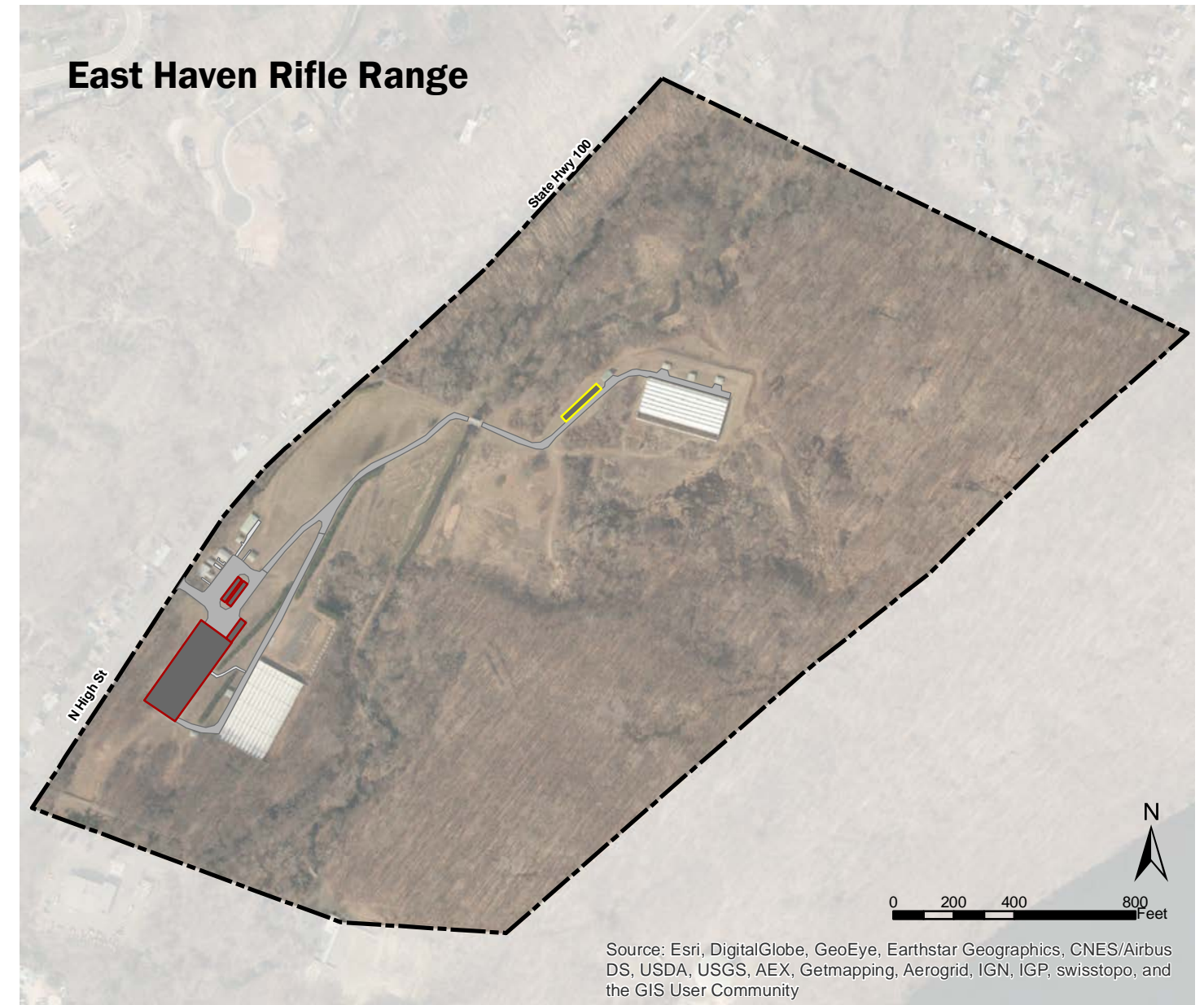
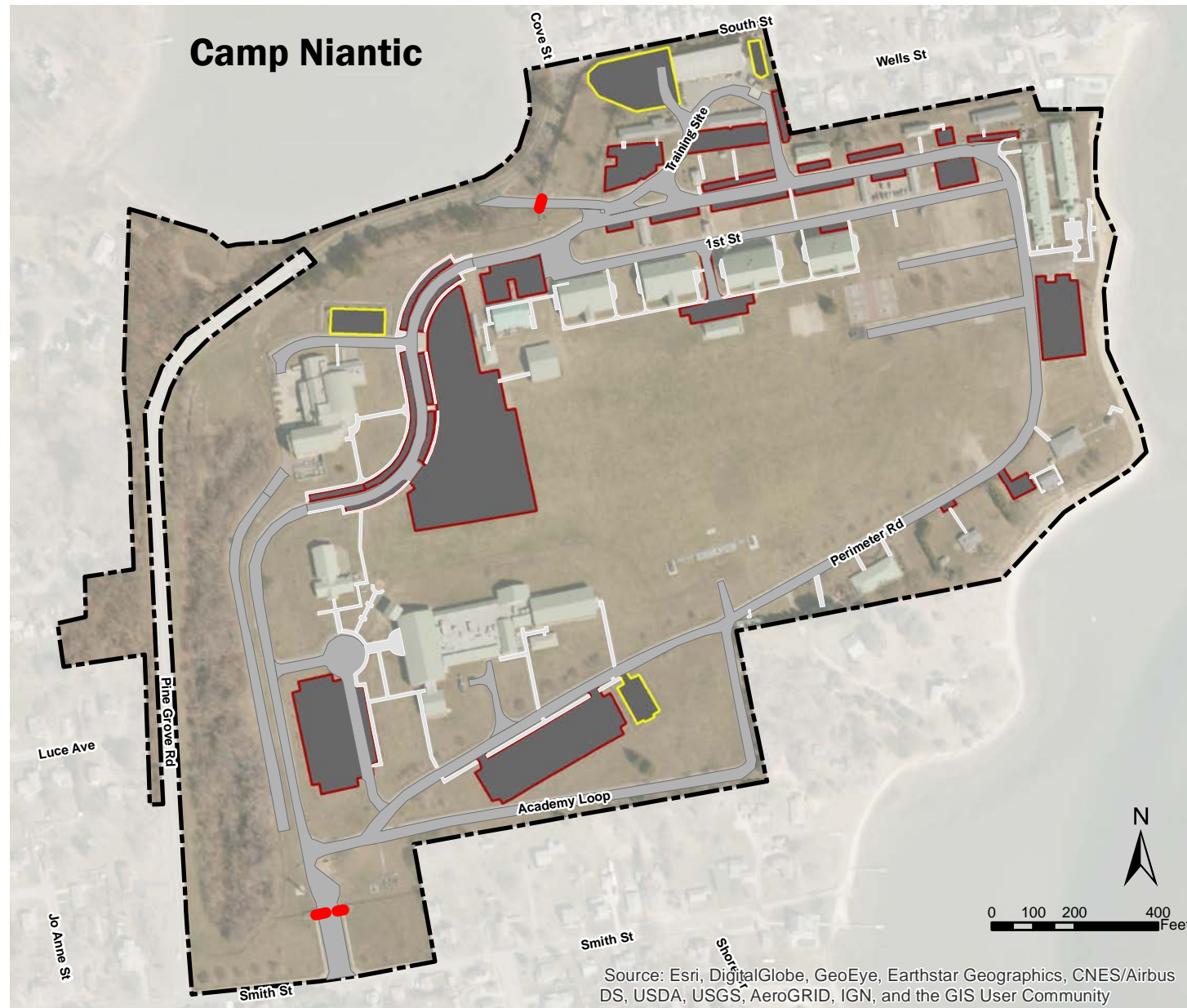
Pedestrian safety and circulation is a concern but has the potential for remedy through the development of an improved road reconfiguration. The most functional form of this would be to adopt a one-way street pattern to reduce lane size and provide protected pedestrian ways. Parking, especially during drill weekends, is a concern as the S-curve of Perimeter Road becomes hazardous to pedestrians. Eliminating the S-curve in favor of creating a more direct route is recommended to solve this issue.

### EAST HAVEN RIFLE RANGE

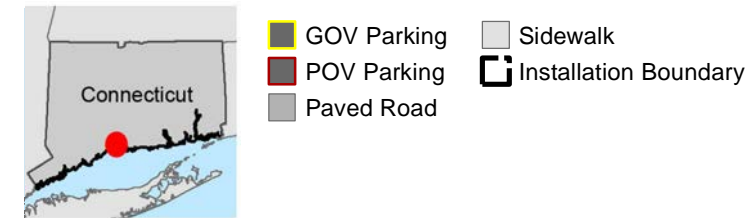
The East Haven circulation network is fairly limited and consists of paved roads, gravel roads, and parking lots. Parking at East Haven is located near range control. Roads located on the site are used primarily to access the ranges. Access to the northernmost range is by gravel road and includes a bridge across the Farm River.

### Issues and Recommendations

The circulation network currently supports the functions of the site adequately. Plans proposed in this document do not require any additional improvements to the East Haven circulation network. Maintenance of the bridge over the Farm River will remain paramount to the site's success, as the bridge provides the only point of access to one of the ranges.



**FIGURE 24:  
CAMP NIANTIC  
CIRCULATION**



**FIGURE 25:  
EAST HAVEN  
CIRCULATION**

# ADJACENCIES

## STONES RANCH MILITARY RESERVATION

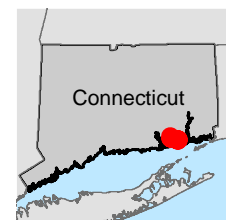
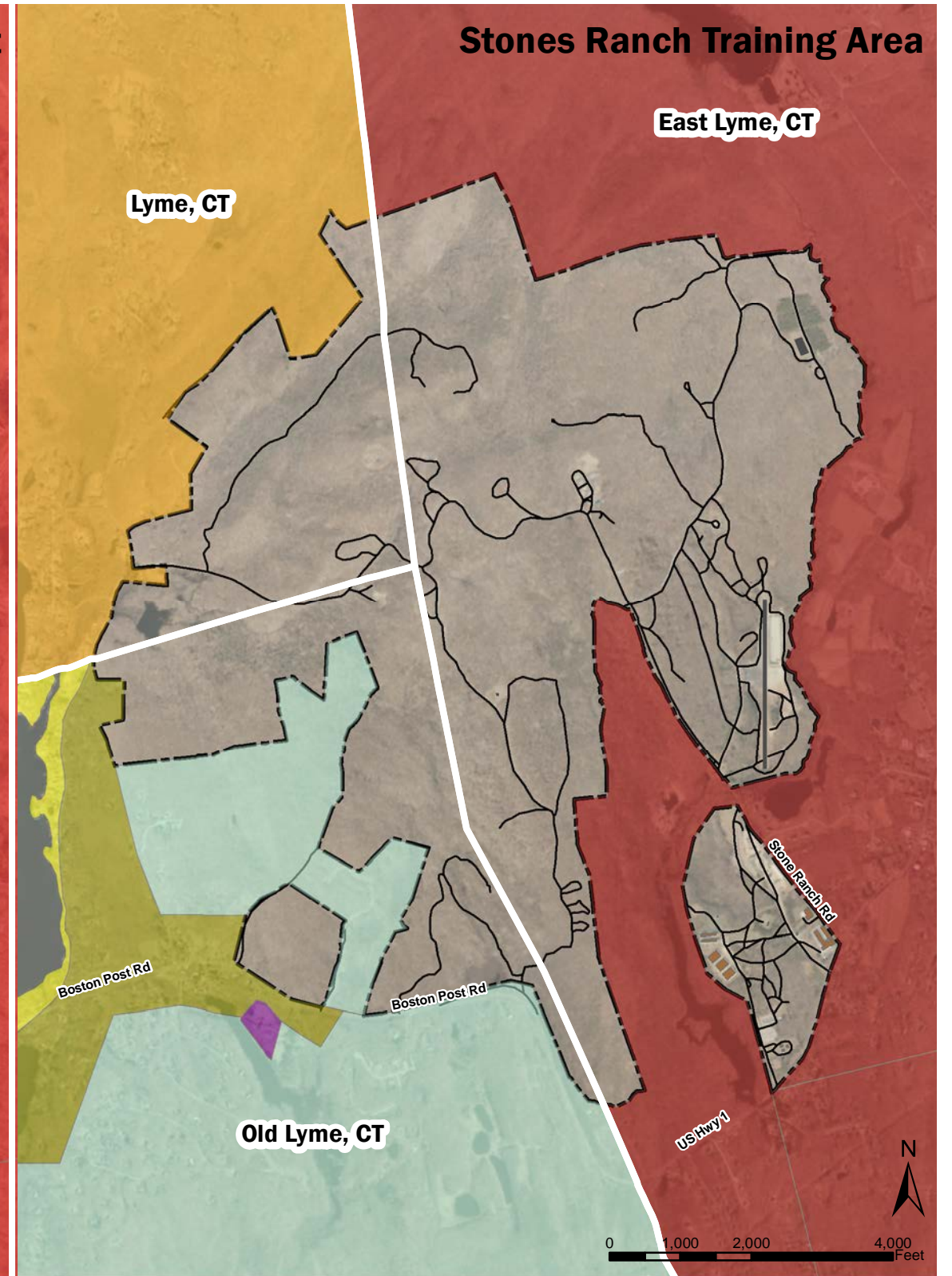
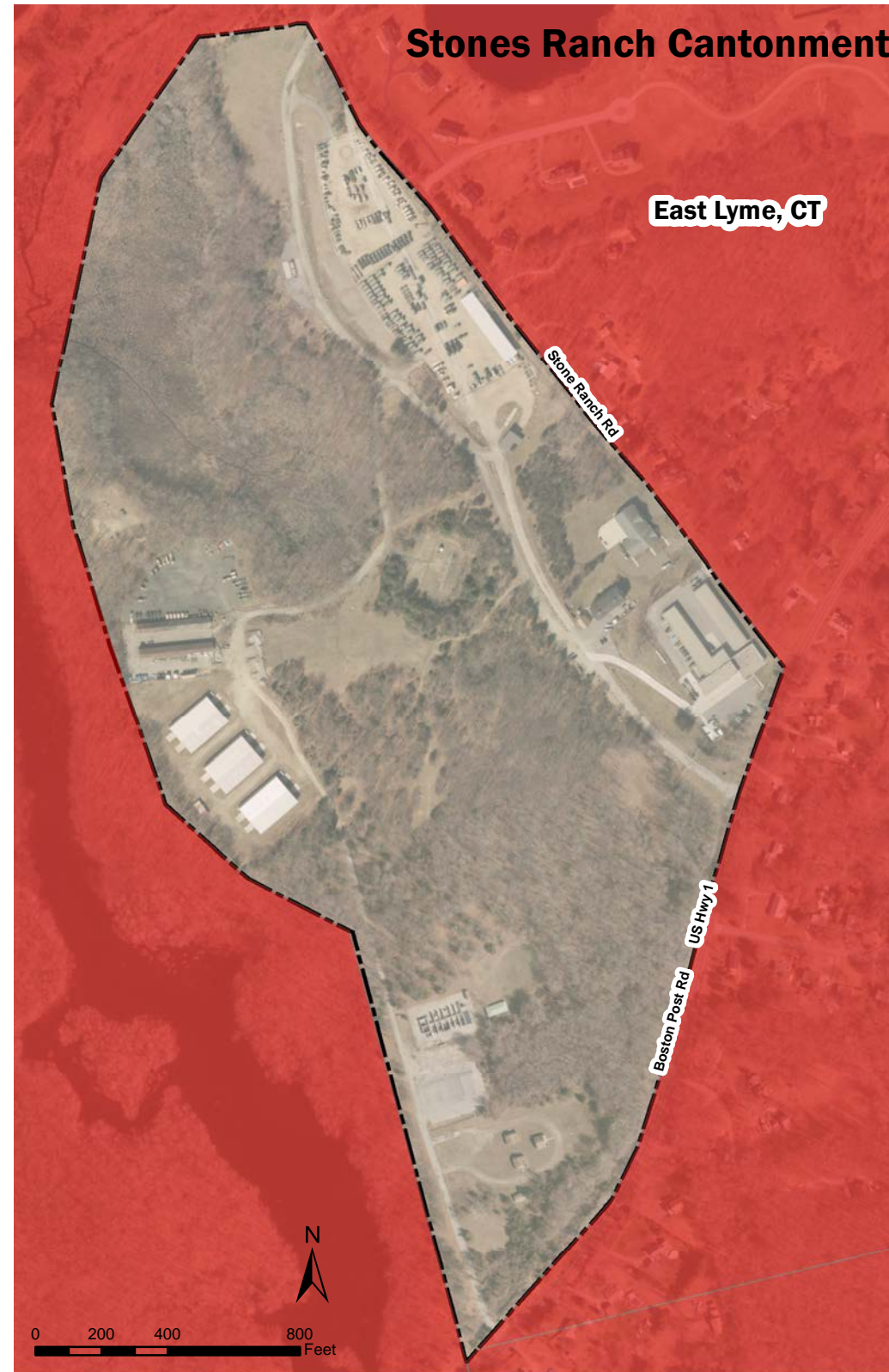
Stones Ranch is located within the limits of the Connecticut towns of East Lyme, Old Lyme, and Lyme. The installation is located in a rural area and is surrounded by forests, wetlands, and lakes. East Lyme is the largest of the three towns. East Lyme primarily encompasses the eastern half of the Stones Ranch installation, including the entire cantonment area. East Lyme has a population of 19,159 and is expected to experience a small decrease in population through 2020. Old Lyme has a population of 7,603 and similarly is expected to see a slight decrease in population through 2020. Old Lyme includes the southwestern portion of Stones Ranch. Lyme's limits include the north-west portion of Stones Ranch and the town has a population of 2,406. Lyme is expected to grow by roughly 11 percent through 2020.

The Stones Ranch cantonment area is located along Boston Post Road and Stone Ranch Road with the main access located off Boston Post Road. The area along Boston Post Road near Stones Ranch mainly consists of rural, large-lot residential homes. The training area of Stones Ranch is primarily surrounded by state-owned forest land; in some locations, it is bordered by rural, large-lot residential homes.

Zoning surrounding Stones Ranch is administered by each of the three surrounding towns. Zoning within the East Lyme boundaries consists of the RU-40 zone, which is a rural district located outside of the developed sections of the town. Old Lyme zoning includes R-10, R-20, and RU-80 zones that allow for single-family residential development. East Lyme zoning includes the RU-80 zone, which allows for rural and residential development.



Residential units are located across the street from the entrance to East Haven.



- |  |   |
|--|---|
| <b>Zone, Jurisdiction</b>                                | <span style="color: red;">■</span> RU-40, East Lyme   |
| <span style="color: purple;">■</span> MFR-20, Old Lyme   | <span style="color: yellow;">■</span> RU-80, Lyme     |
| <span style="color: lightgreen;">■</span> R-10, Old Lyme | <span style="color: teal;">■</span> RU-80, Old Lyme   |
| <span style="color: darkgreen;">■</span> R-20, Old Lyme  | <span style="color: pink;">■</span> RU-120, East Lyme |

**FIGURE 26:  
STONES RANCH  
ADJACENCIES**

### CAMP NIANTIC

Camp Niantic is located entirely within the town limits of East Lyme. Camp Niantic sits on the west bank of the Niantic River on a coastal peninsula. The main access is located off Smith Street near the southwest corner of the installation. Camp Niantic also has a secondary access in the northern portion of the site located off Pine Grove Road. Camp Niantic maintains an emergency access along the northern boundary of the site to provide access to the neighborhood to the north.

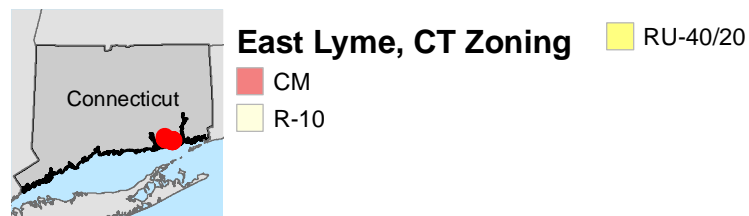
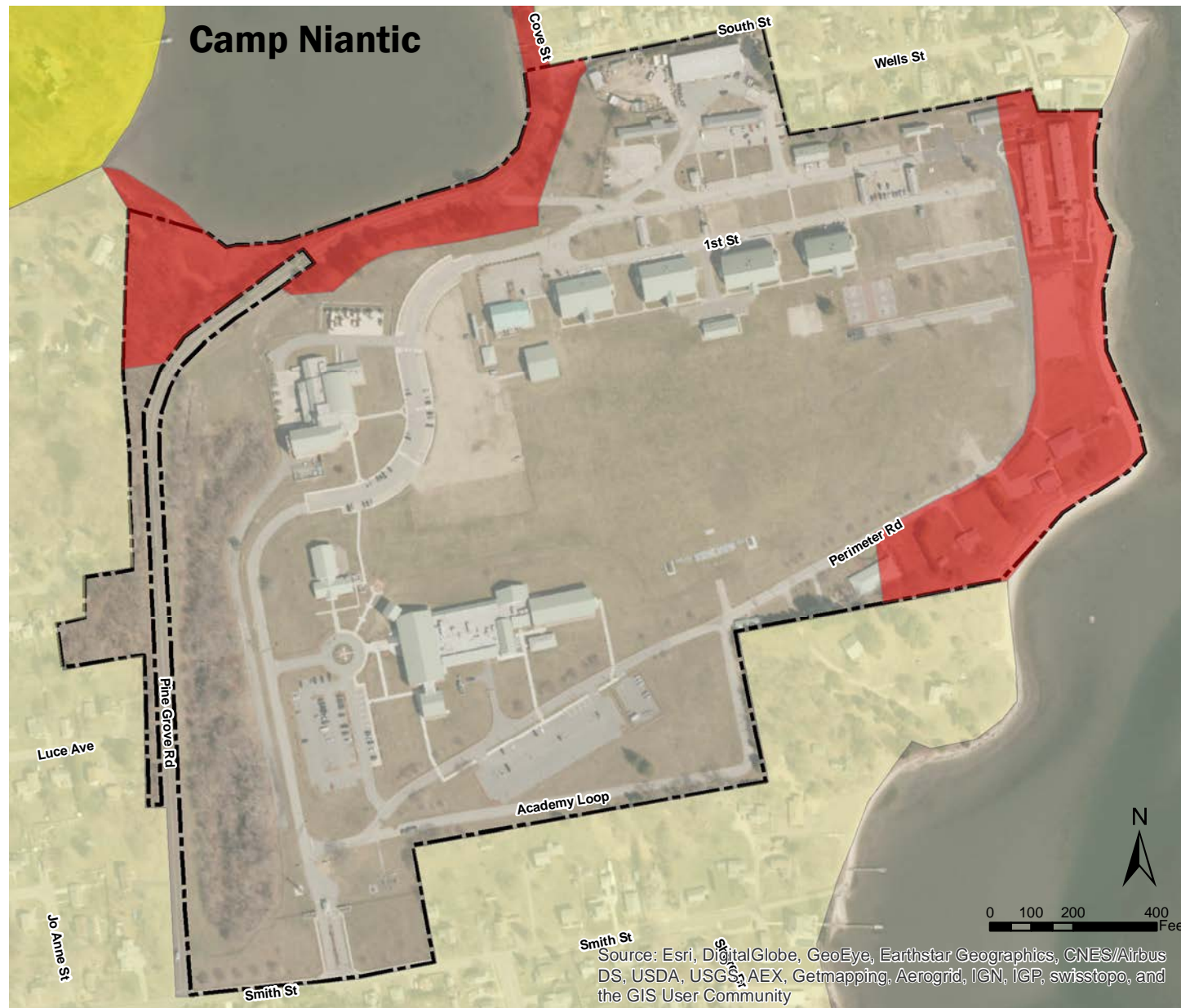
To the north of Camp Niantic is a small residential neighborhood consisting of single-family homes. To the west of the camp is a 15-acre state-owned area that is heavily wooded. West of this area is a single-family neighborhood. South of Camp Niantic is a single family neighborhood that transitions southward into a commercial area. Zoning surrounding Camp Niantic includes the CM, R-10, and RU-40/20 zones. The R-10 and RU-40/20 zones primarily allow for residential zoning. The CM zone limits coastal areas to marine commercial uses that consist of relatively low-intensity uses.

### EAST HAVEN RIFLE RANGE

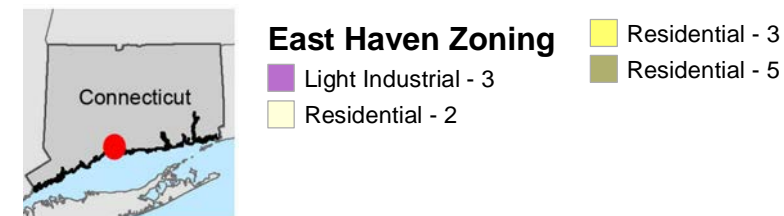
East Haven is located entirely within the limits of East Haven, Connecticut, population 29,257. East Haven is located off High Street/State Highway 100. Much of East Haven lies within the Farm River floodplain. The property is heavily forested and contains wetlands and critical flora and fauna habitats. The east boundary of the site runs parallel to Saltonstall Mountain.

zones. To the north and west are single-family residential uses with light industrial mixed in. Uses to the south are industrial/warehouse type buildings and residential. Directly to the south is a private gun range, which uses a private access granted by East Haven through the southern portion of the site. One of the gun range buildings is partially located on East Haven property.

Surrounding zoning includes R-2, R-3, R-5, and Light Industrial-3



**FIGURE 27:  
CAMP NIANTIC  
ADJACENCIES**



**FIGURE 28:  
EAST HAVEN  
ADJACENCIES**

# CONSTRAINTS

## STONES RANCH MILITARY RESERVATION

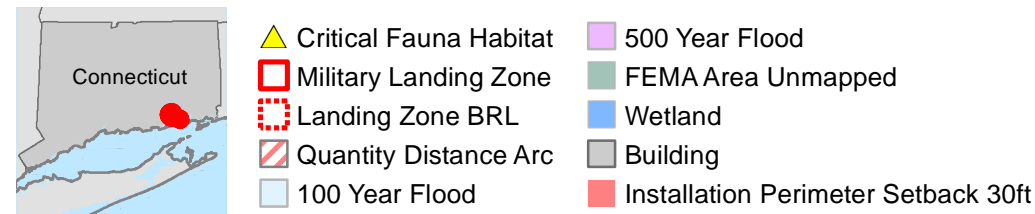
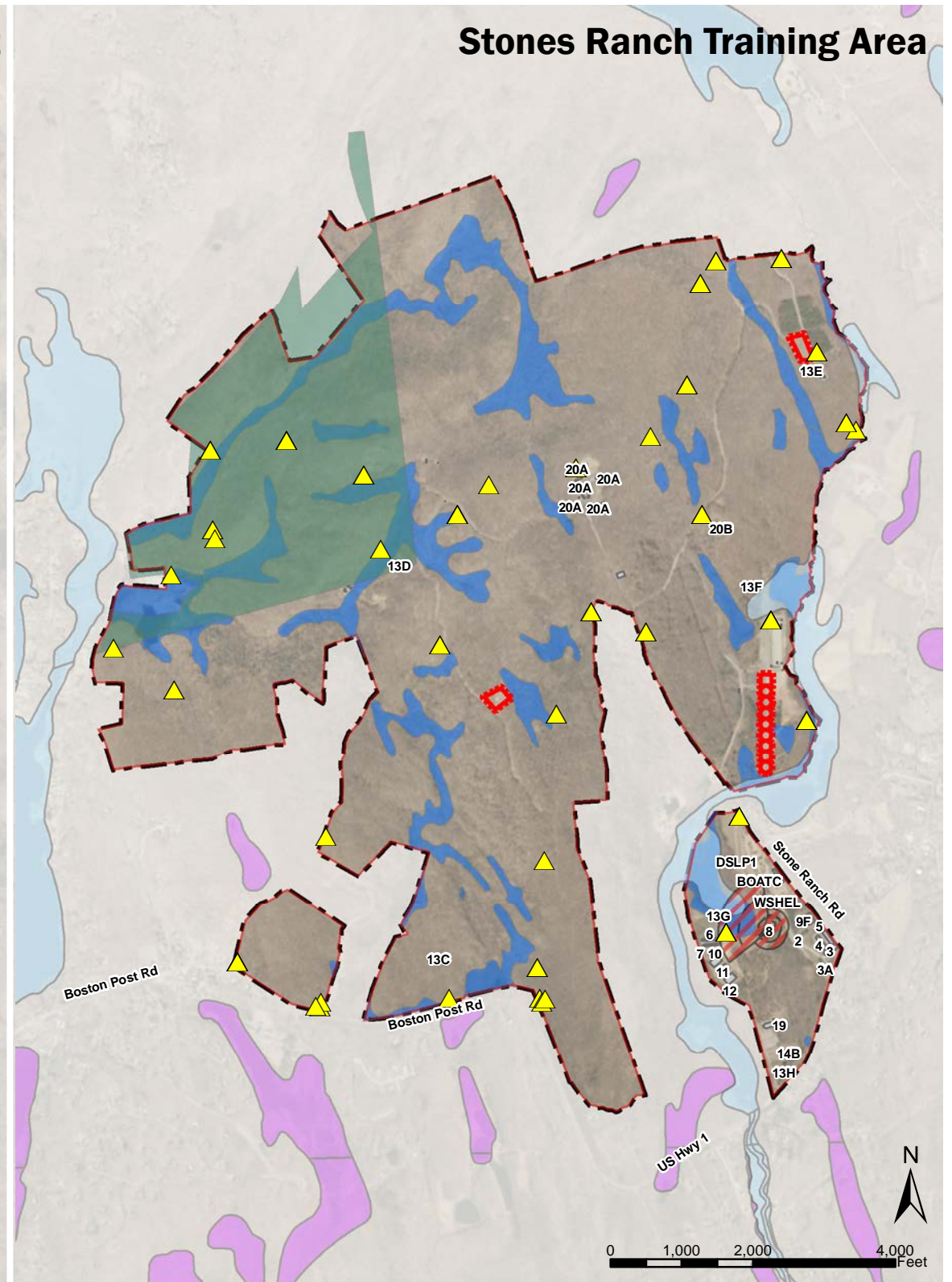
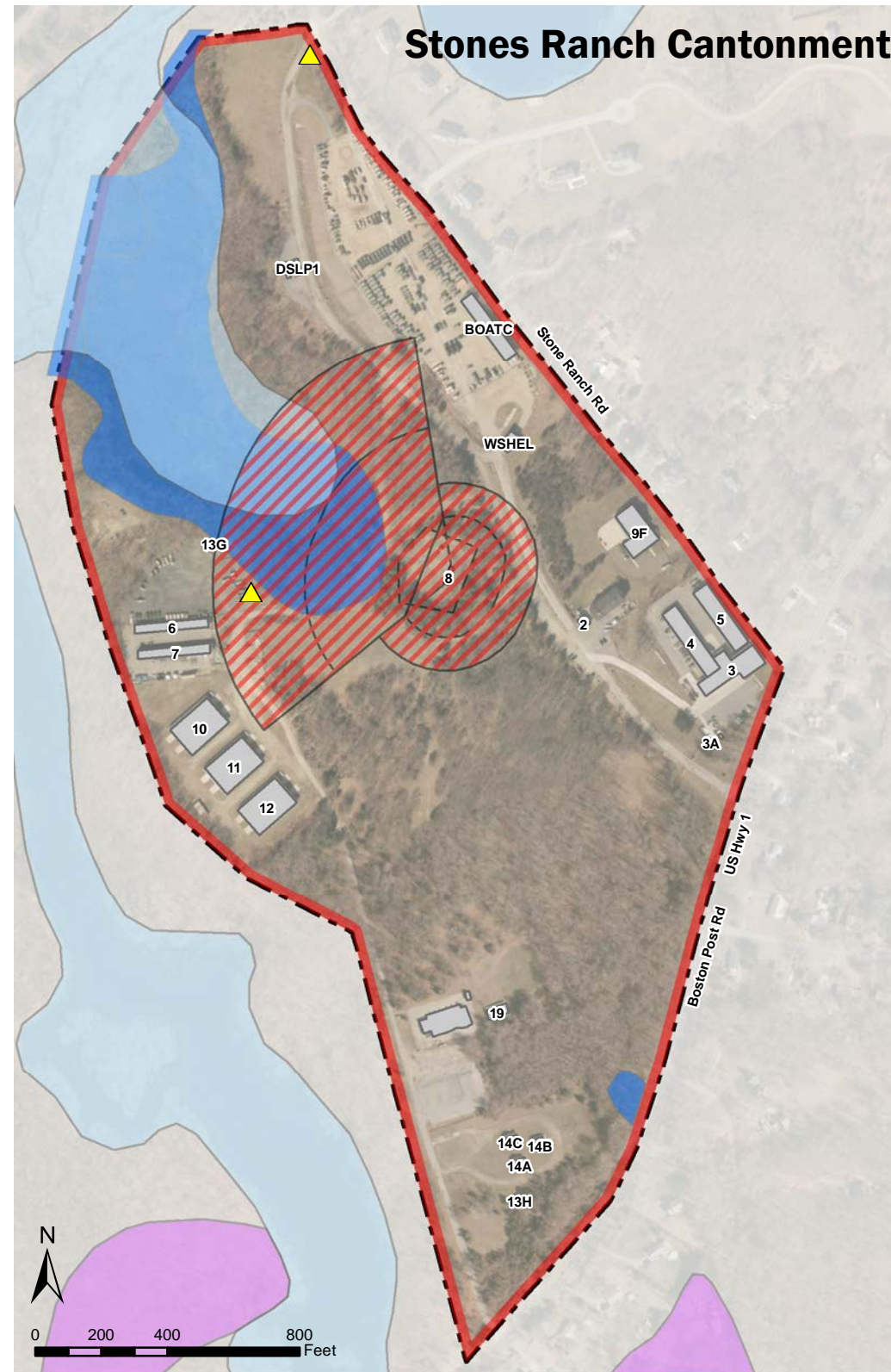
**LANDING ZONES (LZ).** The airfield is listed in the Facility Inventory and Stationing Plans (FISP) as a fixed-wing runway. It is in the process of being changed to more accurately reflect its use as an omni-directional landing zone in the category of low-use rotary-wing heliport. The map indicates constraints for that current and intended use.

**ASP.** Proposed plan explosive safety quantity distance (ESQD) arcs will reflect the same criteria, and a call to the Armag Corp. identified no difference in ESQD by using their containers. Their containers may need to become an earth-covered magazines (ECMs) in order to achieve a comparable ESQD arc to currently depicted ESQDs; an unbarricaded magazine has a much greater ESQD buffer (1,250 feet). (Previously indicated Blast Radius 1 is 700 feet to the inhabitable building distance [IBD] – if barricaded, that is reduced to a 250-foot radius; and Blast Radius 2 is 420 feet to a public traffic route [PTR] – if barricaded, that is reduced to a 150-foot radius.)

**AT/FP.** Stones Ranch is a controlled-perimeter installation. All training activities in primary inhabited buildings should be a minimum setback of construction type, allowing for maximum utilization of available land from the installation boundary, roads/parking, or other buildings. Due to limited cantonment area, it would be recommended that reinforced masonry be the construction standard to maximize buildable area within a reasonable construction type.

**FLOOD ZONE.** Federal Emergency Management Agency (FEMA) information is replicated on the map to depict 100- and 500-year flood information. There is a region in the northwest that has not been mapped by FEMA that is included as a possible constraint. Also included on the map are known critical habitats for flora and fauna. Cultural probable sensitive areas are also noted from previously documented sources.

**CRITICAL HABITAT.** Critical habitat is depicted on the constraints map. The developable area map utilizes the critical habitat information to apply considerations and limitations to future development at Stones Ranch. Potential cultural sensitive areas are included in the developable areas map. The developable areas map follows the constraints section.



**FIGURE 29:  
STONES RANCH  
CONSTRAINTS**





The coastal area provides recreational and aesthetic value to Camp Niantic but poses a constraint for development due to the associated floodplains.

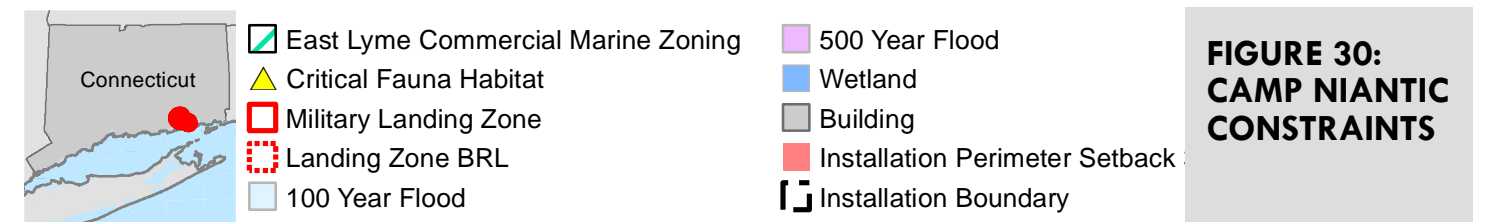
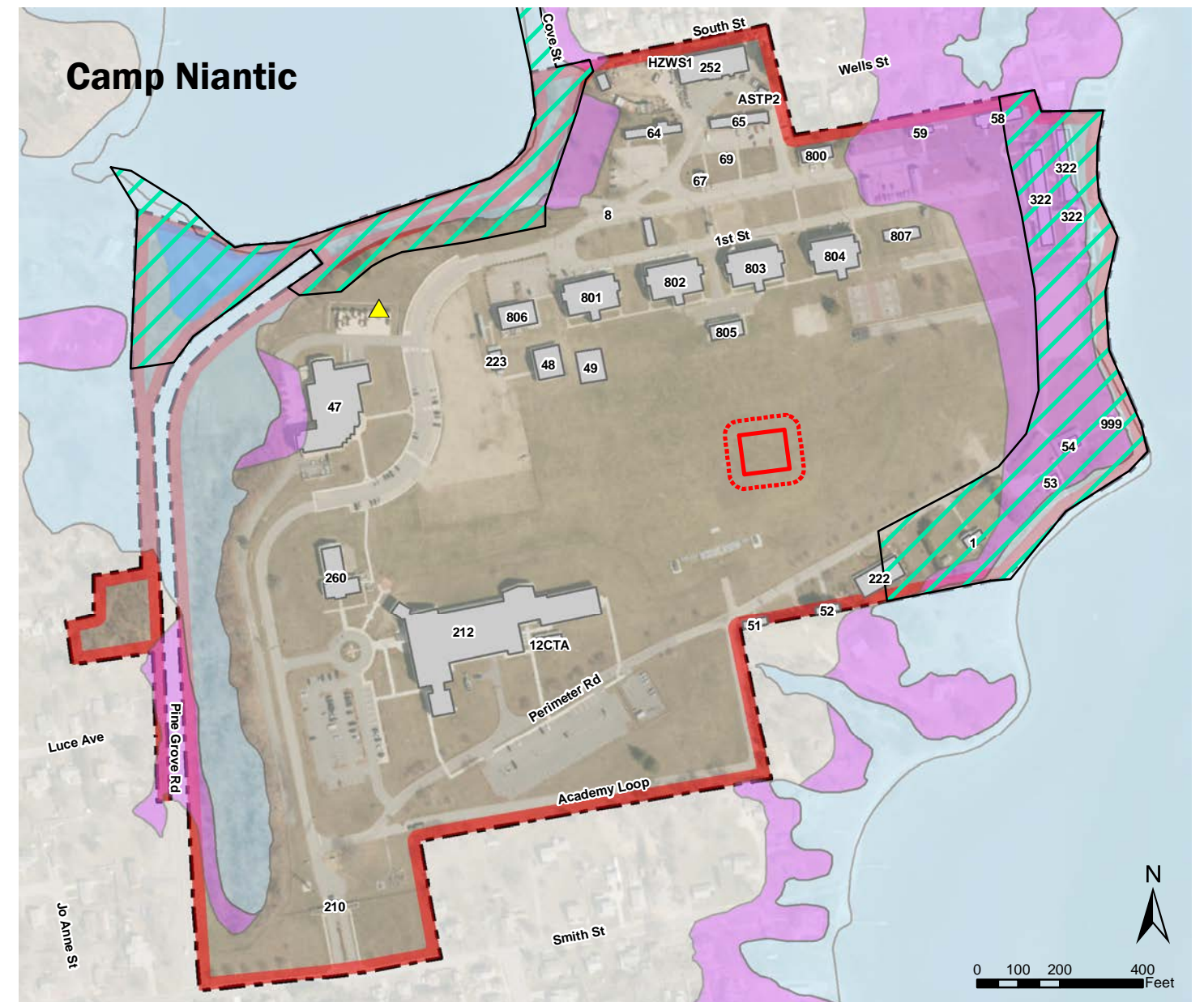
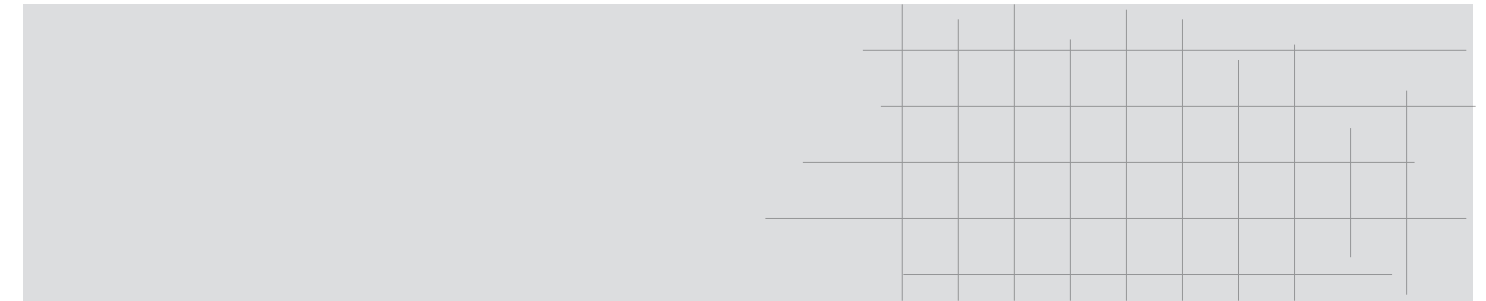
## CAMP NIANTIC

**LZ.** The Camp Niantic LZ is listed as an LZ in the FISP. They defined it as an omni-directional facility in the category of low-use rotary-wing heliport. Being omni-directional, the imaginary surface includes a 75-foot radius clear zone (CZ). The CZ is bounded by approach-departure slopes in all directions at an 8-to-1 slope. A single-direction LZ would allow future development closer to the airfield without completely eliminating its use.

**AT/FP.** Camp Niantic is a controlled-perimeter installation. All training activities in primary inhabited buildings should be a minimum setback of construction type allowing for maximum utilization of available land from the installation boundary, roads/parking, or other buildings constructed of reinforced masonry. High tide is reported as 3.6 feet, so it is shown as a constraint in addition to the East Lyme Commercial Marine Zoning. A shared access is located on the southeast portion of the site to allow for private access to a parcel to the southwest of the site. A fence has been proposed to line the north side of the shared access.

**FLOOD ZONE.** FEMA information is replicated on the map to depict 100- and 500-year floodplain information.

**CRITICAL HABITAT.** Critical habitat is depicted on the constraints map. The developable area map utilizes the critical habitat information to apply considerations and limitations to future development at Camp Niantic. Potential culturally sensitive areas are also included in the developable areas map. The developable areas map follows the constraints section.



**FIGURE 30:  
CAMP NIANTIC  
CONSTRAINTS**



This floodway holds stormwater on East Haven Rifle Range. Flooding is the primary constraint associated with East Haven.

### EAST HAVEN RIFLE RANGE

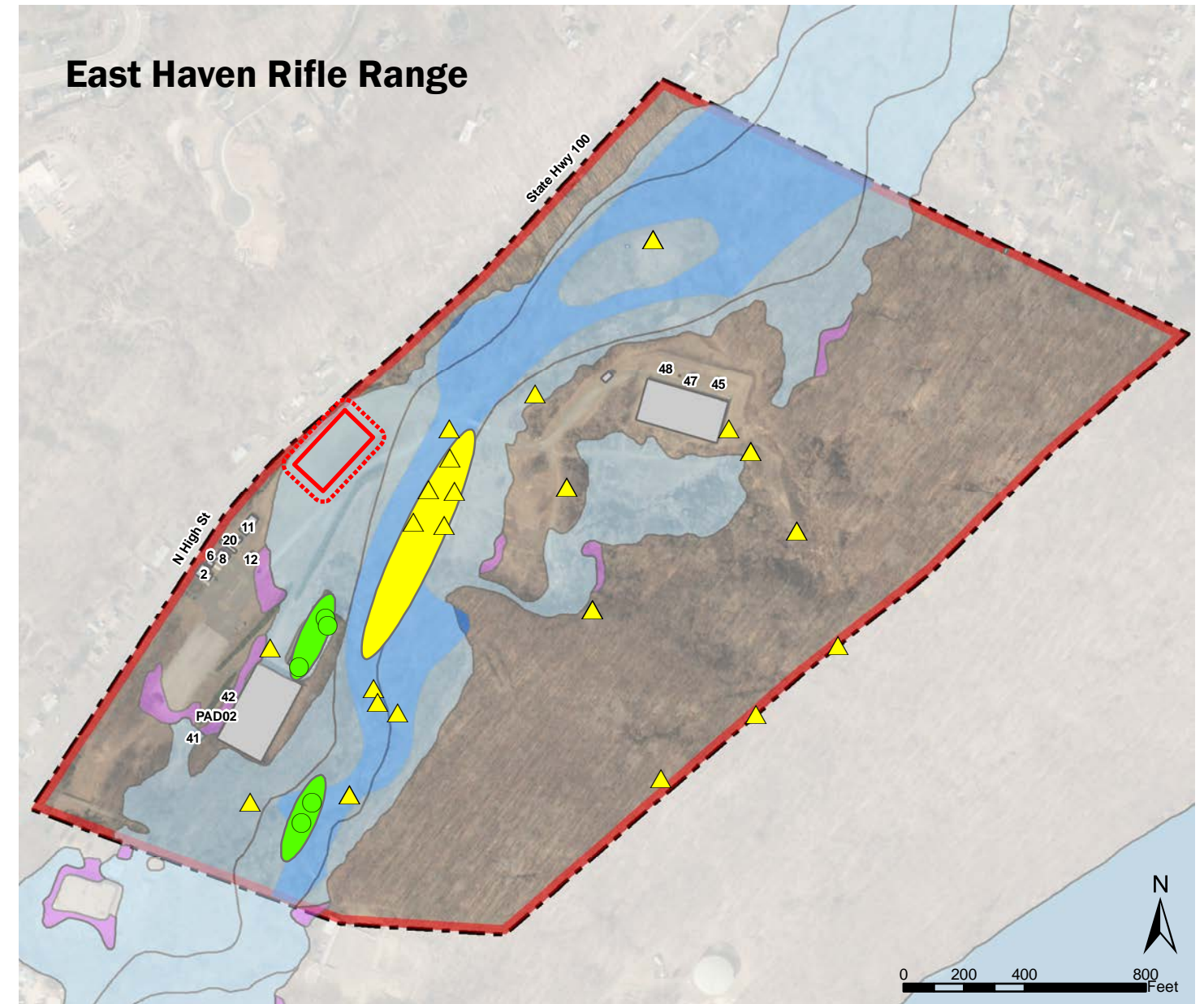
**LZ.** The East Haven LZ is listed as an LZ in the FISP. They defined it as an omni-directional facility in the category of low-use rotary-wing heliport. Being omni-directional, the appropriate delineation of imaginary surfaces would include identification of a 75-foot radius CZ. This should be bounded by approach-departure slopes in all directions at an 8-to-1 slope.

**ASP.** Surface danger zones (SDZs) need to be gathered for the rifle range. A request through range control to utilize their Range Management Tool Kit (RMTK) is needed to gather this data.

**AT/FP.** East Haven is a controlled-perimeter installation. All training activities in primary inhabited buildings should be a minimum setback of 30 feet from the installation boundary, roads/parking, or other buildings. Due to limited cantonment area, it would be recommended that reinforced masonry be the construction standard to maximize buildable area within a reasonable construction type.

**FLOOD ZONE.** FEMA information is replicated on the map to depict 100- and 500-year flood information.

**CRITICAL HABITAT.** Critical habitat is depicted on the constraints map. The developable area map utilizes the critical habitat information to apply considerations and limitations to future development at East Haven. Potential culturally sensitive areas are included in the developable areas map. The developable areas map follows the constraints section.



- ▲ Critical Fauna Habitat
- Endangered Flora
- Critical Fauna Area
- Critical Flora Area
- Military Landing Zone
- Landing Zone BRL
- 100 Year Flood
- 500 Year Flood
- Wetland
- Building
- Installation Perimeter Setback 30ft
- Installation Boundary

**FIGURE 31: EAST HAVEN CONSTRAINTS**

# DEVELOPABLE AREAS

The land in the area of interest that can be developed for future use, mission beddown, or expansion of existing mission is illustrated on the following developable area figures. Three categories, defined below, group planning constraints and considerations that are similar, primarily based on their difficulty to redevelop. Environmental, cultural, land development, and safety constraints have all been factored into each developable area map. An environmental assessment (EA) is required and has been funded. When the EA is completed, the developable area categories should be reexamined to reflect the information gathered during the EA process.

## STONES RANCH MILITARY RESERVATION

### Developable Area 1: No or Limited Constraints

Land use types that can be developed with minimal demolition, relocation, and remediation.

- + Nonorganizational parking areas
- + Minor roads and paved areas
- + Hydrological features of minor concern
- + Relatively flat areas with minimal slopes (less than or equal to 3 percent)
- + Surrounding community zoning/height restrictions

### Developable Area 2: Minor Constraints to Development

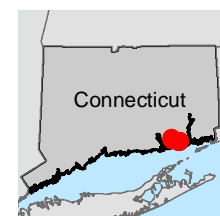
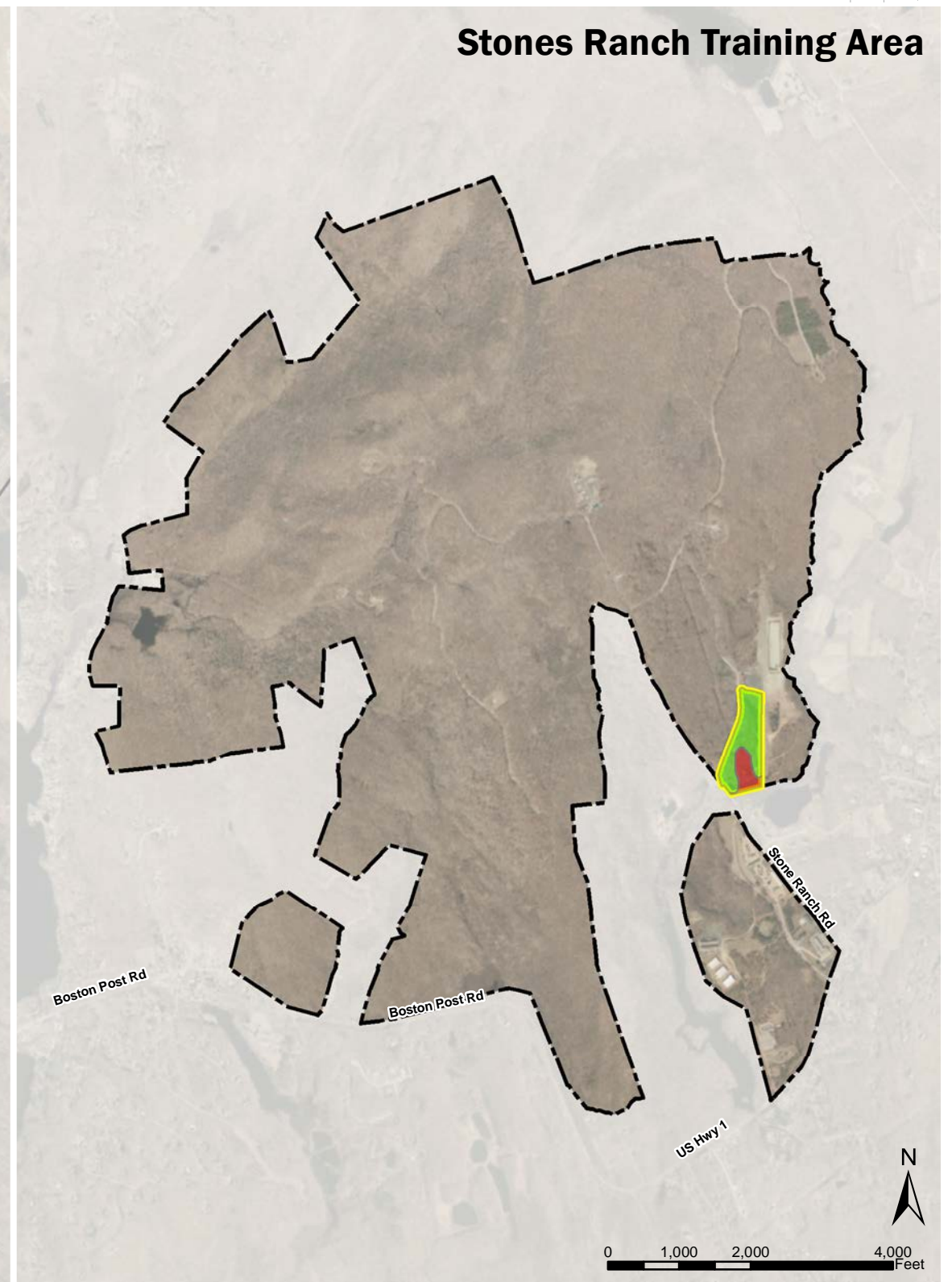
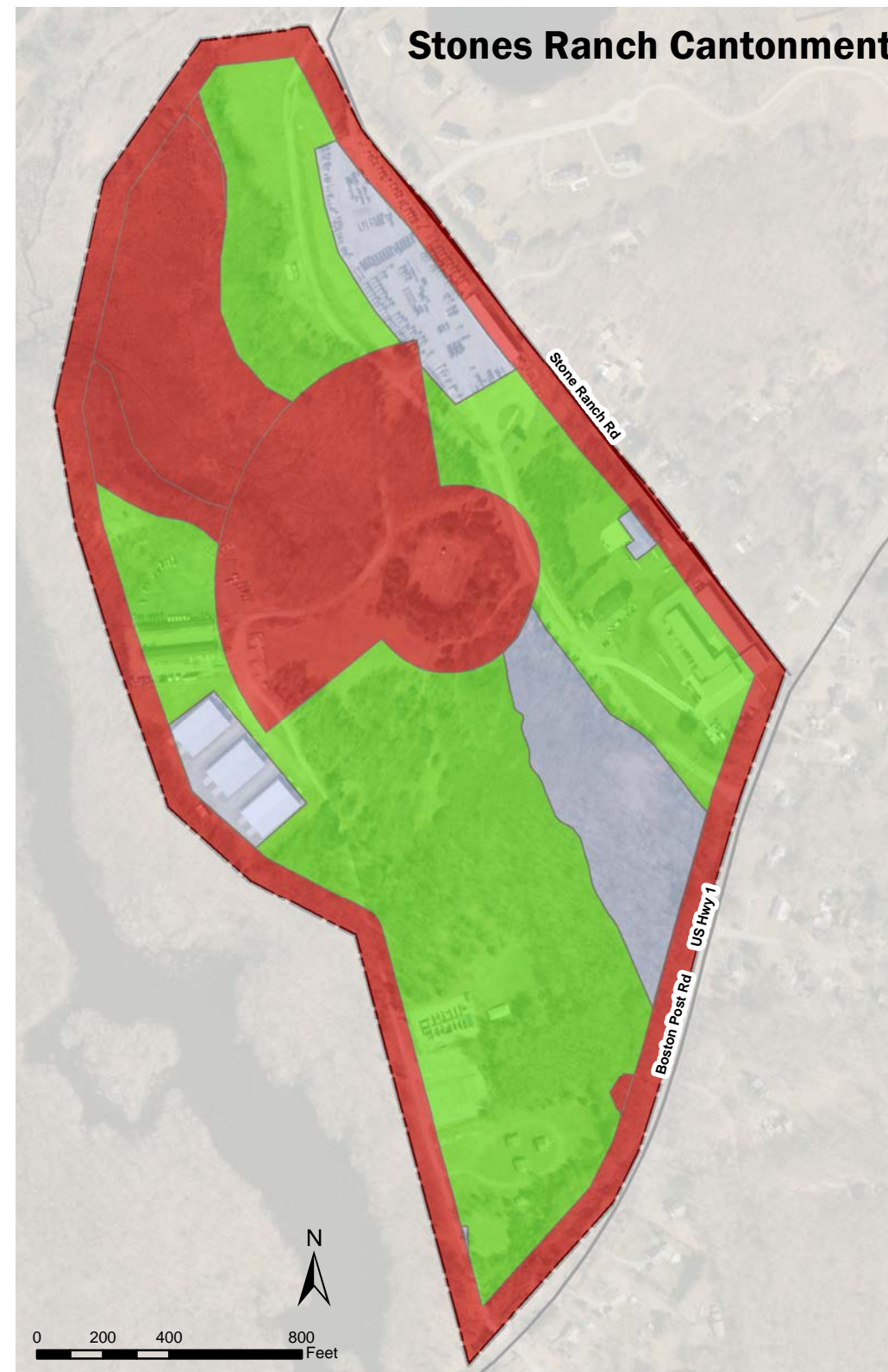
Land uses with additional costs and remediation in order to be developed.

- + Stormwater/retention ponds
- + Environmental remediation
- + Critical fauna and flora habitats
- + Moderately sloped areas (3 percent to 5 percent)

### Developable Area 3: Major Constraints to Development

Land uses associated with significant costs or remediation, or areas not available for development.

- + Wetlands
- + Floodplain
- + Airfield clearance: LZs and imaginary surfaces
- + Storm surge
- + AT/FP (inhabited buildings)
- + ESQD arcs
- + Historic features
- + Sloped areas (between 5 percent and 10 percent)



**Stones Ranch Cantonment Area**  
 + Developable Area 1 - 49.84 Acres  
 + Developable Area 2 - 21.07 Acres  
 + Developable Area 3 - 62.65 Acres

**Stones Ranch Training Area Cantonment**  
 + Developable Area 1 - 10.55 Acres  
 + Developable Area 3 - 3.33 Acres  
 + Stones Ranch North Cantonment

**FIGURE 32:  
STONES RANCH  
DEVELOPABLE  
AREAS**

CAMP NIANTIC AND EAST HAVEN RIFLE RANGE

Developable Area 1:  
No or Limited Constraints

- + Nonorganizational parking areas
- + Minor roads and paved areas
- + Hydrological features of minor concern

- + Relatively flat areas with minimal slopes (less than or equal to 3 percent)
- + Surrounding community zoning/height restrictions

Developable Area 2:  
Minor Constraints to Development

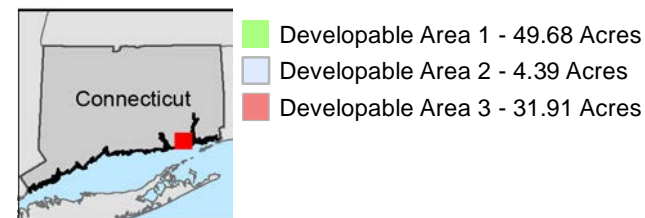
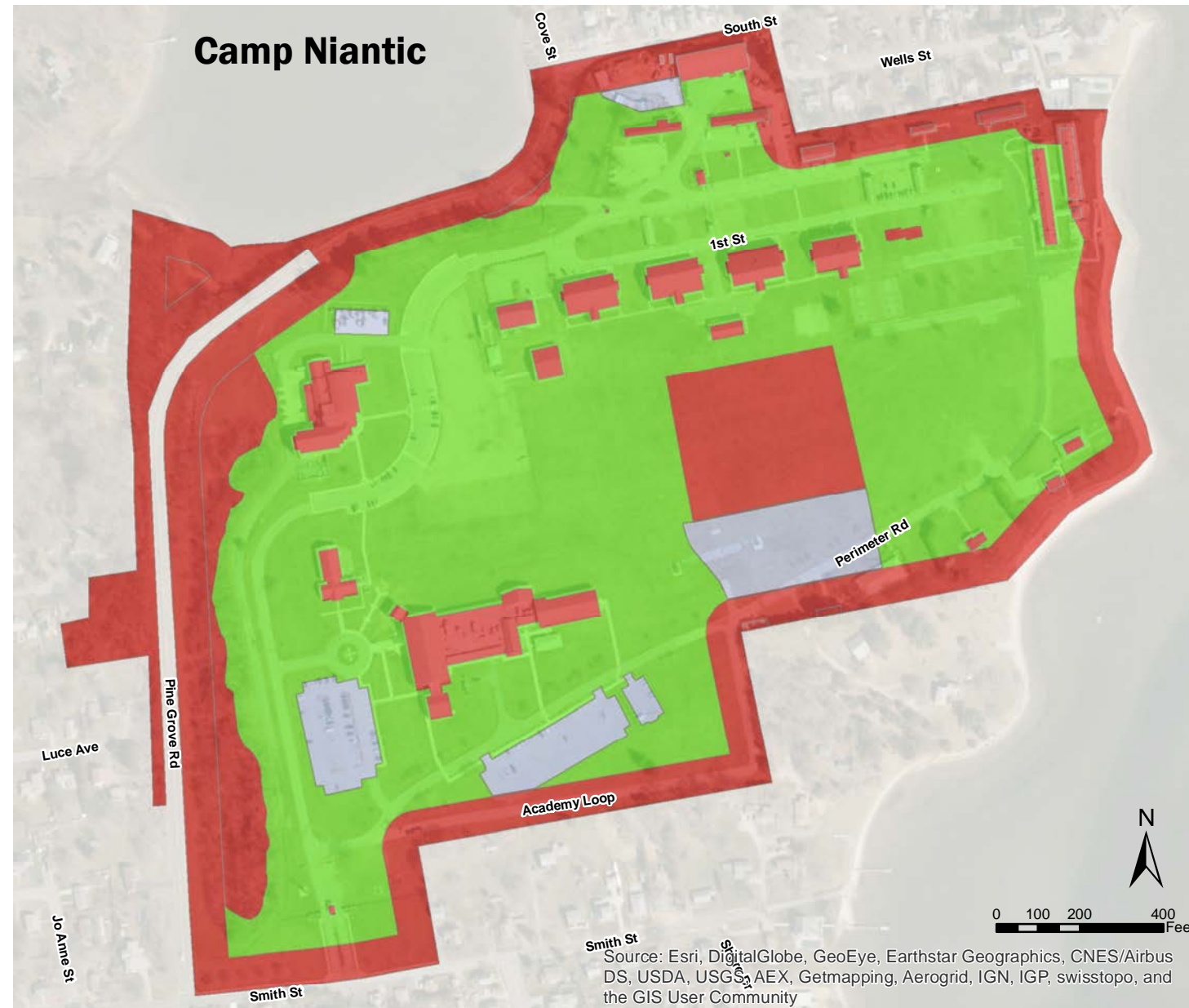
- + Stormwater/retention ponds
- + Environmental remediation
- + Critical fauna and flora habitats

- + Moderately sloped areas (3 percent to 5 percent)

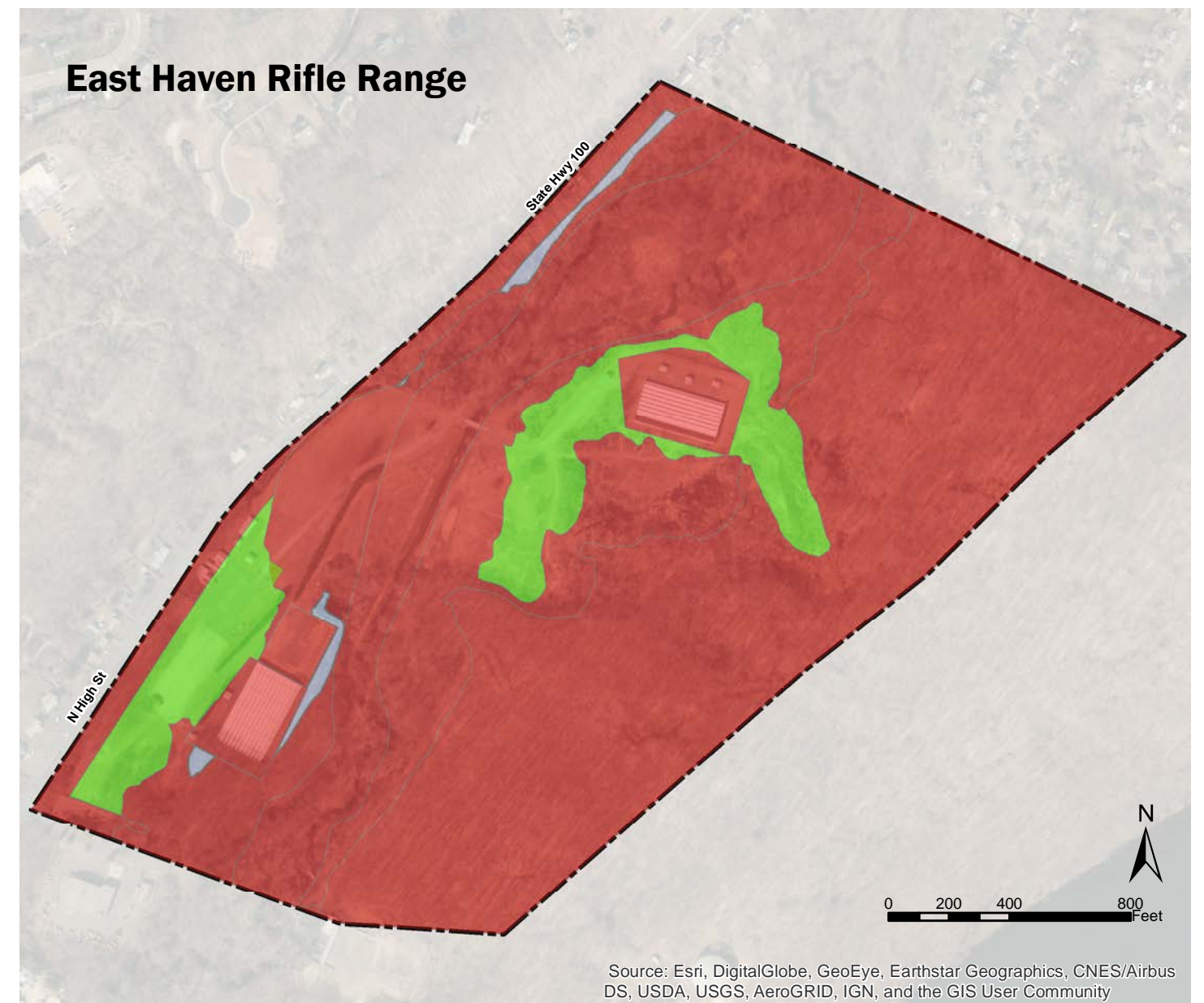
Developable Area 3:  
Major Constraints to Development

- + Wetlands
- + Floodplain
- + Airfield clearance: LZs and imaginary surfaces
- + Storm surge

- + AT/FP (inhabited buildings)
- + ESQD arcs
- + Historic features
- + Sloped areas (between 5 percent and 10 percent)



**FIGURE 33:  
CAMP NIANTIC  
DEVELOPABLE  
AREAS**



**FIGURE 34:  
EAST HAVEN  
DEVELOPABLE  
AREAS**



Above left: FOB at Stones Ranch. The FOB is located in the training area and serviced by the cantonment area.

Above right: CTC stakeholders participate in the planning charrette in December 2017.

Left: Ranges at East Haven are crucial to the CTC, as new range land and support facilities is difficult to obtain.



# FRAMEWORK

The framework plan identifies the transportation networks, visual characteristic, existing uses, and development features that influence future development.

## EXISTING CONDITIONS

The CTC provides Connecticut training land, range areas, and facilities to support the mission of the CTARNG. The lack of available land within the state of Connecticut makes CTC highly valuable. Many of the functions of the CTC require upgrades, and new facilities are needed to keep the CTC a Level IV Garrison Training Center. The framework plan identifies the current facilities and areas in need of improvement and offers, through the planning process, a course of action to address and augment the deficiencies of the CTC.

## PROPOSED

The vision statement developed during the charrette was incorporated throughout the plan. The plan is designed to identify and locate both new facilities and facilities in need of upgrade, in locations most prudent to fulfill the vision of providing world-class facilities and world-class customer service. The facilities to support specific missions such as range activities, unit-specific missions, and transient units were located in areas conducive to those specific missions.

FRAMEWORK PLAN

*This section presents the framework plan, visual character, illustrative plan, and preferred plan for the CTC.*

# FRAMEWORK PLAN

**HEALTHY COMMUNITY PLANNING STRATEGIES.** Recreational zones are linked to transient districts and training districts by protected pedestrian pathways and secondary circulation routes that feature sidewalks. These pedestrian connections reduce vehicular and pedestrian conflicts while improving equitable and accessible means of transportation. At Camp Niantic, the protected pedestrian pathway is intended to link the training district through the transient district to the coastal area. A detail of the protected pedestrian pathway can be found in the Street Envelope Standards section. It is recommended that pedestrian facilities and infrastructure such as shaded areas, benches, and landscaping be incorporated at the site plan phase of development for each proposed project.

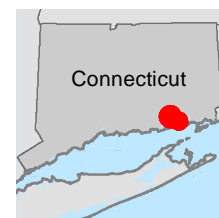
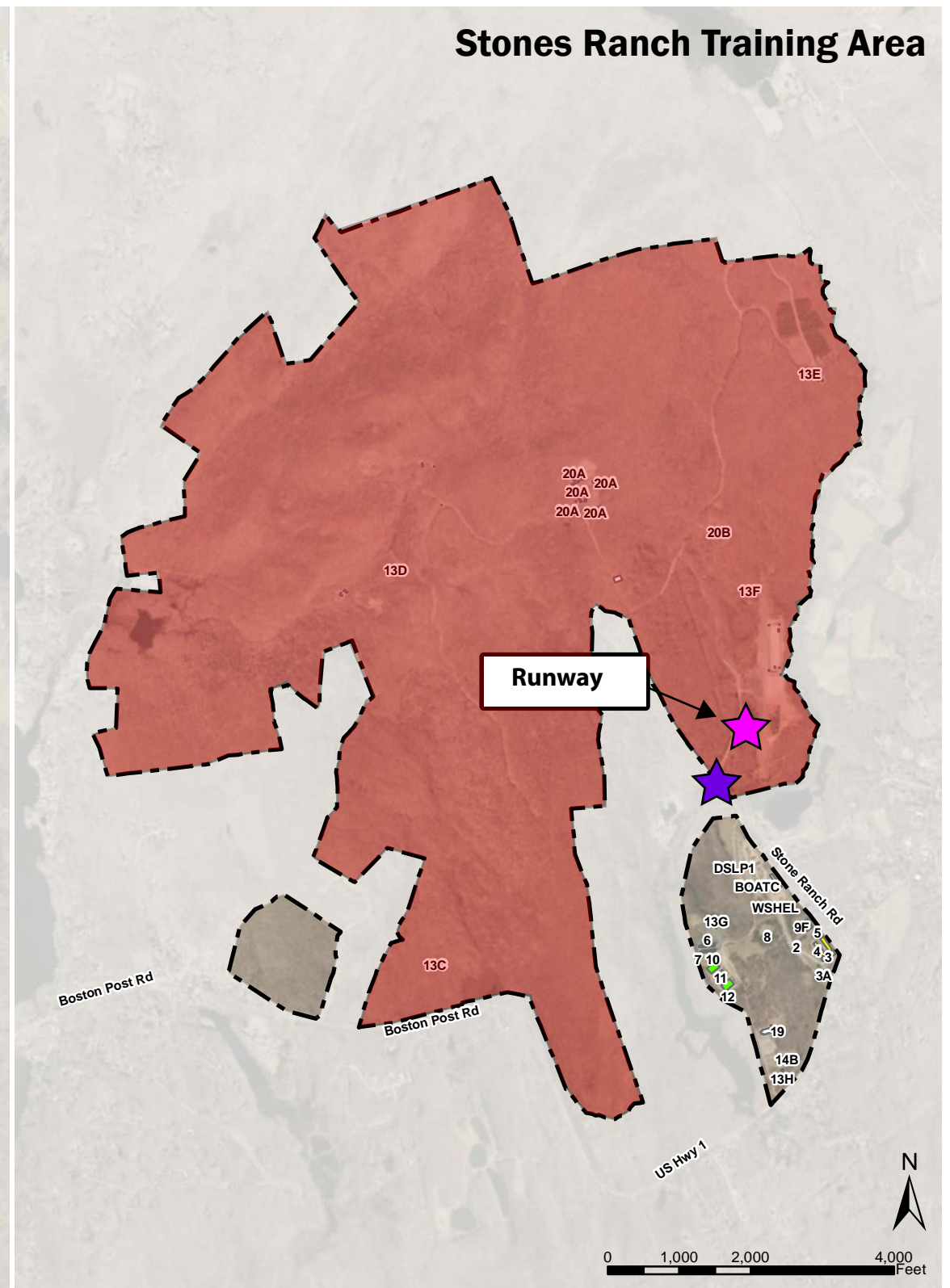
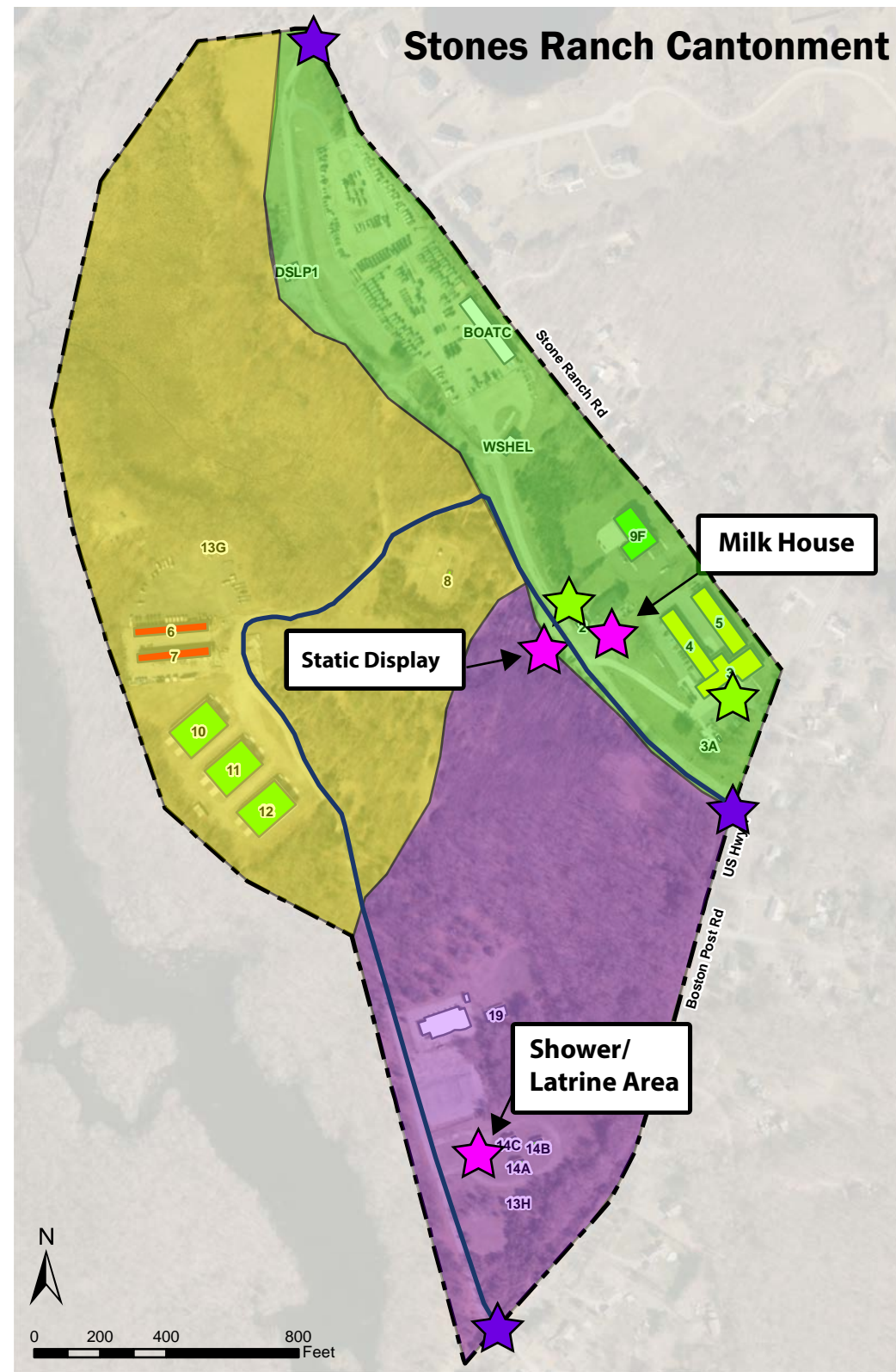
**GREEN INFRASTRUCTURE.** Green infrastructure is intended to be incorporated along with the pedestrian paths to capture stormwater and to facilitate the growth of native plants and landscape. A more detailed explanation of landscaping is provided in the Landscape Standards section. Along with landscaping and incorporating green space along pedestrian pathways, green stormwater management techniques have been employed. The use of LID techniques – including porous paving, bioretention, vegetated roofs, and rainwater harvesting – is provided in greater detail in Appendix A.

**PATHS.** Paths are routes or channels people move along to travel between land uses or facilities on an installation. Paths can accommodate vehicular and nonmotorized travel, and they include roads, sidewalks, trails, transit, and freight corridors. Paths often serve as defining features on an installation because they can create dividing lines between neighborhoods or functions. Primary paths at the CTC include Perimeter Road at Camp Niantic and Stones Ranch Road at Stones Ranch.

**NODES.** Nodes are centers, intersections, or points at which specific activities may be concentrated. Nodes may lie at the convergence of paths, and they include intersections, public plazas, or popular destinations. Nodes at Camp Niantic include the RTI area and the Point/coastal area. Nodes at Stones Ranch include the UTES area and milk house area.

**LANDMARKS.** Landmarks are physical objects, buildings, or natural features that act as reference points when navigating an installation. Landmarks at the CTC include the static displays located at the entrances of Camp Niantic and Stones Ranch.

**DISTRICTS.** Districts are sections of an installation that are identified by their character, land use, or the activities occurring within them. A district can include multiple land uses or activities, but it is often characterized by features that distinguish it from neighboring districts. Each of the three sites are



- Maintenance District
- Storage District
- Training District
- Transient/Training District
- Not Included
- Installation Boundary
- ★ Node
- ★ Landmark
- ★ Access Control Point
- Path

**FIGURE 35:  
STONES RANCH  
FRAMEWORK  
PLAN**

divided into districts. Districts at each site were developed by considering uses currently located on the site along with proposed locations for new uses developed during the charrette. In considering these two factors, district lines were clearly laid out and a definition of each district is provided here.

**MAINTENANCE DISTRICT.** Maintenance districts are located at Camp Niantic and Stones Ranch. These districts currently host DPW functions along with warehousing for the CTC. New facilities planned for the maintenance district consist of expanding

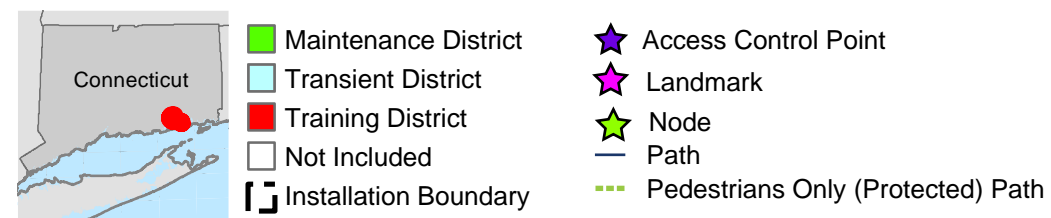
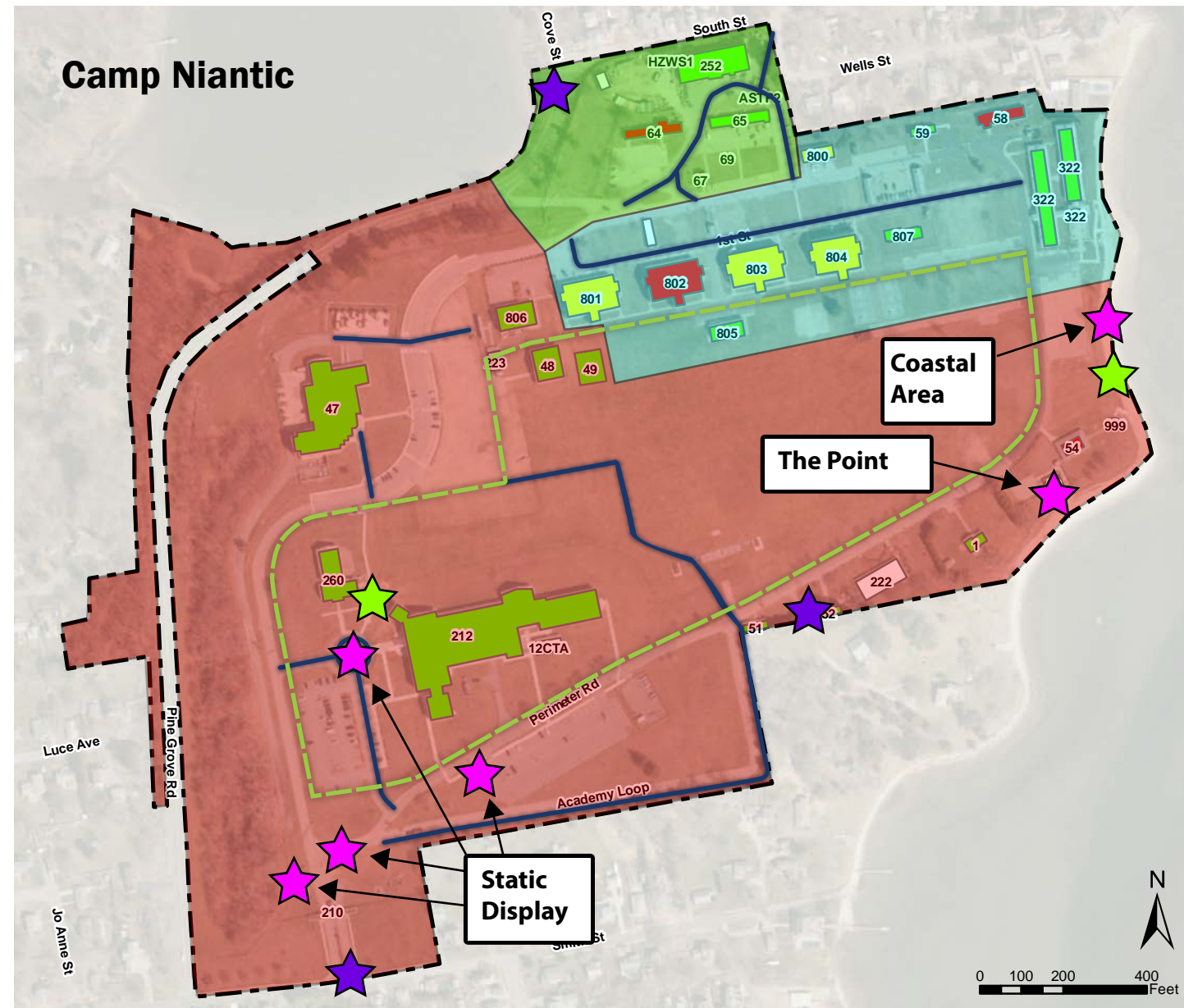
DPW facilities and adding more storage for DPW use. Secondary pedestrian connections and vehicular roadways service these districts.

**STORAGE DISTRICT.** A storage district is located at Stones Ranch. Storage districts are primarily comprised of DPW functions including warehouses and administrative space.

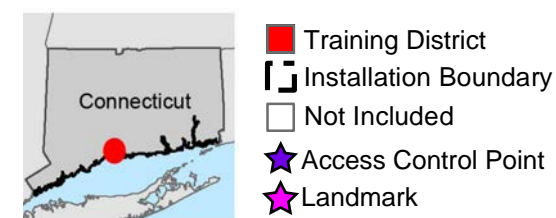
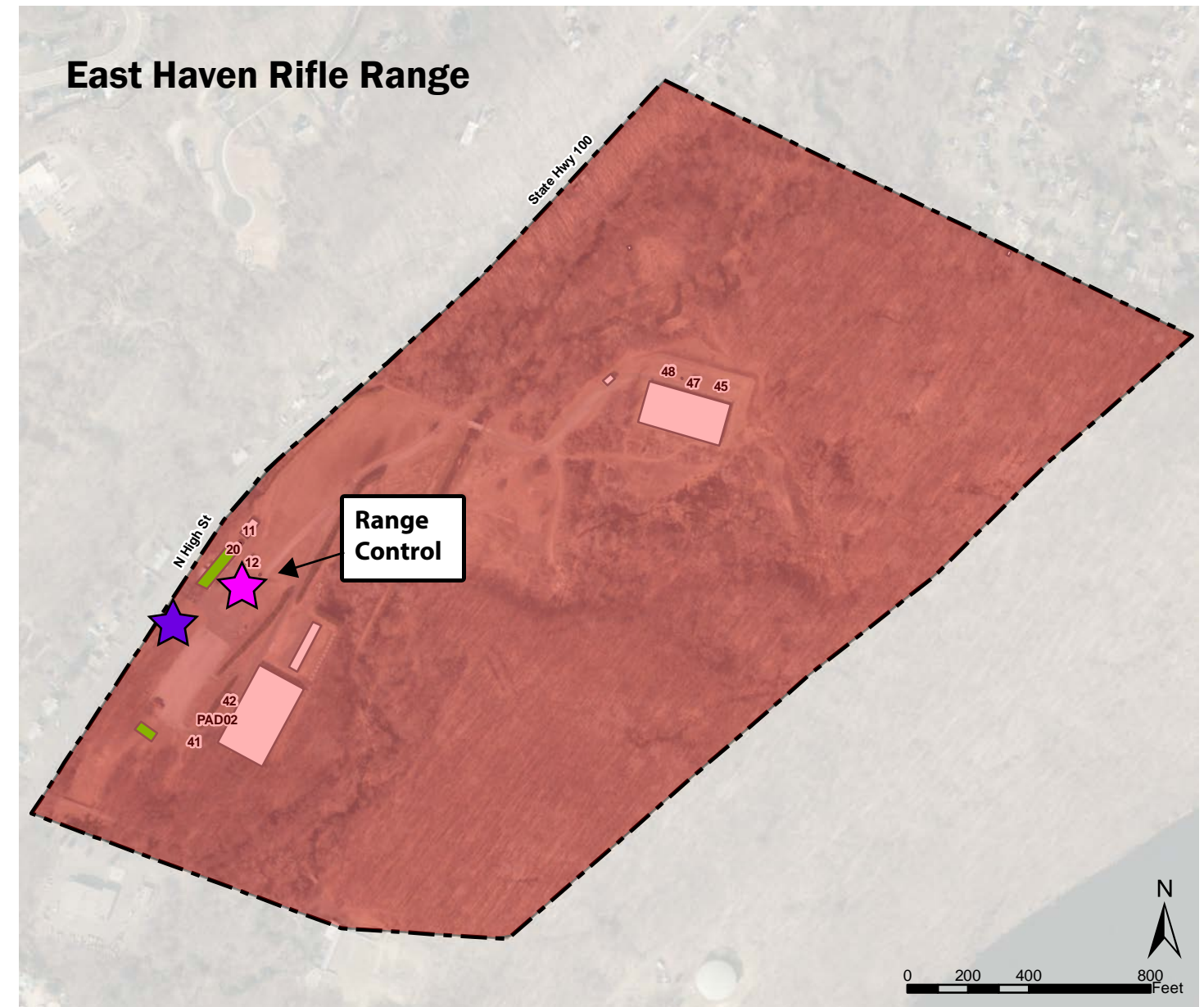
**TRAINING DISTRICT.** Training districts are located at Camp Niantic and Stones Ranch. The entire Stones Ranch training

area is considered a training district. The training area will contain the new range control building and ammunition holding area. Training districts located at Camp Niantic consists of the area that currently houses the RTI, along with the area proposed for development for the new MED DET Readiness Center. The southeast portion of the Stones Ranch cantonment area is a mixed district featuring a combination of a transient district and a training district. The mixed district houses readiness centers and transient facilities such as barracks and dining facilities. All of East Haven Rifle Range is considered a training district.

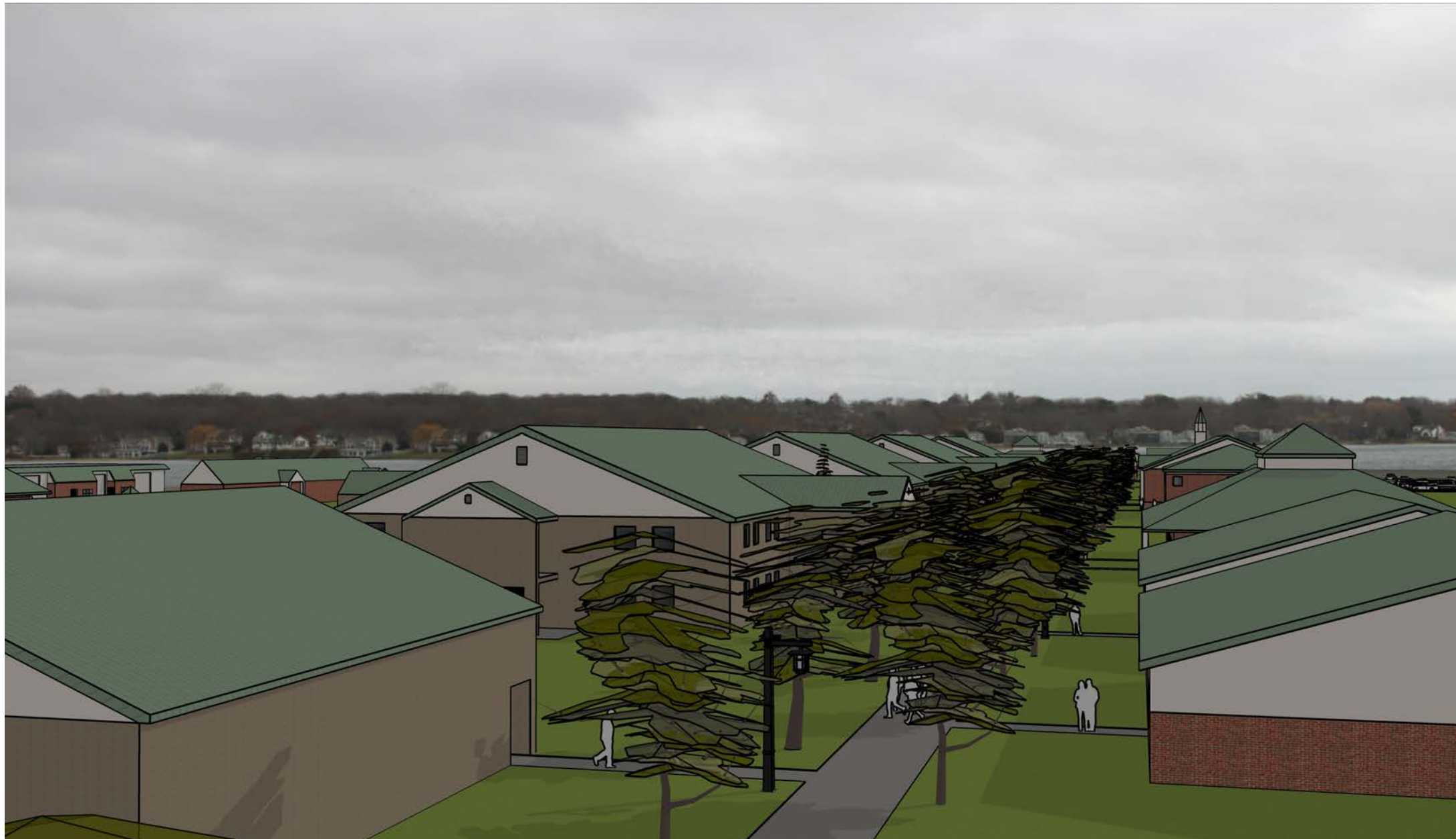
**TRANSIENT DISTRICT.** The transient district is located at Camp Niantic where the current barracks and dining facility spaces are located. This area also contains the workout facility and chapel. The transient district is connected to the training district and the coastal area by the protected pedestrian pathway. The basketball courts located at Camp Niantic are included in the transient district and will remain in place.



**FIGURE 36:  
CAMP NIANTIC  
FRAMEWORK  
PLAN**



**FIGURE 37:  
EAST HAVEN  
FRAMEWORK  
PLAN**



Pictured above and on the following page are renderings of the illustrative plan proposed at Camp Niantic.

The illustrative plan is a method of visualizing the potential build-out scenario that the capital investment strategy is based upon.

# ILLUSTRATIVE PLAN

## COMPONENTS

### **TRANSIENT UNIT FACILITIES.**

Development of additional facilities to support transient units will require space for administrative functions, barracks, dining facilities, and headquarters space, which has been planned for.

**MAINTENANCE.** The ongoing maintenance of government vehicles and areas for parking have been addressed. A new UTES has been proposed because the current UTES is 7,445 SF short of its requirement. Other storage and parking areas have been provided in the this plan.

**LANDING ZONES.** The Landing Zones located at all three sites have been preserved in this plan.

**READINESS CENTER.** With the proposal of a new readiness center at Stones Ranch, the development of support facilities such as barracks, dining facilities, administrative space, storage, and parking have all been included.

**ACP.** A significant upgrade of the current ACPs at Stones Ranch is included in the plan.

**CIRCULATION.** A change in traffic routing to one-way roads and elimination of the S-curve at Camp Niantic has been proposed. Along with these changes, a pedestrian walkway has been provided.





## COMPONENTS

**ASP.** Moving the ASP at Stones Ranch to the training area frees space for development.

**MEDICAL.** The current TMC, located in building 804 at Camp Niantic, does not meet the requirement of the CTC as the TMC and SRM both occupy building 804. A new TMC and a new SRM facility has been proposed at Camp Niantic.

**TRAINING.** The requirement of five new simulation centers are in this plan. New simulation centers are located at East Haven and Stones Ranch.

**RANGE OPERATIONS.** Range operations at the Stones Ranch cantonment area are moved to the training area to consolidate training-related facilities near the training area.

**FACILITY UPGRADES.** Facilities such as the physical fitness center are proposed for improvements because the facility is in a good location, but it is in need of an upgrade to better support users.

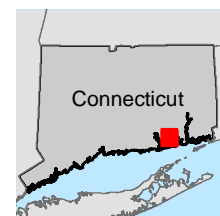
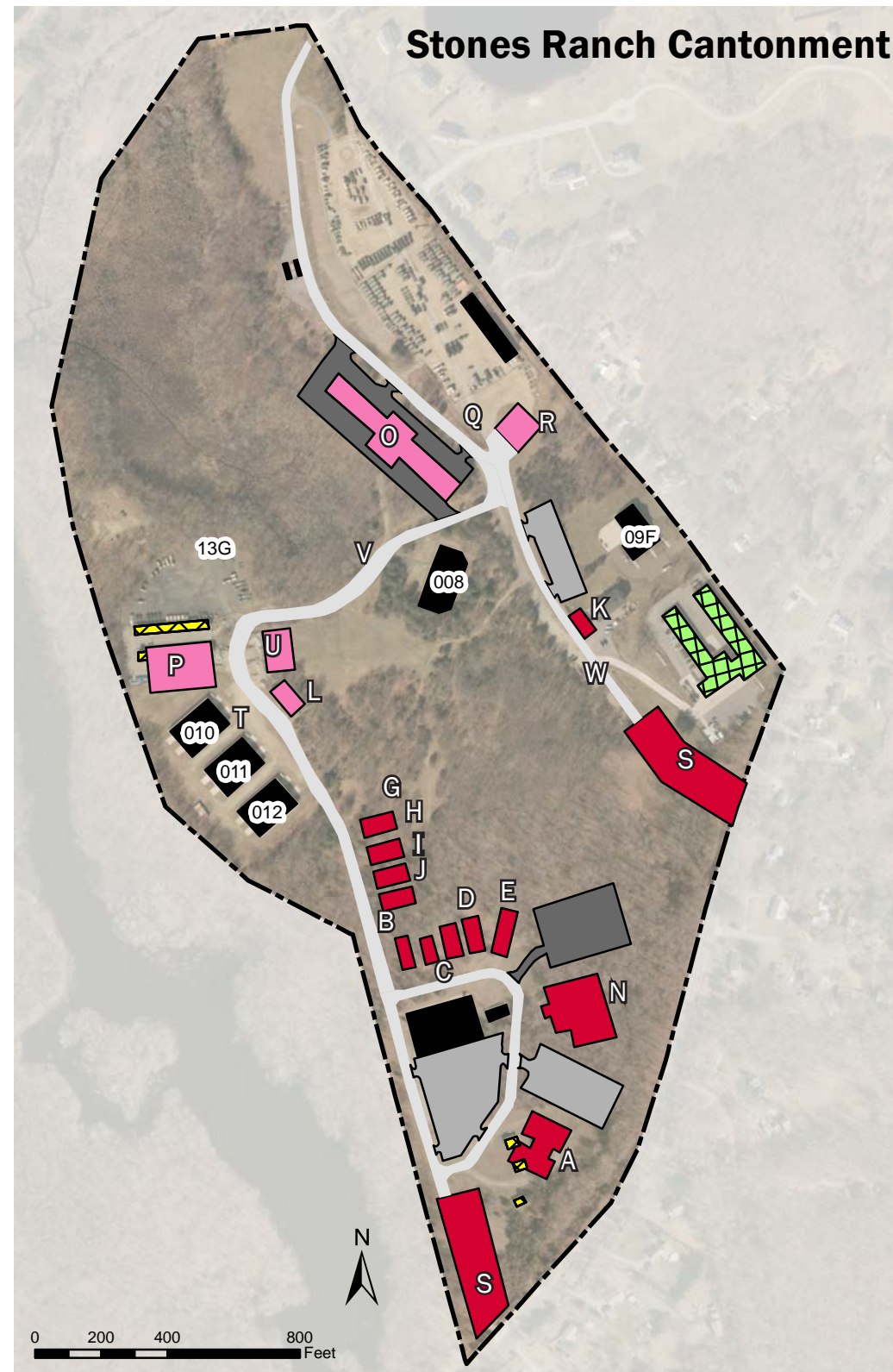
**RECREATIONAL FACILITIES.** Pedestrian circulation at Camp Niantic connects the coastal area of the property with the readiness center area and transient area. The basketball courts at Camp Niantic will remain untouched. It is recommended that recreational facilities be included at the site plan level for the development of the Stones Ranch transient area.

# ILLUSTRATIVE PREFERRED PLAN

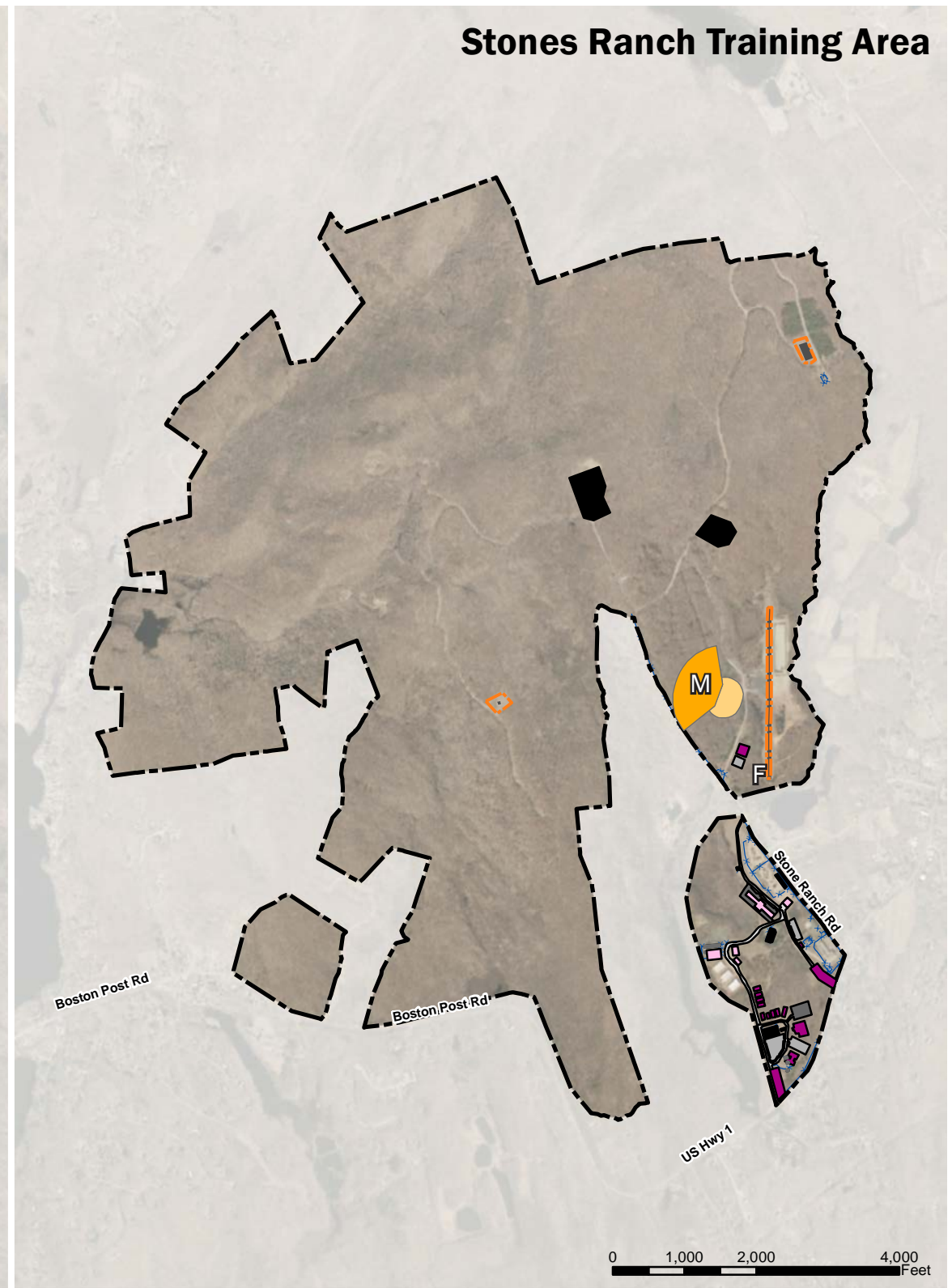
The illustrative preferred plan shows one potential way of developing the site based on the regulating plan and the requirements set forth during the charrette.

**TABLE 7: PREFERRED PLAN PROJECTS**

STONES RANCH MILITARY RESERVATION	
PROJECT ID	PROJECT DESCRIPTION
A	Enlisted Barracks - Transient (200 PN)
B	Battalion HQ - Transient
C	Company HQ - Transient
D	Battalion Support/Ration Breakdown
E	Battalion Maintenance Shelter
F	Range Operations
G	Simulator
H	Simulator
I	Simulator
J	Simulator
K	General Instruction
L	DPW Maintenance/Admin
M	Ammunition Supply Point
N	Readiness Center - 250th Multi-Role Bridge CO
O	UTES
P	General Purpose Instruction - 3,000 SF to BNHQ
Q	Loading Ramp
R	Wash Rack
S	Access Control Point
T	DPW Roads and Grounds
U	Vehicle Maintenance Canopy
V	Traffic Circulation (Pave Roadways)
W	Stones Ranch Infrastructure Update



- Existing
- Proposed GOV
- Proposed POV
- Proposed Required
- Proposed Project
- Remove
- Remove/Convert to Parking
- Traffic Circulation
- Explosive Safety Quantity Distance
- Military Landing Zone



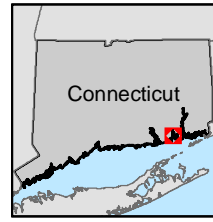
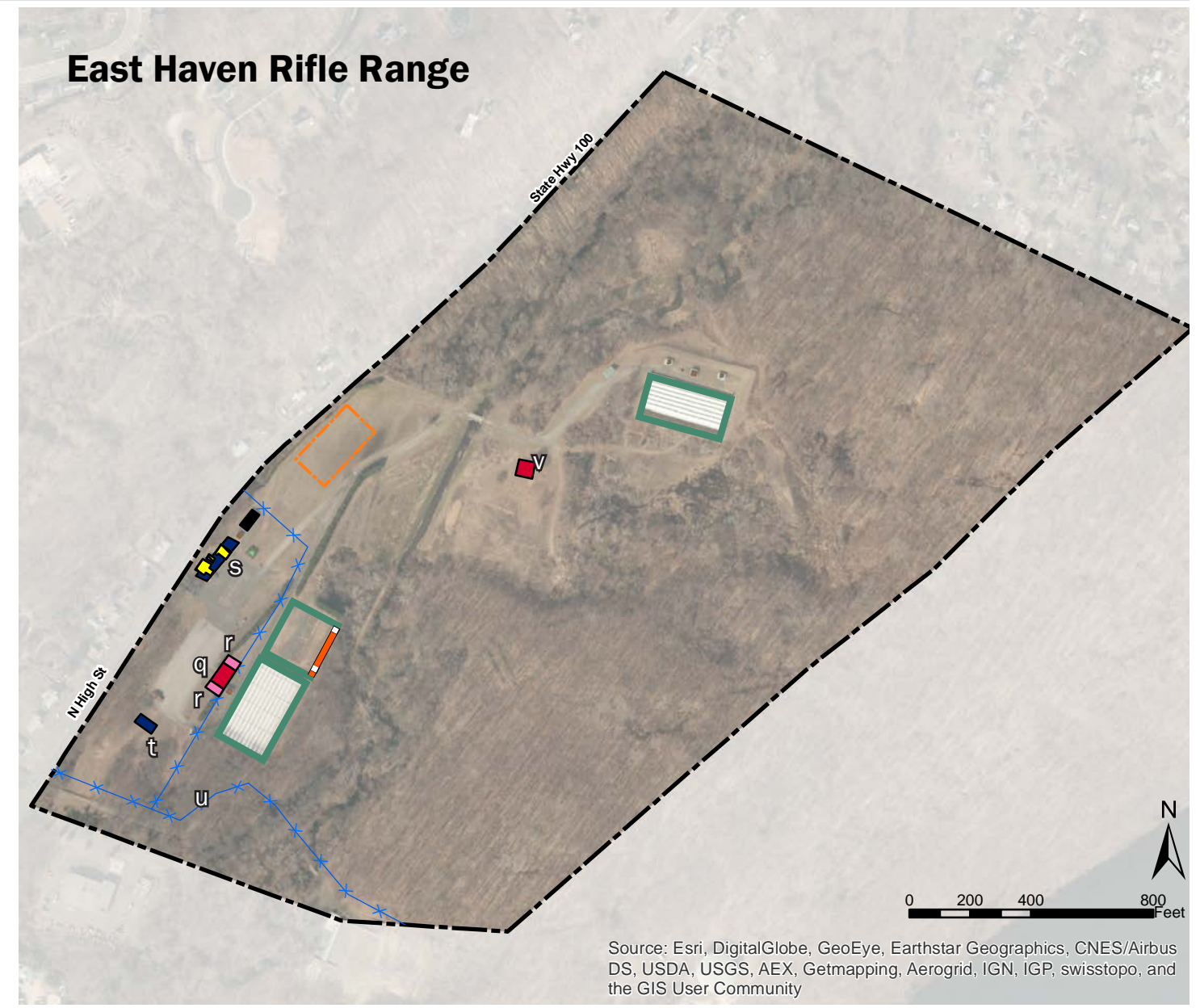
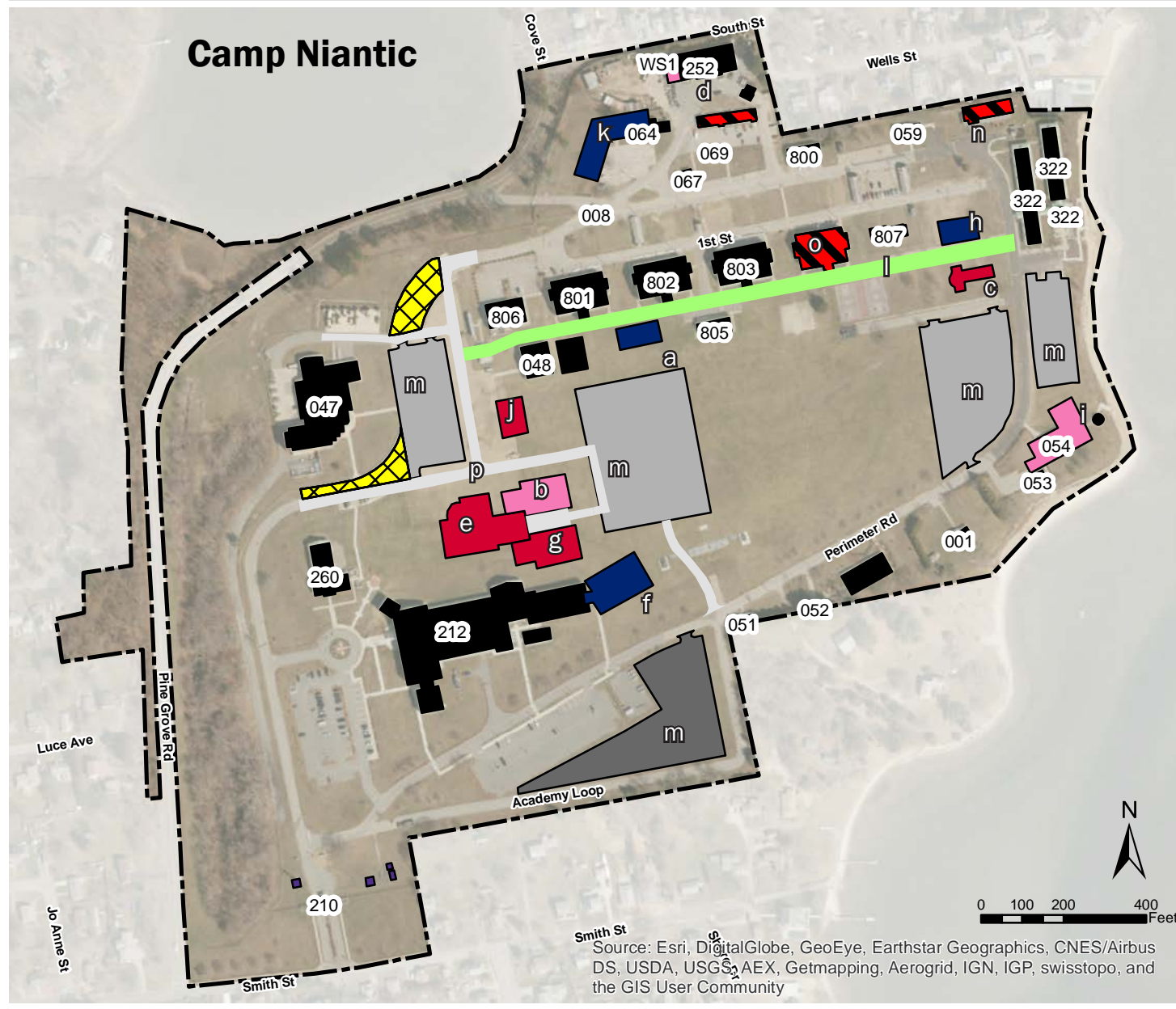
**FIGURE 38:  
STONES RANCH  
PREFERRED PLAN**

CAMP NIANTIC	
PROJECT ID	PROJECT DESCRIPTION
a	Company HQ – Transient
b	Troop Dispensary/Medical Clinic
c	Chapel
d	DPW – Canopy Building
e	Readiness Center – DET MED DET

CAMP NIANTIC	
f	RTI Billets
g	Exam Space
h	Dining Facility – Transient (400 PN)
i	General Instruction (The Point)
j	Post HQ
k	Post Exchange (PX)

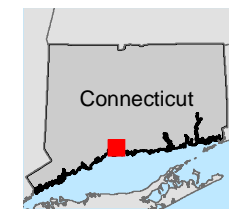
CAMP NIANTIC	
l	Pedestrian Way
m	POV/MVP Parking
n	Physical Fitness Center
o	804 Renovate Back to Barracks
p	Roadway Realignment

EAST HAVEN RIFLE RANGE	
PROJECT ID	PROJECT DESCRIPTION
q	Simulator
r	Range Instruction Canopies (2)
s	Range Operations
t	Grounds Maintenance Building
u	Perimeter/Compound Fencing
v	Ammunition Holding Area



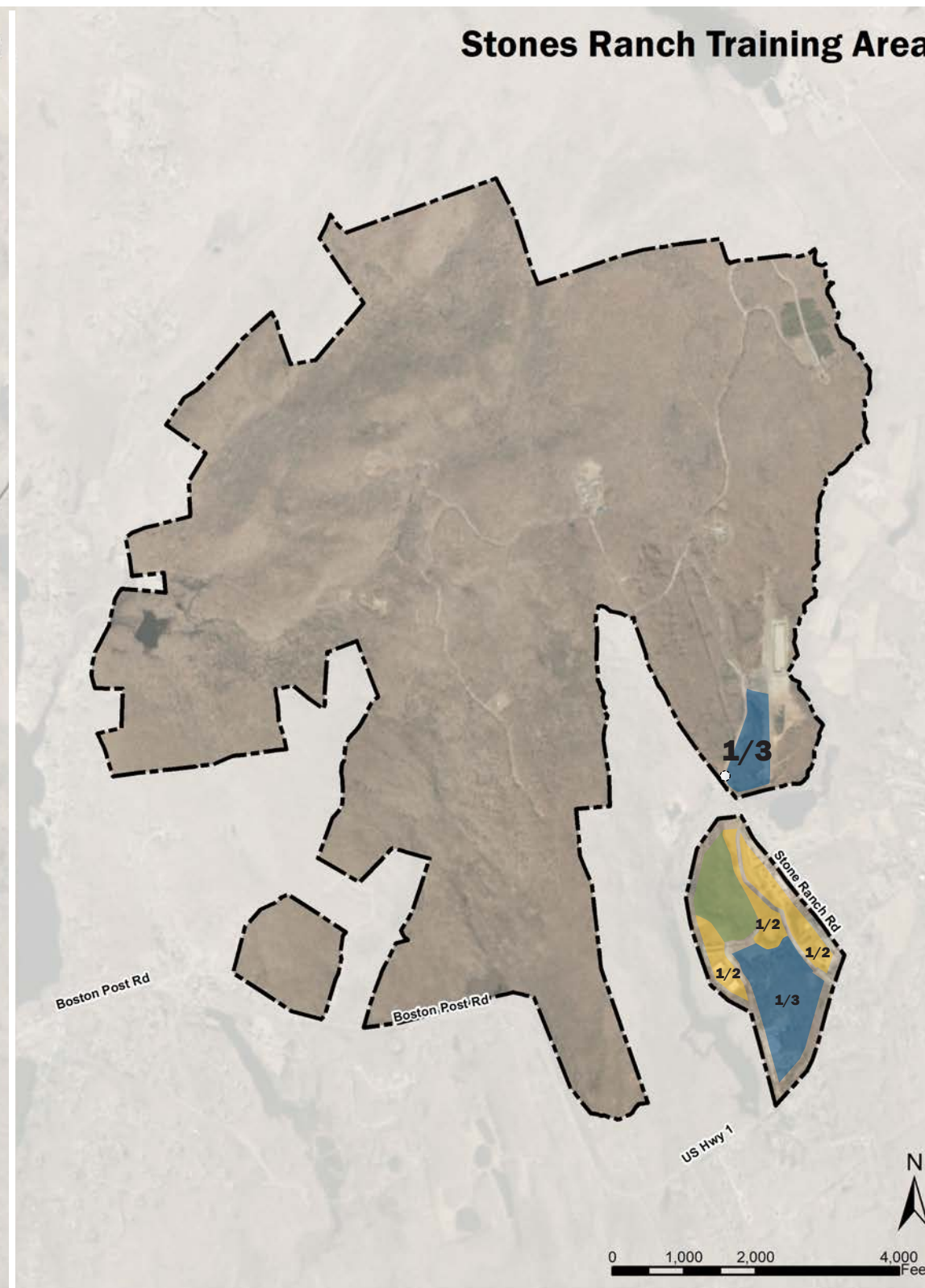
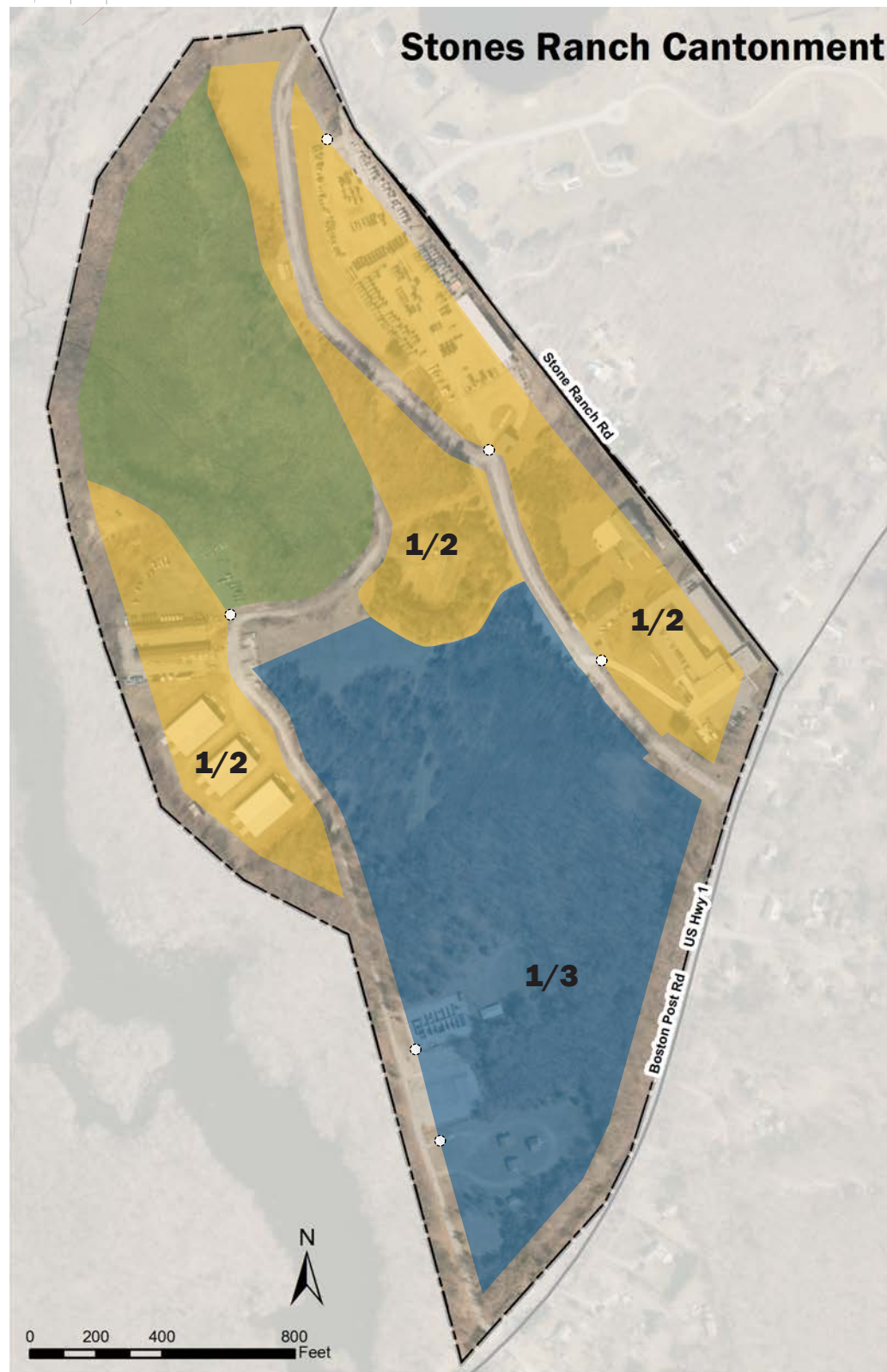
- Current Plan
- Existing
- Proposed Required
- Proposed Project
- Traffic Circulation
- Remove
- Proposed GOV
- Proposed POV
- Renovate
- Static Display
- Pedestrian Pathway

**FIGURE 39:  
CAMP NIANTIC  
PREFERRED PLAN**



- Current Plan
- Existing
- Proposed Required
- Proposed Project
- Remove
- Proposed Fence
- Range Berm
- Military Landing Zone
- Military Training Location

**FIGURE 40:  
EAST HAVEN  
PREFERRED PLAN**



# REGULATING PLAN

The regulating plan functions like an enhanced land use plan, providing increased flexibility over the traditional land use style of planning. The building envelope standards (BES) describe the types of building structures that can be built in each BES category. BES also determines the minimum and maximum number of floors. The facilities that fit each BES category within a particular zone are designed to be used for a variety of functions.

## FLEX-USE 1 BES

**HEIGHT.** 1 to 4 stories.

**PLACEMENT.** Clustered with and oriented toward other buildings, set to a designated build-to line, and/or oriented toward a main roadway. Parking lots should be near buildings but oriented to the rear and away from pedestrian paths to the extent possible.

**CHARACTER.** Community-oriented functions laid out in a campus setting.

**USE.** Retail, religious facilities, offices, classroom training, meeting facilities, schools, restaurants, recreational facilities, and medical uses.

## FLEX-USE 2 BES

**HEIGHT.** 1 to 2 stories.

**PLACEMENT.** Clustered with and oriented toward other buildings in a campus setting, set to a designated build-to line, and/or oriented toward a main roadway.

**CHARACTER.** Low massing with larger buildings and low density.

**USE.** Housing, maintenance facilities, range support facilities, research facilities, warehouses, military equipment parking, and recreation facilities.

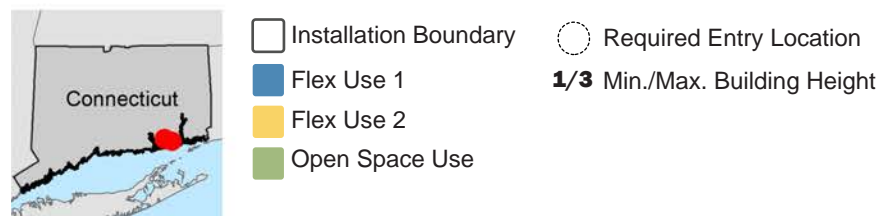
## FLEX-USE 3 BES

**HEIGHT.** 0 to 1 stories.

**PLACEMENT.** Along the coastal seawall/high tide line.

**CHARACTER.** Low density, not to exceed 30 feet in height at any point, with minimal massing.

**USE.** Recreational or housing.



**FIGURE 41:  
STONES RANCH  
REGULATING  
PLAN**

## OPEN SPACE USE BES

**HEIGHT.** N/A

**PLACEMENT.** Throughout the sites, with emphasis on pedestrian-way intersections.

**USE.** Pedestrian thoroughfare, gathering spaces, parade field, recreational field, drainage, formation training areas, and no-build areas/buffer zones.

## STONES RANCH MILITARY RESERVATION

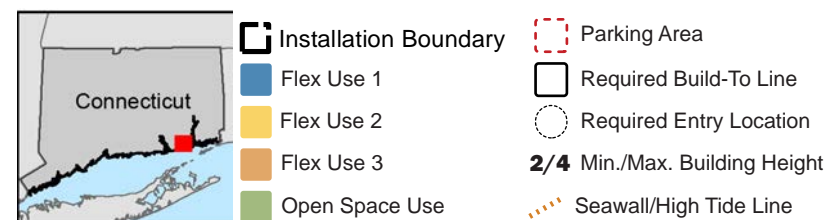
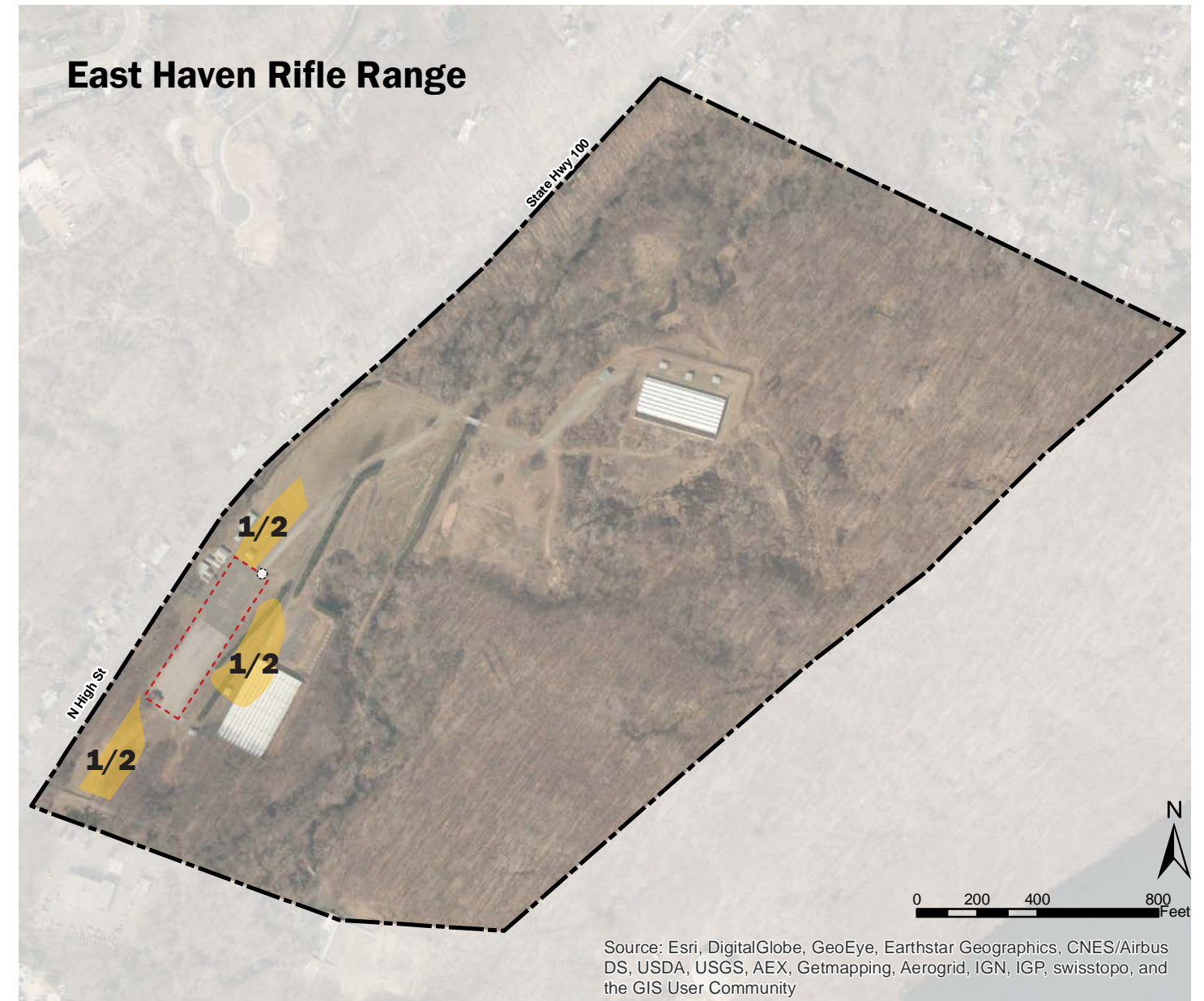
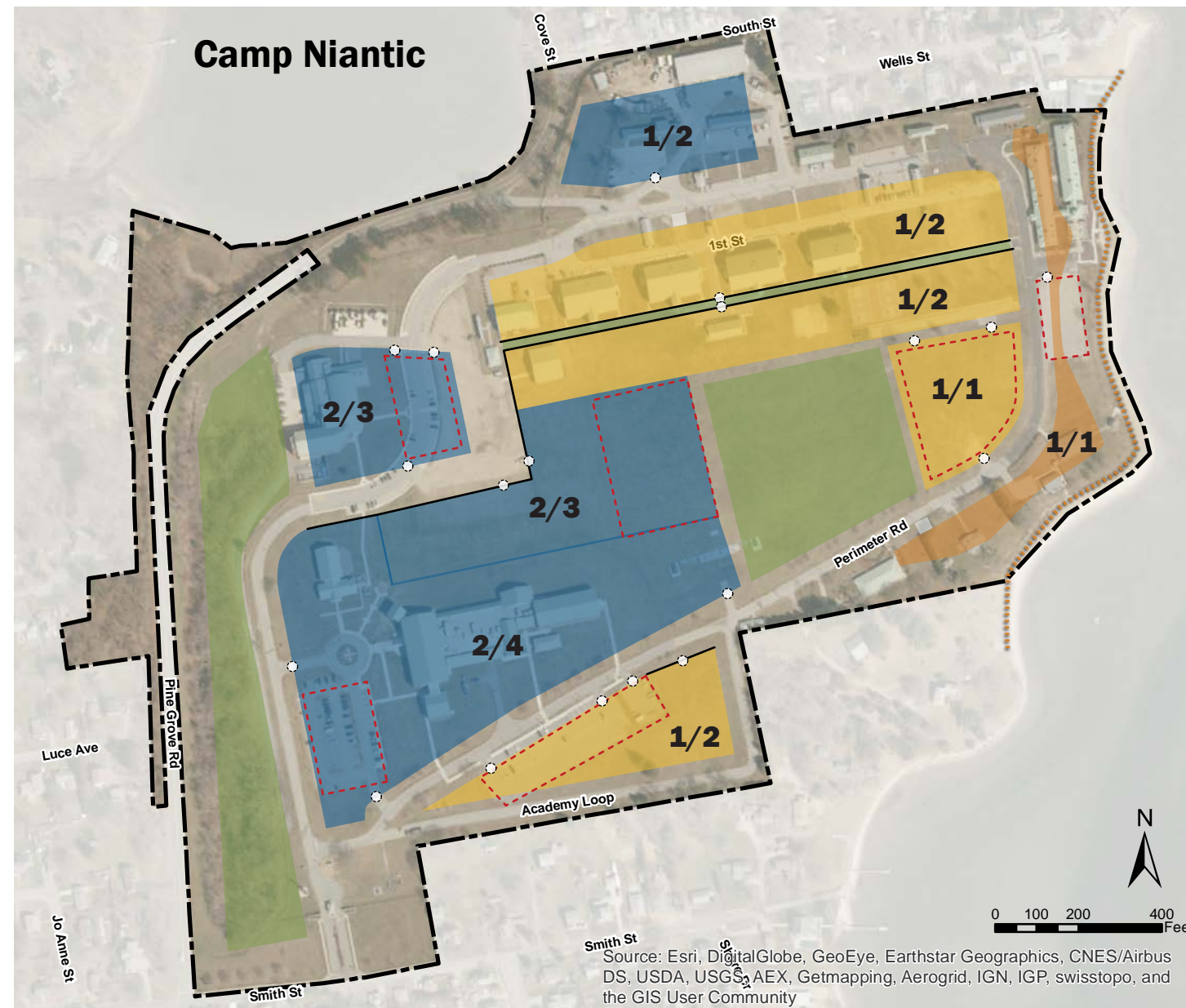
At Stones Ranch, the cantonment area and the smaller cantonment area at the training area are divided between Flex Use 1 and 2. The areas around the sides of the site are best categorized by Flex Use 2, while there is an area prime for a campus development toward the south-central portion. The northern cantonment would be best served by Flex Use 1 development.

## CAMP NIANTIC

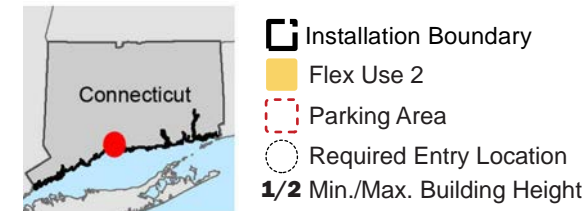
Camp Niantic features denser campus-style development opportunities on the west side of the site with open space being added in the form of a pedestrian pathway. The east side of the site is constrained by the shoreline. Anything built in Flex Use 3 space must be less than 30 feet in height.

## EAST HAVEN RIFLE RANGE

Development on East Haven should be limited to Flex Use 2, which should accommodate a variety of range support activities.



**FIGURE 42:  
CAMP NIANTIC  
REGULATING  
PLAN**



**FIGURE 43:  
EAST HAVEN  
REGULATING  
PLAN**

# VISUAL CHARACTER

## BUILDING MATERIAL

### CONNECTICUT TRAINING CENTER SITES

CTARNG has established design guides published as the Planning and Design Standards Manual by the Facilities Management Office, May 2016. New construction should follow these standards to ensure uniformity throughout the CTC. New development should vary from the standards only with approval of the CTARNG and to the extent it enhances the established character of existing facilities. One primary building element that should remain consistent throughout the camp is the established green roof color, which should be matched to the extent possible.

### STONES RANCH CANTONMENT AND RANGE

The Stones Ranch cantonment area consists of wooded and rolling terrain. Existing buildings were built over many years and have no discernible standard. Future planned development at Stones Ranch provides an opportunity for the CTARNG to establish new standards that reflect the unique geography and history of the location. In order to establish some uniformity between the sites of the CTC, it is recommended the green roof color standard be utilized at Stones Ranch. The building envelopes should maintain the same material choices as Camp Niantic (brick and concrete masonry units [CMU] where appropriate). The colors of the materials may include the red-brown brick and white schemes established at Camp Niantic, as well as a darker brown and tans palette unique to Stones Ranch. A darker color scheme would reflect the wooded nature of the site as well as recall the weathered nature of the aged cedar-sided buildings that are found throughout the CTC. Site lighting is another opportunity to break from the Camp Niantic standard, if desired.

### CAMP NIANTIC

Camp Niantic is located on a peninsula between the Niantic River and Smith Cove, and it is mainly surrounded by residential neighborhoods. Installation construction spans many decades, materials, and standards. Earlier buildings are mainly of light-frame construction with cedar-shingle siding; some are built of CMU. Newer buildings, including the RTI and Readiness Center, have adopted a palette of metal panel and brick masonry veneer over CMU. This palette is consistent with newer AT/FP standards and should be continued in future construction. The property on which the installation sits is an increasingly valuable resource. For this reason, construction materials should be employed that keep standoff distances to a minimum, while allowing for flexibility in design and economic construction. An established design element are the site light poles; additional light poles shall match the standard as defined in the Planning and Design Standards Manual. The CTARNG has indicated that building heights should be limited to two to three stories. Additionally, there are restrictions to building heights visible from the bay. Any building that is two or more stories tall must be sited away from the water, on the opposite side of the perimeter road.

### EAST HAVEN RIFLE RANGE

East Haven Rifle Range provides another opportunity to establish its own character. Existing buildings on the site are made up of a variety of materials, but the most prominent are the cedar-sided range control and storage buildings. Like at Stones Ranch, a palette of darker browns and tans would reference these buildings when they are replaced. Utilizing the established green roof color standard would tie the three sites together.



### STONES RANCH MILITARY RESERVATION

*The aged cedar wood shakes and sloped roof of the existing range control building reflect the local style and wooded environment.*



### STONES RANCH MILITARY RESERVATION

*Existing storage facilities feature a tan and brown color palette.*



### CAMP NIANTIC

*This existing barracks building features the standard gray CMU construction with green metal roofs.*



### CAMP NIANTIC

*The red-brown brick and white accents of this existing administrative building should serve as a model for new construction at CTC sites.*



### EAST HAVEN RIFLE RANGE

*The East Haven range control building has cedar siding similar to that of the Stones Ranch range control building but has white trim rather than brown.*



### EAST HAVEN RIFLE RANGE

*Metal roofs should be green, as seen on this support building, as defined in the Planning and Design Standards Manual.*

## COLORS

The installation has established design standards and a materials palette that is consistent with AT/FP standards. In concert with this approach, future development should adopt similar materials and colors.

### STONES RANCH MILITARY RESERVATION

- + Concrete may be painted gray or tan, or applied with either CMU veneer or metal panel.
- + Metal panel may be browns, grays, or light tan.
- + Trim should match roof colors or siding where appropriate.
- + Metal roofs will be colored green, as defined in the Planning and Design Standards Manual.
- + Brown or gray reinforced CMU or CMU veneer will help unify installation buildings. Buildings of all recommended construction materials can integrate CMU into the ground floor at a minimum.
- + When repainted, existing buildings may be painted brown, gray, and/or light tan.

### CAMP NIANTIC

- + Concrete may be painted light gray or tan, or applied with either CMU veneer or metal panel.
- + Metal panel may be gray or light tan/white.
- + Trim should match roof colors or siding where appropriate.
- + Metal roof shall be colored green the same as the roofing currently on site.
- + Red-brown reinforced CMU or CMU veneer will help unify buildings. Buildings of all recommended construction materials can integrate CMU into the ground floor at a minimum.
- + When repainted, existing buildings may be painted light gray and/or light tan.

### EAST HAVEN RIFLE RANGE

- + Concrete may be painted gray or tan, or applied with either CMU veneer or metal panel.
- + Metal panel may be browns, grays, or light tan.
- + Trim should match roof colors or siding where appropriate.
- + Metal roofs should be colored green as defined in the Planning and Design Standards Manual.
- + Brown or gray reinforced CMU or CMU veneer will help unify buildings. Buildings of all recommended construction materials can integrate CMU into the ground floor at a minimum.
- + When repainted, existing buildings may be painted brown gray and/or light tan.

## GENERAL BUILDING ENVELOPE STANDARDS

**HEIGHT.** 1 to 3 stories

**PLACEMENT.** Clustered with and oriented toward other buildings in a campus setting on Stones Ranch. Set to a designated build-to or established set back line. Oriented toward the main pedestrian pathways on Camp Niantic.

**PARKING.** To the extent possible, parking lots should be to the side and/or rear of buildings and away from pedestrian areas.

**USE.** Lower Levels: Public Spaces, medical uses, religious facilities, and meeting facilities.

**UPPER LEVELS.** Private spaces, offices, training, and lodging.

## OPEN SPACE BES

**HEIGHT.** N/A

**PLACEMENT.** Throughout the sites, with emphasis on pedestrian-way intersections.

**PARKING.** Parking associated with the buildings should be sufficient for normal operations. Overflow parking for larger event can be provided.

**USE.** Pedestrian thoroughfare, gathering spaces, parade field, recreational field, drainage, and formation training uses.

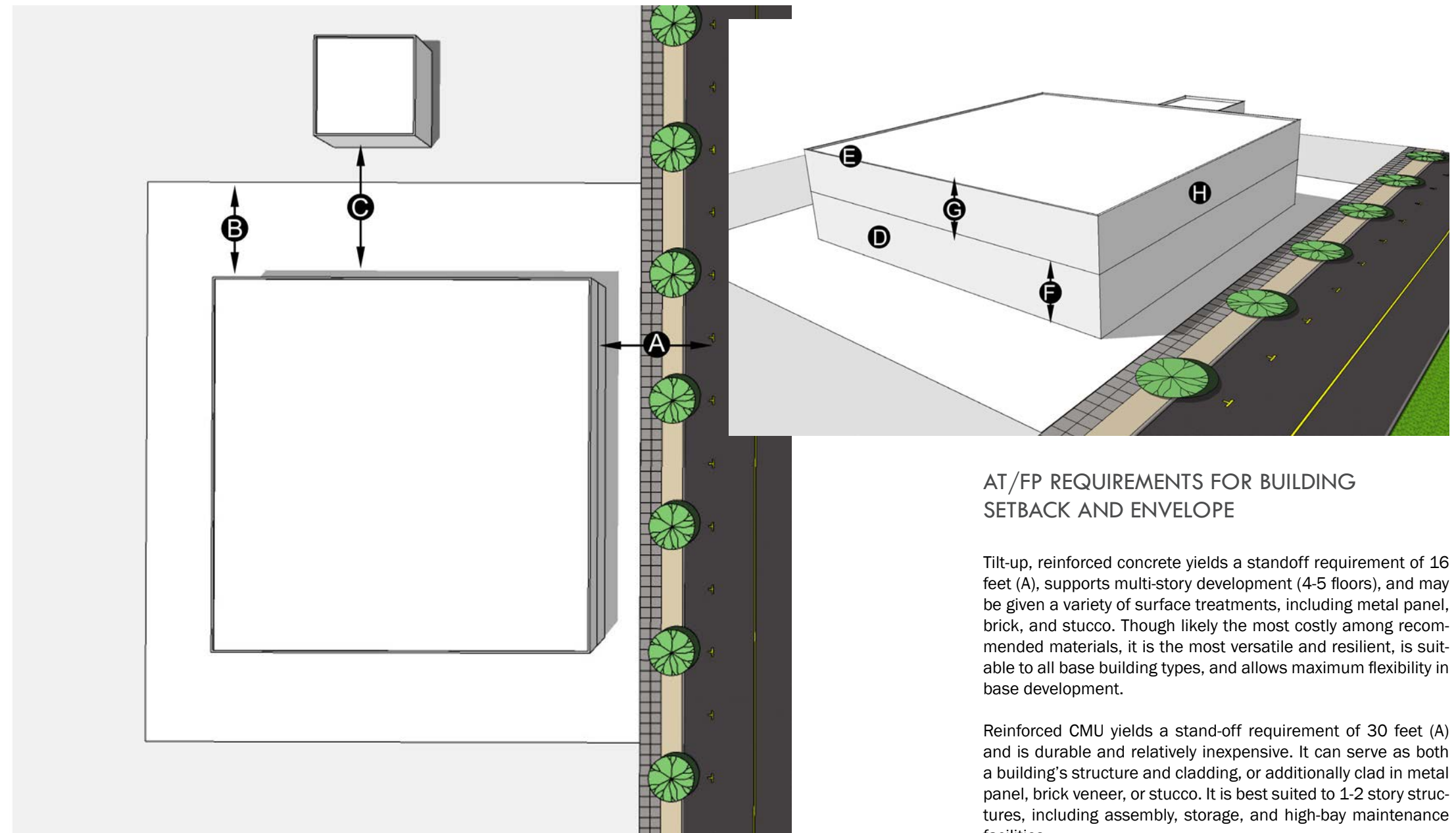
## PARKING AREAS BES

**HEIGHT.** N/A

**PLACEMENT.** To the extent possible, parking lots should be to the side and/or rear of buildings and away from pedestrian areas.

**PARKING.** In identified locations.

**USE.** Private and government vehicle parking.



Building standards as illustrated above provide basic form requirements for an installation.

- |   |  |
|---|--|
| <b>A</b> Max. setback from drive lane - Min 30 feet         | <b>E</b> Building height - 1-3 stories       |
| <b>B</b> Min. setback from parking - Min 16 feet            | <b>F</b> First floor height - 14 feet        |
| <b>C</b> Max. setback from adjacent buildings - Min 30 feet | <b>G</b> Floor-to-floor height - Max 14 feet |
| <b>D</b> Building width - Max 90 feet                       | <b>H</b> Percent of facade area - Up to 90%  |

### AT/FP REQUIREMENTS FOR BUILDING SETBACK AND ENVELOPE

Tilt-up, reinforced concrete yields a standoff requirement of 16 feet (A), supports multi-story development (4-5 floors), and may be given a variety of surface treatments, including metal panel, brick, and stucco. Though likely the most costly among recommended materials, it is the most versatile and resilient, is suitable to all base building types, and allows maximum flexibility in base development.

Reinforced CMU yields a stand-off requirement of 30 feet (A) and is durable and relatively inexpensive. It can serve as both a building's structure and cladding, or additionally clad in metal panel, brick veneer, or stucco. It is best suited to 1-2 story structures, including assembly, storage, and high-bay maintenance facilities.

Metal panel, over steel frame construction, requires a setback distance of 56 feet (A) and is an efficient material for cladding expansive surfaces. It is best suited to high-bay industrial, storage, and maintenance facilities.

**FIGURE 44:**  
**BUILDING ENVELOPE STANDARDS**

# BUILDING ENVELOPE STANDARDS



## LANDSCAPING

Landscape elements such as benches, light bollards, bioswales and other features can serve dual purposes by enhancing the landscape and assisting in meeting AT/FP standoff and setback requirements.

**PEDESTRIAN WAY.** A wide pedestrian-only path creates a more campus-like feeling on the installation; the surface could be impervious with paving blocks as the walk surface. If needed, it could be designed to support emergency vehicles as well.

All installation landscaping shall conform to current AT/FP standards: maximum of 6-inch-high ground cover with trees and foliage not lower than 3 feet above the ground in obstructed areas. Native durable species should be selected for all added landscape features. Landscaping species of trees, shrubs, bushes, plants, and ground cover should be selected for aesthetic appeal and durability in the climate of the installation and should require minimal maintenance and resources to survive.

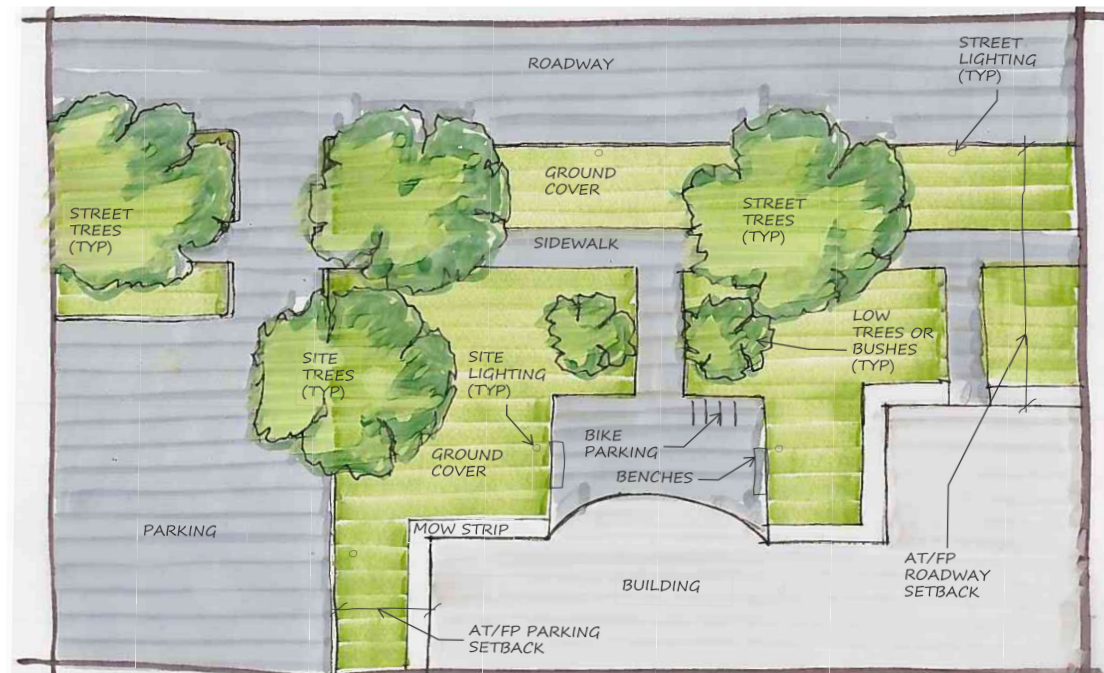
Trees shall be provided along the verge strips of the roadways; these trees serve several purposes beyond aesthetic. Trees create a buffer between vehicle and pedestrians and also provide shade for pedestrians, encouraging more walking.

Utilizing a variety of species of native trees will minimize disease and enhance the pedestrian walkway. Landscaping materials soften the hard surfaces of the built environment and encourage people to engage in their surroundings, while also providing natural shade and shelter.

Ground cover should consist of native species and can be provided up to a building's mow strip. Mow strips can be hard or impervious surfaces; they create a barrier adjacent to buildings and protect them from landscaping equipment. Any foliage around the buildings' perimeter from trees, shrubs, or bushes need to maintain a 3-foot clearance to the ground surface per the AT/FP standard.



Examples of current landscaping elements on Camp Niantic that could be replicated.



A sketch of potential building and streetscape landscaping.

# LANDSCAPE STANDARDS

## STREETSCAPE

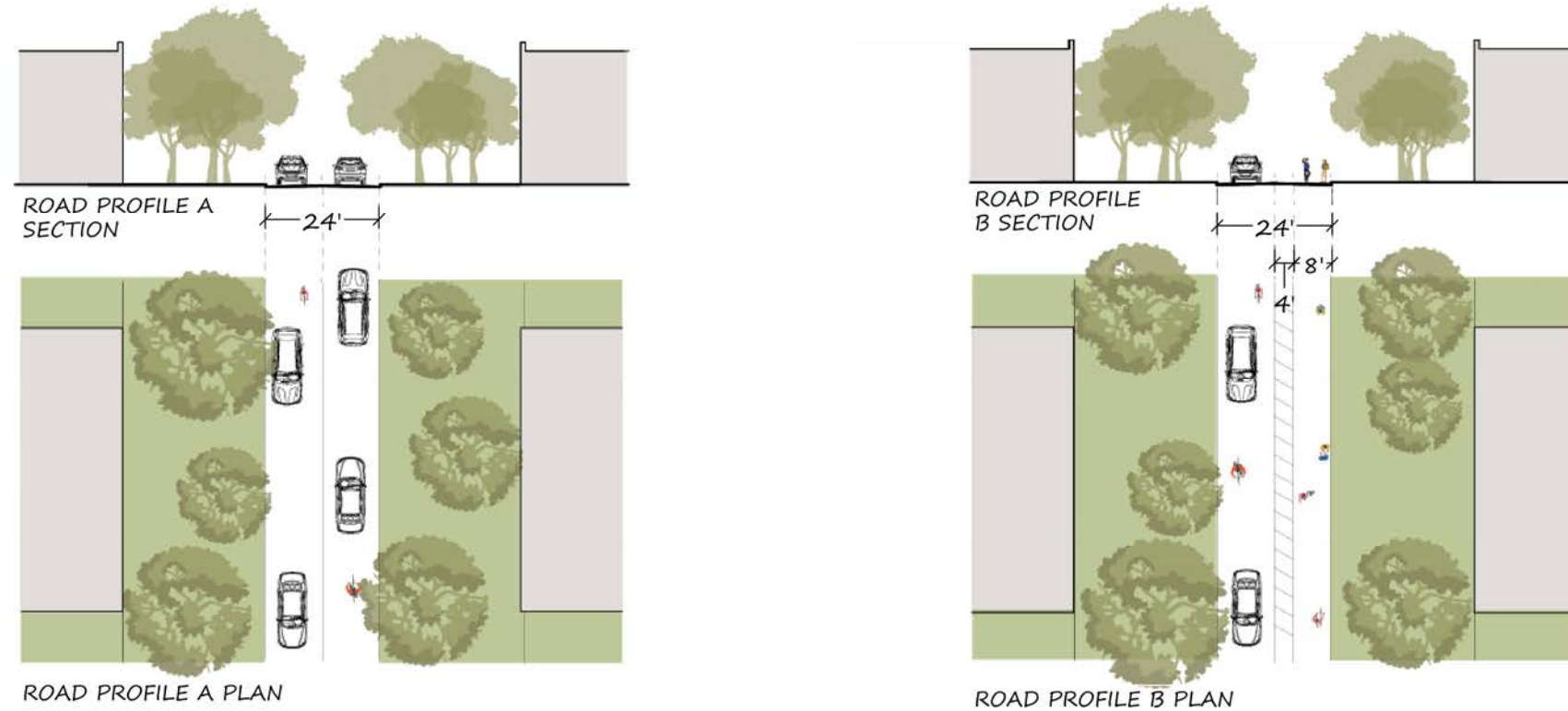
New streets and renovations of the existing streets should be based on good streetscape practices to enhance the overall quality of the installation. Streets will be designed in an orderly manner with curbs and appropriate lighting levels. Pedestrian sidewalks, crossings, and trees should be provided as components of the street network.

The current road type on the installation is Road Type A, as shown at right. It would require a significant investment to upgrade the road to change the profile, so it has been left in place. It represents a 24-foot-wide road mat with no on-street parking and no sidewalks for pedestrian circulation. Building setbacks to all road types are based on building construction types and discussed further in the Visual Character section of the report.

Road Type B repurposes the Type A profile to include pedestrian circulation. The 24-foot road mat remains in place, but traffic is reduced to a single lane with one-way traffic. A painted 4-foot buffer zone is added to the road mat and the remaining road mat is re-purposed for pedestrian circulation. See the Circulation Plan section of this report for more detail on the pedestrian circulation.

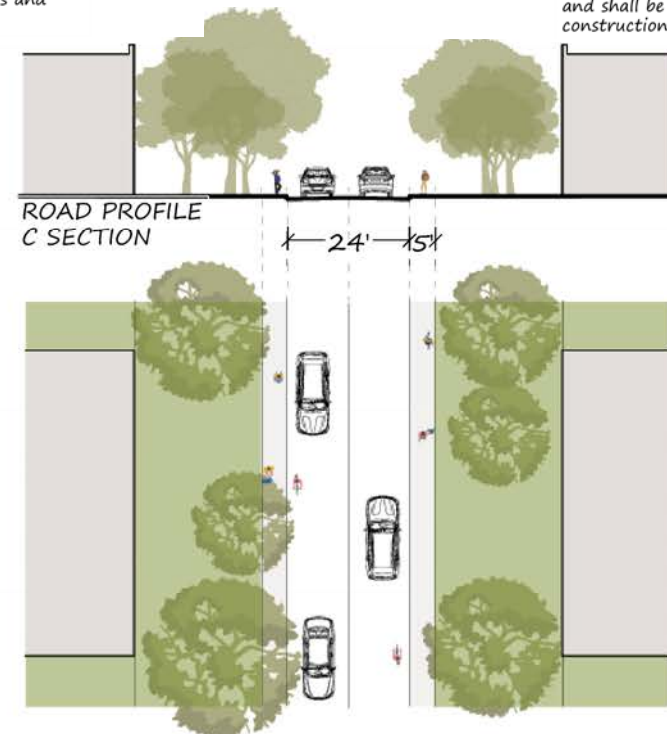
Road type C is the same 24-foot road mat as shown, but with 5-foot-wide sidewalks added at curb height on one or both sides of the roadway. This road type would serve as low-speed, secondary building access roads across the installations. The addition of pedestrian walkways with this road type would increase safety by separating pedestrian and vehicular traffic.

Type D roads are new construction roads with a 24-foot road mat, an 8-foot verge (planting) strip, and 5-foot sidewalks. This road would serve the new building construction areas of the installation and further separate vehicular and pedestrian traffic with the addition of the planting strip. These roads would be provided in the denser built areas where pedestrian traffic would be most likely.

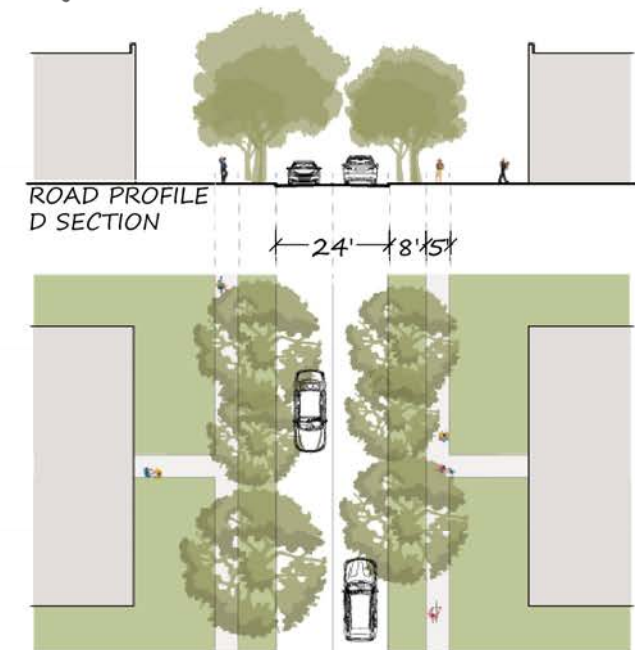


*NOTE: building setbacks shall meet current AT/FP requirements and shall be consistent with required building materials and construction type*

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*NOTE: building setbacks shall meet current AT/FP requirements and shall be consistent with required building materials and construction type*

# STREET ENVELOPE STANDARDS

**FIGURE 45:**  
STREET ENVELOPE STANDARDS

## STONES RANCH MILITARY RESERVATION

The circulation plan for Stones Ranch would consist primarily of pavement and intersection upgrades. New ACPs, shown in the illustrative plan, would be provided to ensure Level IV compliance. Stones Ranch would feature a combination of Road Profile A, C, and D, as described in the Street Envelope Standards section. Road Profiles C and D would be used in the main cantonment area where appropriate based on road and site plan design. Road Profile A would be utilized in the Stones Ranch Training Area.

D, also described in the Street Envelope Standards section, to facilitate vehicular and pedestrian movement. At the transition between one-way and two-way vehicular movement, cars traveling in the opposite direction from the prevailing one-way flow of traffic would be diverted onto secondary circulation paths. The 1-mile loop would also utilize a proposed pedestrian-only connection. This pedestrian way is to be located between the existing barracks and simulation center area. The pedestrian way will run east to west, connecting with Perimeter Road at both the east and west terminuses. The pedestrian way is intended to connect the more transient-intensive areas with the existing RTI and readiness center and the proposed TMC.

## CAMP NIANTIC

The circulation plan for Camp Niantic features a protected 1-mile pedestrian loop for soldiers to use for physical training (PT). The protected pedestrian loop is uninterrupted, only crossing secondary circulation routes a handful of times. To create space for the pedestrian loop, the primary vehicular circulation route around the installation would become one-way in certain places and would utilize the Road Profile B layout described in the Street Envelope Standards section. Portions of the circulation plan that feature two-way traffic would utilize Road Profile C and

The S-curve is proposed to be removed to improve pedestrian safety while also providing more room for parking. In its place will be a four-way stop north of the RTI. An ACP is added for residents of the surrounding neighborhood whose access is periodically cut off by flooding. This would only be open when needed; otherwise, access to Camp Niantic is via the existing ACPs.



### Infrastructure Type

- GOV
- POV
- Primary Circulation**
- ➡ One-way Traffic
- ↔ Two-way Traffic

- ⊖ Change in Traffic Direction
- ➡ Secondary Circulation
- Pedestrians Only (Protected)
- ★ ACP
- ★ ACP for Neighborhood Access Only (In Case of Flooding)



This pedestrian walkway is proposed at Camp Niantic.

# CIRCULATION PLAN

**FIGURE 46:**  
**CAMP NIANTIC**  
**CIRCULATION**  
**PLAN**

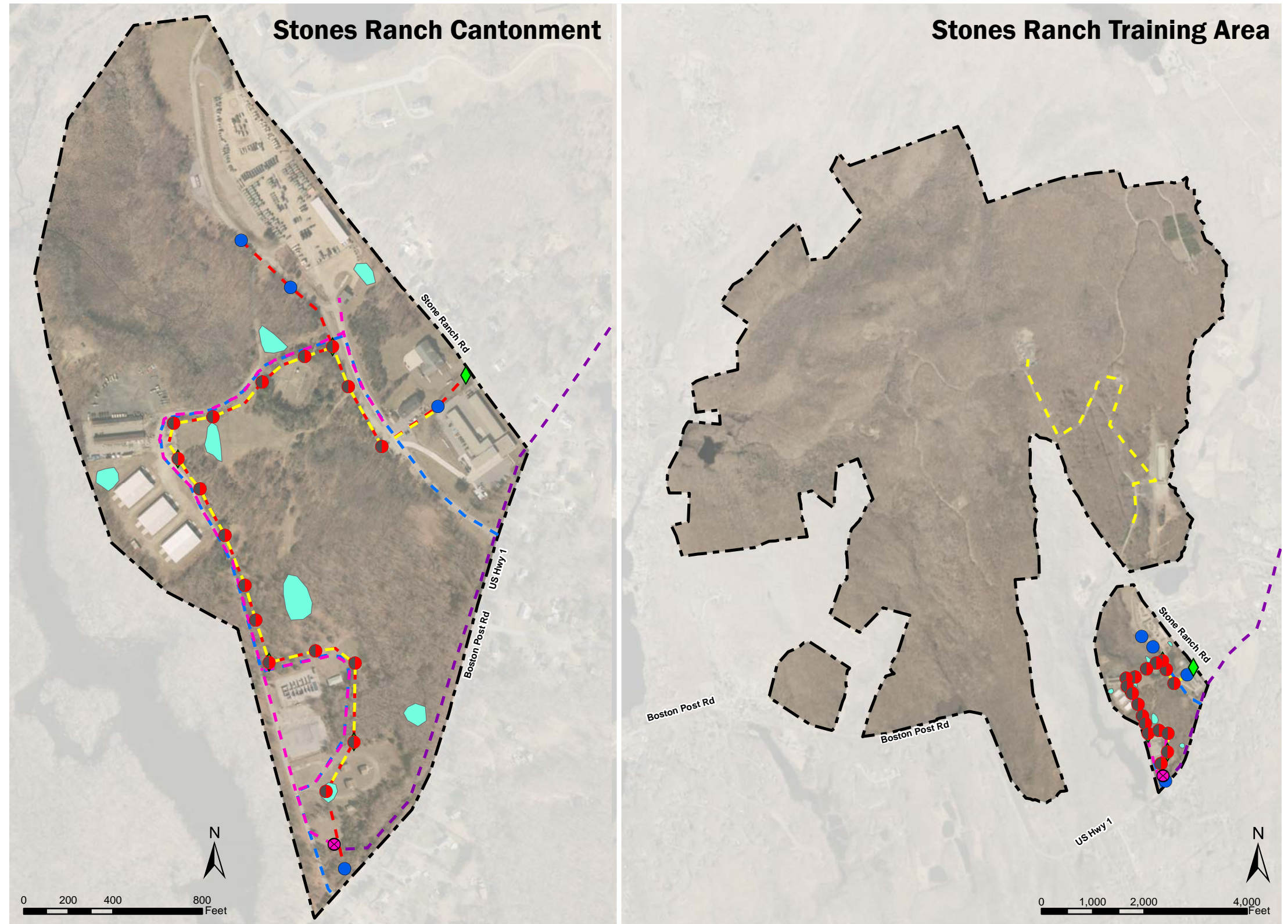
# NETWORK PLAN

The IMP identifies those areas of the three separate training sites where expansion will occur to meet future requirements for the CTC. The future buildout incorporates training center requirements, organizational needs of the CTARNG, and constraining factors where future development should be limited. Training center requirements will be developed on all three training sites that make up the CTC and will require expansion of existing services to support the development of the plan.

## STONES RANCH MILITARY RESERVATION

Stones Ranch was identified as a location for substantial development. Stones Ranch will expand operations to accommodate multiple requirements, including billeting, transient headquarters, support facilities, maintenance, simulations, classrooms, readiness center, and ACPs to access the site. Operationally for the CTARNG, Stones Ranch will contain a UTES, wash rack, loading ramp, maintenance canopy, and storage warehouse to meet requirements for training the force. Development of a new ammunition holding area and range control to support tactical operations at the location will allow CTARNG to utilize Stones Ranch as the premier training location for units in the state.

Infrastructure improvements for these developments will require extension and expansion to utilities already located on site. In some cases, utilities will require mainline expansion and to the extent possible should be built out as a separate MILCON or SRM project depending upon the scope. Wastewater is the greatest concern because all infrastructure on Stones Ranch is on an individual septic system with no main service from the local municipality. Multiple individual septic systems will need to be utilized until wastewater services are established. Buildout of these systems as a separate project would allow for economy of scale, fewer coordination issues, and less of an impact to operation as subsequent projects are identified. Infrastructure requirements for planned facilities should be developed to tie into the buildout of new infrastructure systems and not the development or extension of the entire requirement throughout the site.



- ⊗ Future Wastewater Lift Station
- Future Communication/MV Manhole
- Future MV Manhole
- ◆ Future MV Switchgear
- Future Stormwater Drainage Basin Area
- Future Force Main Sewer Line
- Future Gravity Sewer Line
- Future Communication Line
- Future Electrical Line
- Future Water Line
- ▭ Installation Boundary

**FIGURE 47:  
STONES RANCH  
NETWORK PLAN**

### CAMP NIANTIC

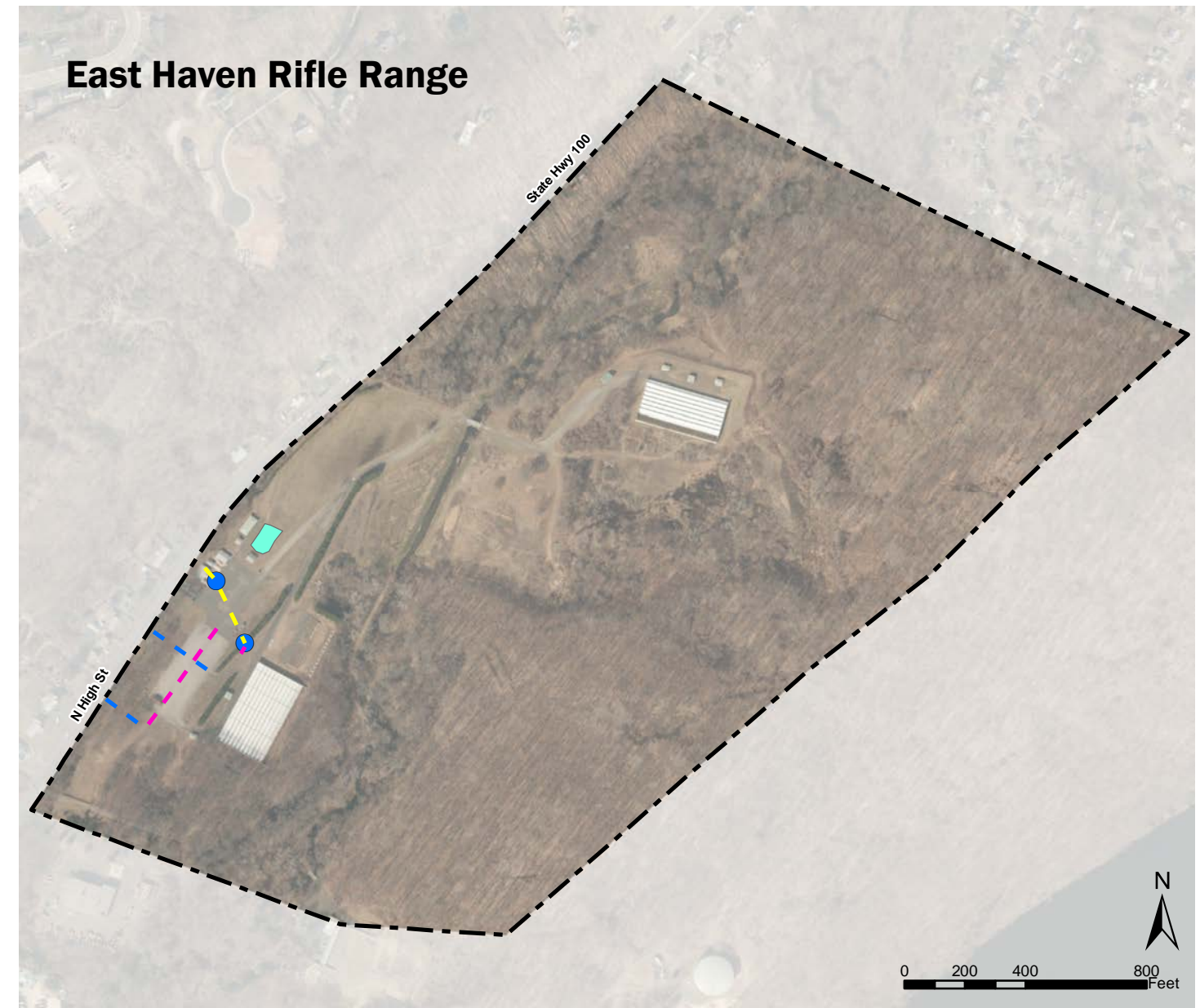
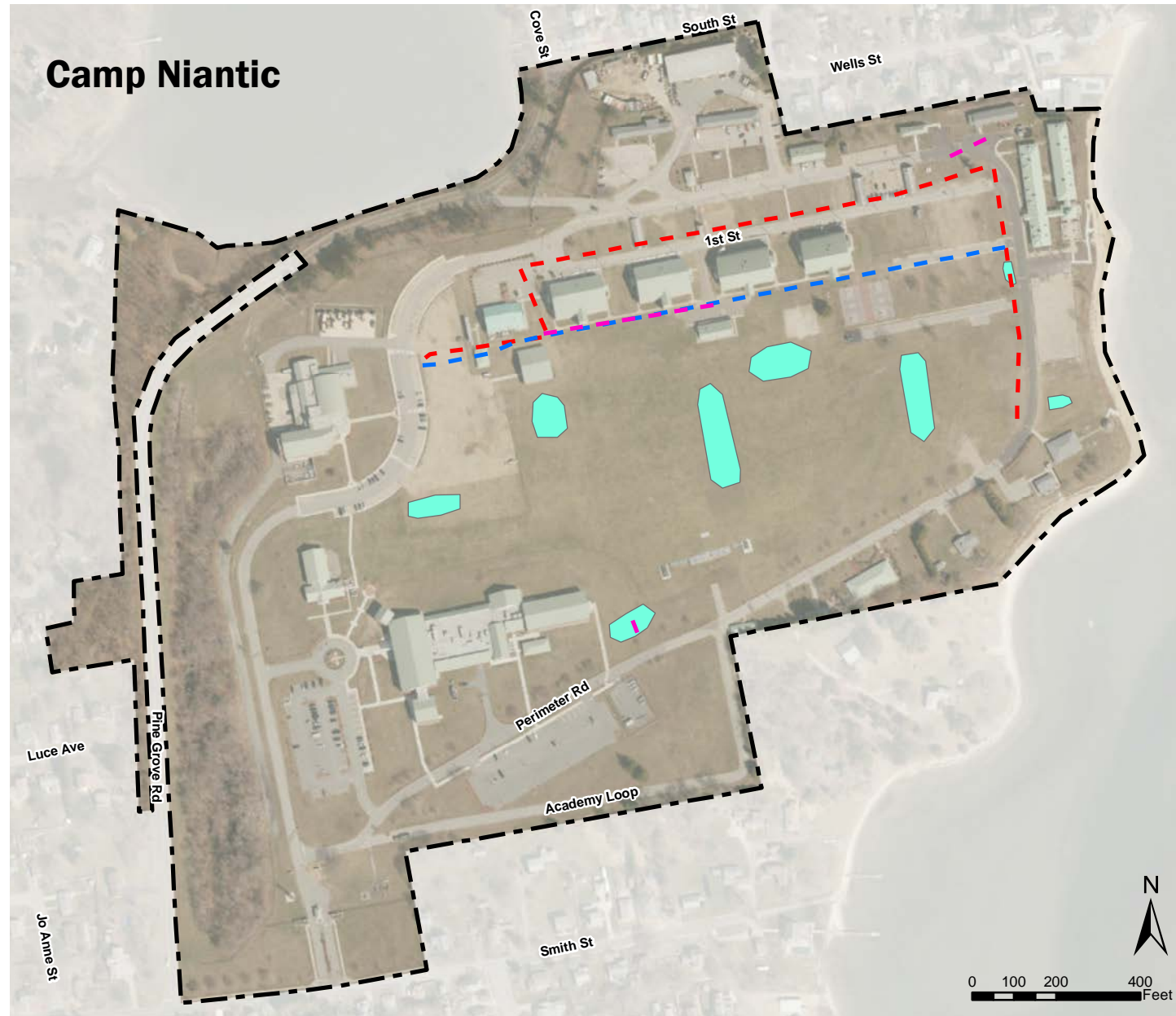
Camp Niantic was identified as a location that will continue development of requirements already located on site. Camp Niantic will add additional billeting, TMC requirements, DPW requirements, readiness center space, RTI billeting, SRP, dining facilities, general instruction, post headquarters, and POV and MVP parking to enhance functions that already exist at this location. With all primary infrastructure established at this location, expansion of primary systems is minimal. Development

of future facilities ties into existing infrastructure and extends sanitary, water, and electrical services that already exist on site. Stormwater drainage is the greatest concern; on-site retention through basin areas identified across the site limits future siting of additional requirements at these locations. Current infrastructure supports the expansion of all known requirements at this location.

### EAST HAVEN RIFLE RANGE

With limited area to expand due to operational and natural constraints on site, future development of East Haven Rifle Range supports requirements associated with live fire of individual weapon systems. A simulations facility, range instruction, range operations, grounds maintenance, and ammunition holding area are future requirements identified for the site. Existing infrastructure for the site is sufficient to meet the future demands identified. Expansion of these existing utilities is minimal due to

the availability of land for expansion and the operational needs required by the CTC. Current infrastructure requirements are already concentrated in the area for future development, and tying into existing utilities will support development of the master plan.



- Future Gravity Sewer Line
- Future Water Line
- Future Electrical Line (25KV) in Existing Manholes
- Future Stormwater Drainage Basin Area
- Installation Boundary

**FIGURE 48:  
 CAMP NIANTIC  
 NETWORK PLAN**

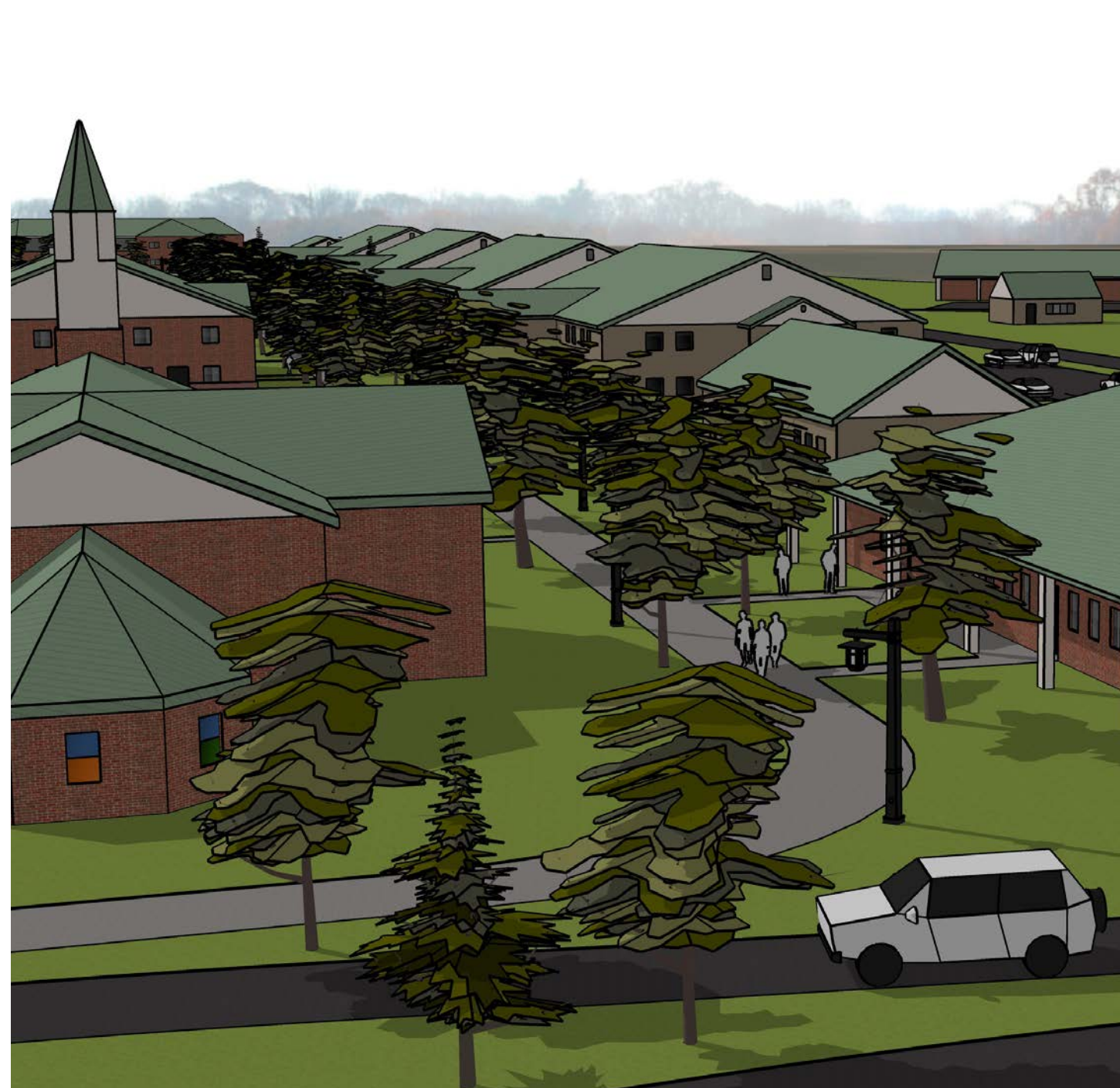
- Future Gravity Sewer Line
- Future Communication Line
- Future Water Line
- Future Communication Manhole
- Future Stormwater Drainage Basin Area

Installation Boundary  
**FIGURE 49:  
 EAST HAVEN  
 NETWORK PLAN**

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Above Left: Rendering of pedestrian walkway at Camp Niantic.  
Bottom Left: The UTES does not meet the current requirement. A new UTES has been proposed in this plan.  
Right: Rendering of potential development at Camp Niantic.



# CAPITAL IMPROVEMENT PROGRAM

The following section details the projects identified during the charrette as required by CTARNG and tenants. A rough order of magnitude (ROM) cost is included for each project. Additional detail, including the three alternatives developed during the charrette, is included in the appendices.

*This section presents the implementation plan, prioritized project list, and ROM costs for the CTC IMP.*

PLAN IMPLEMENTATION

TABLE 8: PROJECT PRIORITY LIST BY FUNDING					
PROJECTS PRIORITY LIST – MILCON					
PRIORITY RANKING	LOCATION	PREFERRED PLAN MAP ID	PROJECT DESCRIPTION	PROJECT TIMELINE <sup>5</sup>	ROM COSTS
1	Camp Niantic	e	Readiness Center - DET MED DET <sup>1</sup>	Short Term	\$5,433,848
2	Camp Niantic	g	Exam Space <sup>1</sup>	Short Term	\$4,363,775
3	Stones Ranch	N	Readiness Center – 250th Multi-Role Bridge CO <sup>2</sup>	Medium Term	\$19,070,279
4	Stones Ranch	S	ACP (Full) <sup>3</sup>	Long Term	\$3,413,507
5	Stones Ranch	A	Enlisted Barracks – Transient (200 PN)	Medium Term	\$15,048,530
6	Stones Ranch	E	Battalion Maintenance Shelter	Long Term	\$3,730,816
7	Camp Niantic	f	RTI Billets	Long Term	\$16,009,201
8	Stones Ranch	P	DPW Warehouse	Long Term	\$3,161,825
9	Stones Ranch	C	Company HQ – Transient	Long Term	\$2,563,693
10	Stones Ranch	B	Battalion HQ – Transient	Long term	\$2,043,710
11	Camp Niantic	j	Post HQ	Medium Term	\$2,637,530
12	Stones Ranch	D	Battalion Support/Ration Breakdown	Long Term	\$1,276,965
13	Stones Ranch	O	Unit Training Equipment Site	Long Term	\$8,269,821
14	Camp Niantic	h	Dining Facility – Transient (400 PN)	Short Term	\$8,017,475
15	Camp Niantic	c	Chapel	Long Term	\$2,116,517
16	Camp Niantic	b	Troop Dispensary/Medical Clinic <sup>1</sup>	Short Term	\$4,361,896
PROJECT PRIORITY LIST - MILCON/OTHER MONEY					
1	Camp Niantic	k	Post Exchange	Long Term	\$2,637,530

See Appendix G for a detailed breakdown of ROM costs that provides the methods and category codes used to determine ROM costs.

1. It is the intent of this plan to provide space for the MED DET Readiness Center, Exam Space (SRP), and TMC either collocated or in proximity. The area on Camp Niantic where each function is located is flexible enough to either contain a single building to locate all functions or build in three separate phases.

2. Some parking will be part of and funded with a MILCON project.

3. The ACP for Stones Ranch is included in both the MILCON and SRM lists. ACP (Full), included with the MILCON list, indicates a complete ACP buildout that features all physical infrastructure needed to control access along with the development of a visitors center and other associated buildings. ACP (Basic), included in the SRM list, references development of an ACP that provides only the critical, physical aspects of an ACP needed to ensure controlled access.

4. When TMC is moved to the Readiness Center, the intent is to renovate 804 and utilize it as a barracks.

5. Short term: 0-5 years; medium term: 6-10 years; long term: 11-20 years

PROJECTS PRIORITY LIST – SRM					
PRIORITY RANKING	LOCATION	PREFERRED PLAN MAP ID	PROJECT DESCRIPTION	PROJECT TIMELINE	ROM COSTS
1	East Haven	t	Grounds Maintenance Building	Short Term	\$5,532,337
2	East Haven	s	Range Operations	Short Term	\$815,593
3	Stones Ranch	Q	Loading Ramp	Short Term	\$228,581
4	Stones Ranch	W	Stones Ranch Infrastructure Upgrade	Short Term	\$4,547,000
5	Stones Ranch	S	ACP (Basic) <sup>3</sup>	Long Term	\$450,708
6	East Haven	u	Perimeter/Compound Fencing	Short Term	\$100,811
7	Stones Ranch	F	Range Operations	Short Term	\$2,676,610
8	Stones Ranch	M	Ammunition Supply Point	Short Term	See Appendix G
9	Camp Niantic	d	DPW – Canopy Building renovate existing warehouse	Medium Term	\$1,293,911
10	Stones Ranch	L	DPW Maintenance/Admin	Long Term	\$3,094,355
11	Camp Niantic	m	POV/MVP Parking	Short Term	\$3,747,472
12	Stones Ranch	T	DPW Roads and Grounds	Short Term	\$2,501,471
13	Stones Ranch	V	Traffic Circulation (Pave Roadways)	Short Term	\$220,602
14	Camp Niantic	p	Roadway Realignment	Short Term	\$673,419
15	Camp Niantic	o	804 Renovate Back to Barracks <sup>4</sup>	Short Term	\$1,607,206
16	East Haven	q	Simulator	Medium Term	\$2,506,449
17	Camp Niantic	i	General Instruction (The Point)	Long Term	\$2,625,508
18	Camp Niantic	l	Pedestrian Way	Short Term	\$71,018
19	Stones Ranch	U	Vehicle Maintenance Canopy	Long Term	\$849,821
20	East Haven	r	Range Instruction Canopies (2)	Short Term	\$279,672
21	Camp Niantic	n	Physical Fitness Center	Long Term	\$706,366
22	Stones Ranch	K	General Instruction	Long Term	\$1,004,159
23	Camp Niantic	a	Company HQ-Transient	Long Term	\$1,901,018
24	Stones Ranch	R	Wash Rack	Short Term	\$793,288
25	East Haven	v	Ammunition Holding Area	Long Term	See Appendix G
26	Stones Ranch	G	Simulator	Long Term	\$2,506,449
27	Stones Ranch	H	Simulator	Long Term	\$2,506,449
28	Stones Ranch	I	Simulator	Long Term	\$2,506,449
29	Stones Ranch	J	Simulator	Long Term	\$2,506,449
30	Stones Ranch	P	General Purpose Inst. 3,000 SF add to BN HQ (B)	Long Term	\$831,221

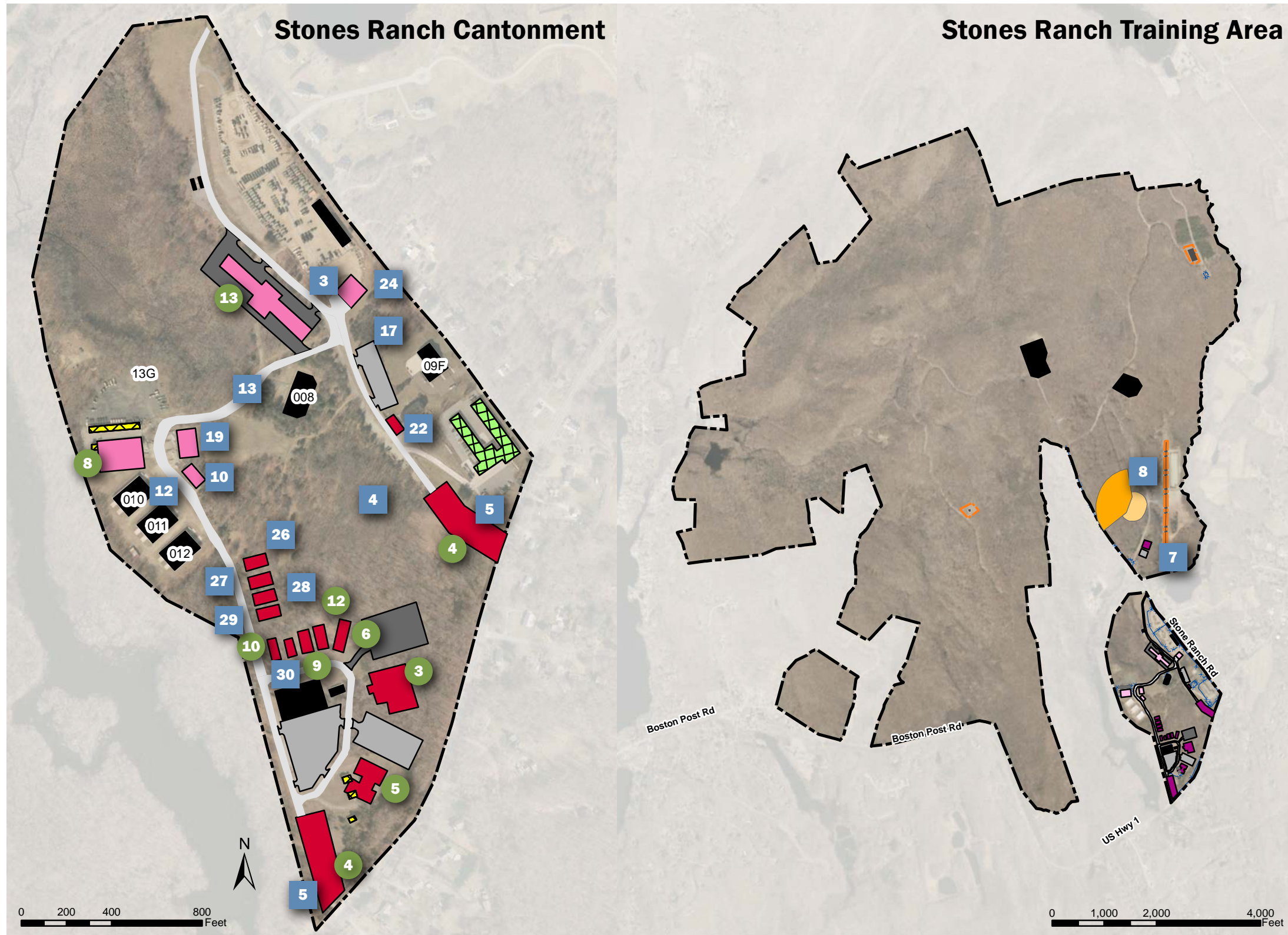
# CAPITAL INVESTMENT STRATEGY

The capital investment strategy (CIS) represents projects identified during the charrette, based on requirements of the CTARNG and input from the stakeholders. The tables above provide a prioritized list of the projects identified. The list provides a priority ranking, or a recommended order, in which each project should be developed. The priority ranking is a combination of the Adjutant General’s (TAG) priority list,

priorities developed in previous plans, and priorities identified during the charrette process. The CIS has been broken down in three categories based on the funding type likely to be used: MILCON, SRM, and other money.

Most of the projects do not have funding and are part of a long-range development plan, although a few are part of approved projects.





Displayed is the preferred plan showing the capital investment strategy. Numbers by each facility indicate the priority for each facility as determined by the CIS. Reference the table below and on page 54 for information pertaining to the numbers displayed on the maps.

**TABLE 9: PROJECT PRIORITY LIST BY FUNDING**

PROJECTS PRIORITY LIST – SRM			
PRIORITY RANKING	LOCATION	PREF. PLAN MAP ID	PROJECT DESCRIPTION
1	East Haven	t	Grounds Maintenance Building
2	East Haven	s	Range Operations
3	Stones Ranch	Q	Loading Ramp
4	Stones Ranch	W	Infrastructure Upgrade
5	Stones Ranch	S	ACP (Basic)
6	East Haven	u	Perimeter Fencing
7	Stones Ranch	F	Range Operations
8	Stones Ranch	M	Ammunition Supply Point
9	Camp Niantic	d	DPW - Canopy building/ renovate existing
10	Stones Ranch	L	DPW Maintenance/Admin
11	Camp Niantic	m	POV/MVP Parking
12	Stones Ranch	T	DPW Roads and Grounds
13	Stones Ranch	V	Traffic Circulation (Pave Roadways)
14	Camp Niantic	p	Roadway Realignment
15	Camp Niantic	o	804 Renovate back to Barracks
16	East Haven	q	Simulator
17	Camp Niantic	i	General Instruction (The Point)
18	Camp Niantic	l	Pedestrian Way
19	Stones Ranch	U	Vehicle Maintenance Canopy
20	East Haven	r	Range Instruction Canopies
21	Camp Niantic	n	Physical Fitness Center
22	Stones Ranch	K	General Instruction
23	Camp Niantic	a	Company HQ - Transient
24	Stones Ranch	R	Wash Rack
25	East Haven	v	Ammunition Holding Area
26	Stones Ranch	G	Simulator
27	Stones Ranch	H	Simulator
28	Stones Ranch	I	Simulator
29	Stones Ranch	J	Simulator
30	Stones Ranch	P	General Purpose Instruction 3,000 SF to BN HQ

**Legend**

- Existing
- Proposed GOV
- Proposed POV
- Proposed Required
- Proposed Project
- Remove
- Remove/Convert to Parking
- Traffic Circulation
- Explosive Safety Quantity Distance
- Military Landing Zone

**Funding Source**

- MILCON Project
- SRM Project

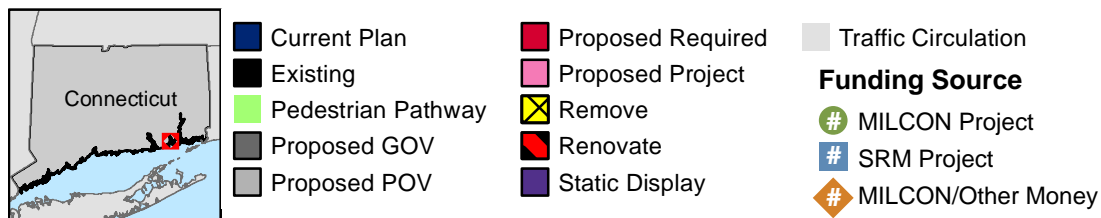
**FIGURE 50: STONES RANCH CAPITAL INVESTMENT STRATEGY**

PROJECTS PRIORITY LIST – MILCON			
PRIORITY RANK	LOCATION	PREF. PLAN MAP ID	PROJECT DESCRIPTION
1	Camp Niantic	e	Readiness Center - DET MED DET
2	Camp Niantic	g	Exam Space
3	Stones Ranch	N	Readiness Center - 250th Multi Role Bridge CO
4	Stones Ranch	S	ACP (Full)
5	Stones Ranch	A	Enlisted Barracks - Transient (200 PN)
6	Stones Ranch	E	Battalion Maintenance Shelter

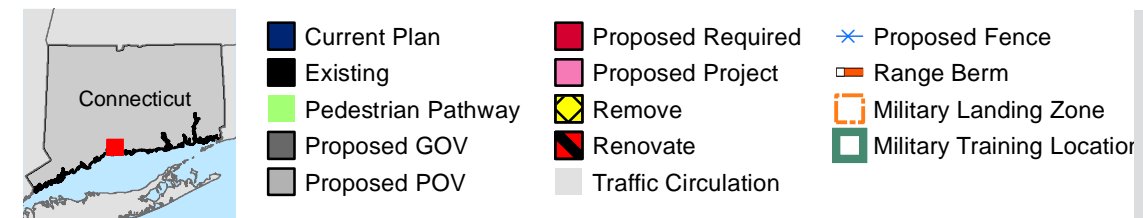
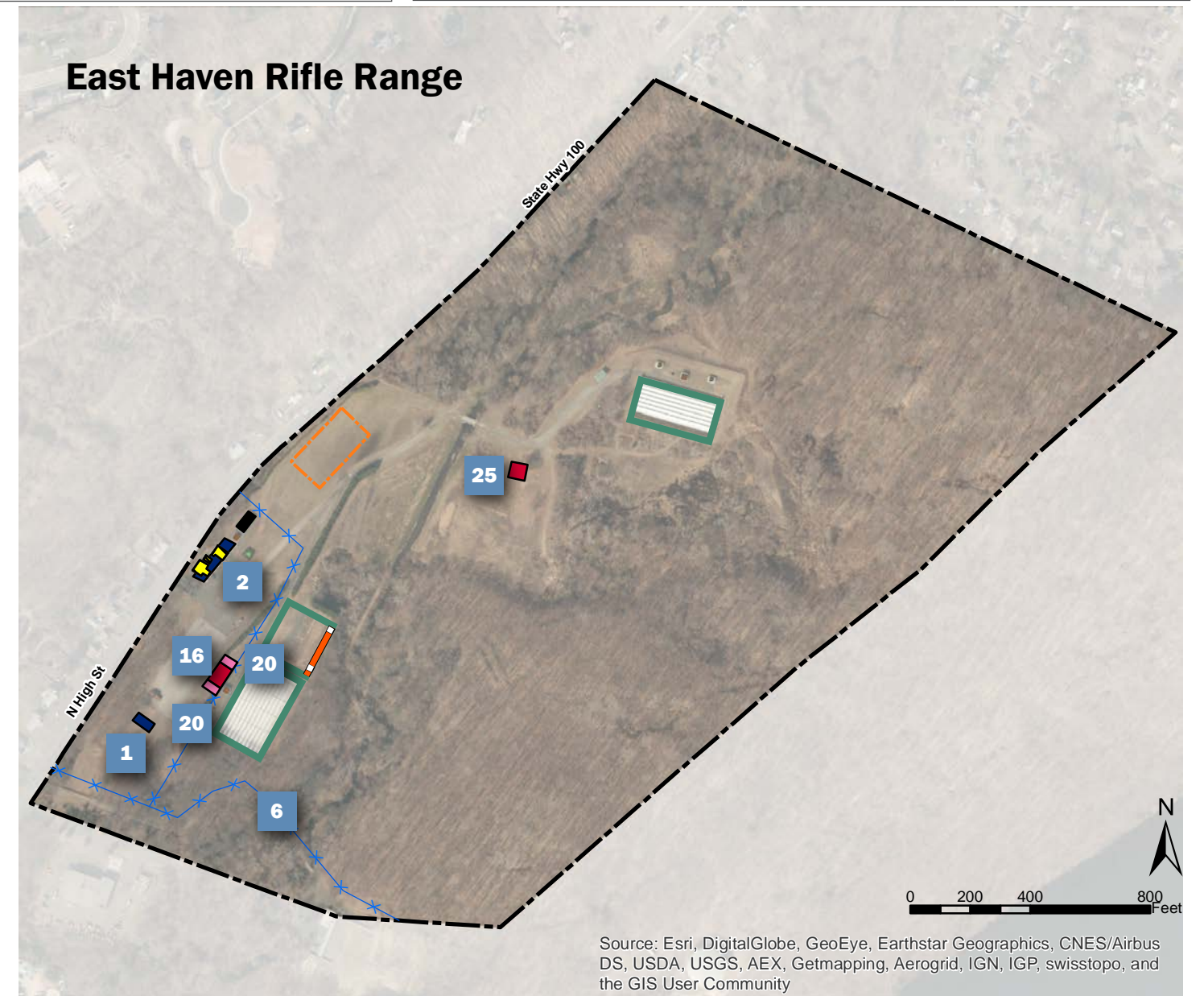
PROJECTS PRIORITY LIST – MILCON			
7	Camp Niantic	f	RTI Billets
8	Stones Ranch	P	DPW Warehouse
9	Stones Ranch	C	Company HQ - Transient
10	Stones Ranch	B	Battalion HQ - Transient
11	Camp Niantic	j	Post HQ
12	Stones Ranch	D	Battalion Support/Ration Breakdown
13	Stones Ranch	O	UTES
14	Camp Niantic	h	Dining Facility - Transient (400 PN)

PROJECTS PRIORITY LIST – MILCON			
15	Camp Niantic	c	Chapel
16	Camp Niantic	b	Troop Dispensary/Medical Clinic

PROJECT PRIORITY LIST - MILCON/OTHER MONEY			
PRIORITY RANK	LOCATION	PREF. PLAN MAP ID	PROJECT DESCRIPTION
1	Camp Niantic	k	PX



**FIGURE 51:  
CAMP NIANTIC  
CAPITAL  
INVESTMENT  
STRATEGY**



**FIGURE 52:  
EAST HAVEN  
CAPITAL  
INVESTMENT  
STRATEGY**



Above are examples of existing utility infrastructure at CTC.

# UTILITIES

See the following pages for additional information about the utility systems.

*This appendix presents the utility maps and supporting information used to develop the Installation Master Plan.*

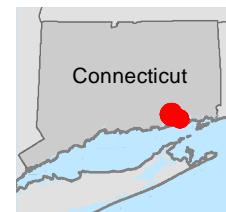
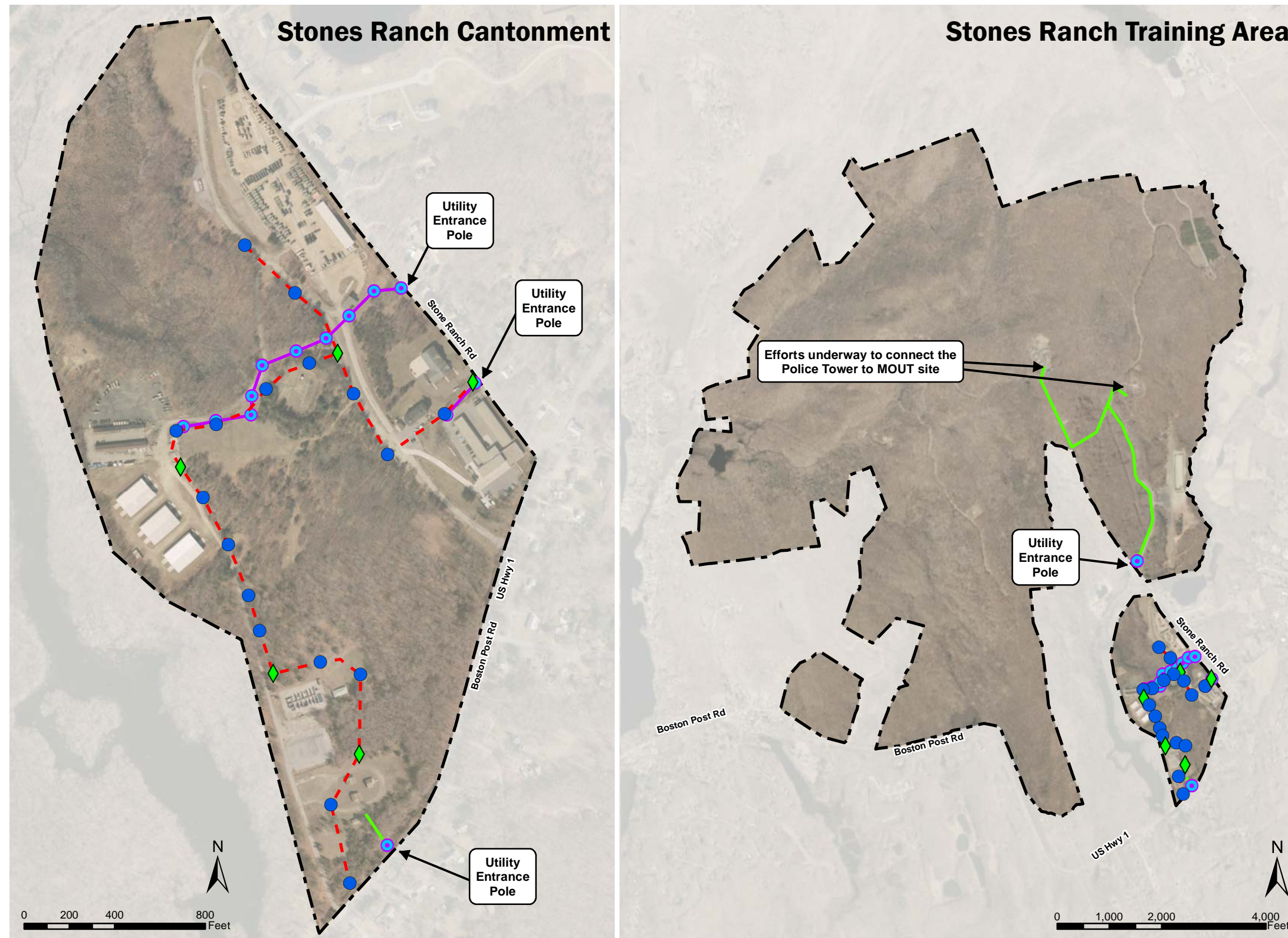
SUPPORTING INFORMATION

# ELECTRICAL

## STONES RANCH MILITARY RESERVATION DESCRIPTION

The existing overhead utility-owned electrical distribution system within the cantonment area is limited and will not be able to support the future electrical demand. In addition, the current overhead wiring is not adequate for any near-term projects. An Infrastructure Upgrade Project will be required to allow for new facilities to be installed within the Stones Ranch cantonment. The proposed new medium-voltage (MV), underground electrical distribution system will be owned and maintained by CTARNG. This new duct bank system is indicated by the dashed red lines on the map and are labeled "Future Electrical Line" in the legend.

The existing underground utility service within the Stones Ranch training area serves the police station radio tower. There are efforts underway to extend this existing utility service from the radio tower to the MOUT site.



- Future MV Manhole
- ◆ Future MV Switchgear
- Future Electrical Line
- Power Pole
- Overhead Electrical Distribution
- Underground Electrical Distribution
- Installation Boundary

**FIGURE 53:  
 STONES RANCH  
 ELECTRICAL PLAN**

## STONES RANCH MILITARY RESERVATION OVERVIEW

The existing overhead electrical distribution system on Stones Ranch cantonment is owned by the utility. In its current configuration, it will not be able to support the future electrical loads on the site.

## STONES RANCH MILITARY RESERVATION IMPROVEMENTS

- + It is assumed that a new 25kV underground distribution system will be required for the Stones Ranch cantonment area. A MV manhole will be required every 400 feet and at every bend. The rough cost per manhole is \$11,000. Rough cost for a new MV pad-mounted switchgear is \$25,000. The linear foot rough cost estimate for 25kV MV ductbank is \$150 per foot, including conductors.
- + It is assumed that the utility will remove all poles and overhead distribution within the cantonment area.
- + It is assumed that the existing underground electrical distribution infrastructure currently underway at Stones Ranch training area is capable of feeding the future electrical loads in this area. No cost will be included for electrical distribution to these facilities.
- + Electrical utilities to the new facilities will require a new 25kV distribution system.
- + Proposed Stones Ranch cantonment 25kV distribution system is approximately 5,000 feet. Cost will be \$750,000 for ductbank, \$176,000 for manholes, and \$125,000 for pad-mounted, MV switchgear. This cost shall be a separate Infrastructure Upgrade Project and is not included in any project cost.

### Table Note

Reference this information for all tables in this appendix.

1. It is the intent of this plan to collocate the MED DET Readiness Center, Exam Space (SRP), and TMC, or site them as close to one another as possible. The area on the Camp Niantic map where each function is located is flexible enough to either contain a single building for all functions, or facilities can be built in three separate phases.

2. Some parking will be part and funded by MILCON Facility.

3. ACP for Stones Ranch is included in both the MILCON and SRM lists. ACP (Full) included with the MILCON list indicates a complete ACP buildout that features all physical infrastructure needed to control access along with development along with a visitor's center and other associated buildings. ACP (Basic) included in the SRM list references development of an ACP that provides only the critical, physical aspects of an ACP needed to ensure controlled access.

4. When the TMC is moved to the new Readiness Center, the intent is to renovate 804, turning it back into barracks.

**TABLE 10: STONES RANCH MILITARY RESERVATION PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	3		Stones Ranch Infrastructure Upgrade	\$1,051	Refer to improvements paragraph for cost breakdown.
MILCON	4	N	Readiness Center - 250th Multi-Role Bridge Co <sup>2</sup>	\$75	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
SRM	3	Q	Loading Ramp	\$10	Assumed Lighting Branch Circuit can be fed from adjacent building electrical distribution system.
MILCON	5	S	ACP (Full) <sup>3</sup>	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	4	S	ACP (Basic) <sup>3</sup>	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
MILCON	5	A	Enlisted Barracks - Transient (200 PN)	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
MILCON	7	E	Battalion Maintenance Shelter	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	6	F	Range Operations	\$25	Cost includes electrical utility costs associated with new electrical service.
SRM	7	M	Ammunition Supply Point	\$10	Assumed Lighting Branch Circuit can be fed from adjacent building electrical distribution system.
MILCON	9	P	DPW Warehouse	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
MILCON	10	C	Company HQ - Transient	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	9	L	DPW Maintenance/Admin	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
MILCON	11	B	Battalion HQ - Transient	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
SRM	11	T	DPW Roads and Grounds		
MILCON	13	D	Battalion Support/Ration Break-down	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	12	V	Traffic Circulation (Pave Roadways)	\$0	Assumed No Electrical Infrastructure Required.
MILCON	14	O	Unit Training Equipment Site	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
SRM	18	U	Vehicle Maintenance Canopy	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	21	K	General Instruction	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
SRM	23	R	Wash Rack	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
SRM	25	G	Simulator	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	26	H	Simulator	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	27	I	Simulator	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	28	J	Simulator	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
SRM	29	P	General Purpose Instruction 3,000 SF add to BN HQ (B)	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest MV Switchgear and associated step-down service transformer.
		TOTAL COST		\$2,071	

### CAMP NIANTIC DESCRIPTION

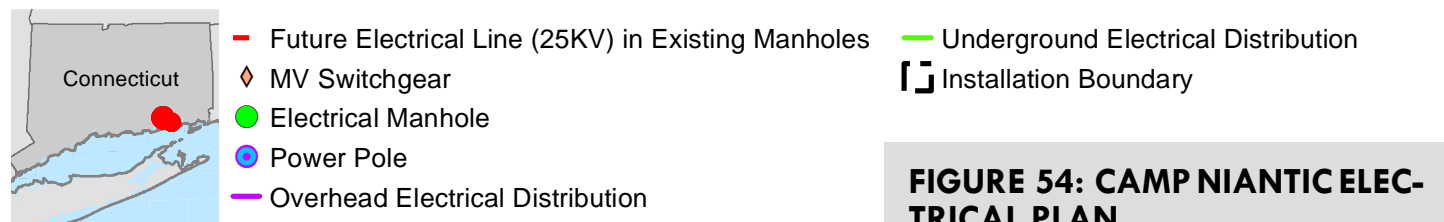
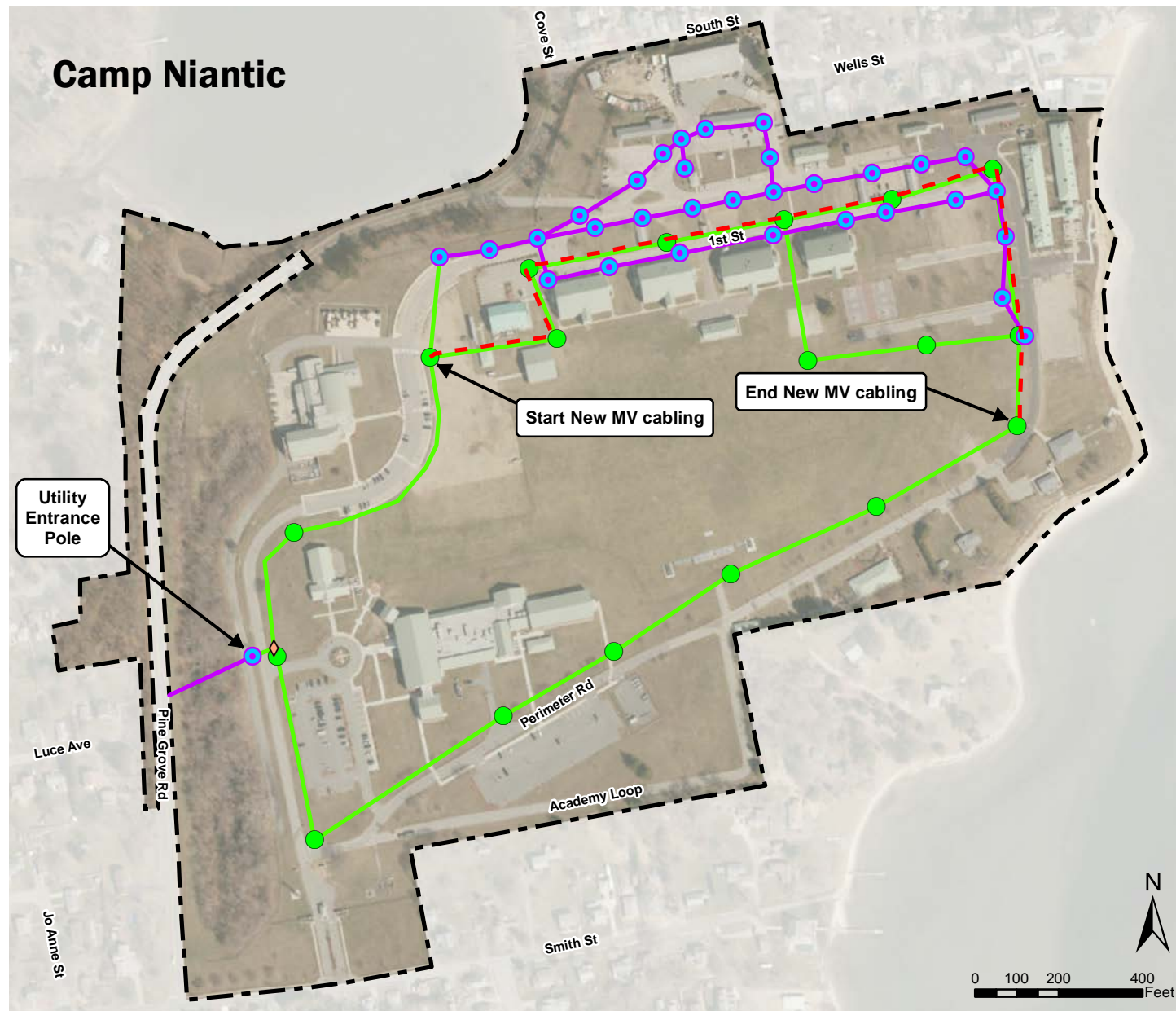
The existing underground electrical distribution system (south half of loop) is adequate to support the future electrical demand on the south half of the site. This southern portion has recently been installed and contains #350 kcMIL, 25kV MV cable in concrete-encased ductbank system.

The existing overhead distribution system (north half of loop) is limited in capacity for the total future electrical demand on the north half of the site. The northern portion should be adequate for near-term small-scale projects and renovations. In order to provide adequate power to the larger scale projects on the north side of the site, the overhead infrastructure is required to be upgraded in similar fashion to the south side with underground #350kcMIL, 25kV MV cable. This infrastructure project would also require the installation of new pad-mounted transformers

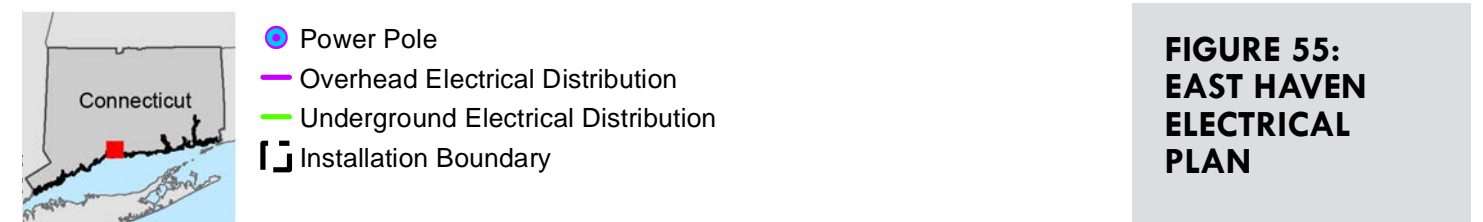
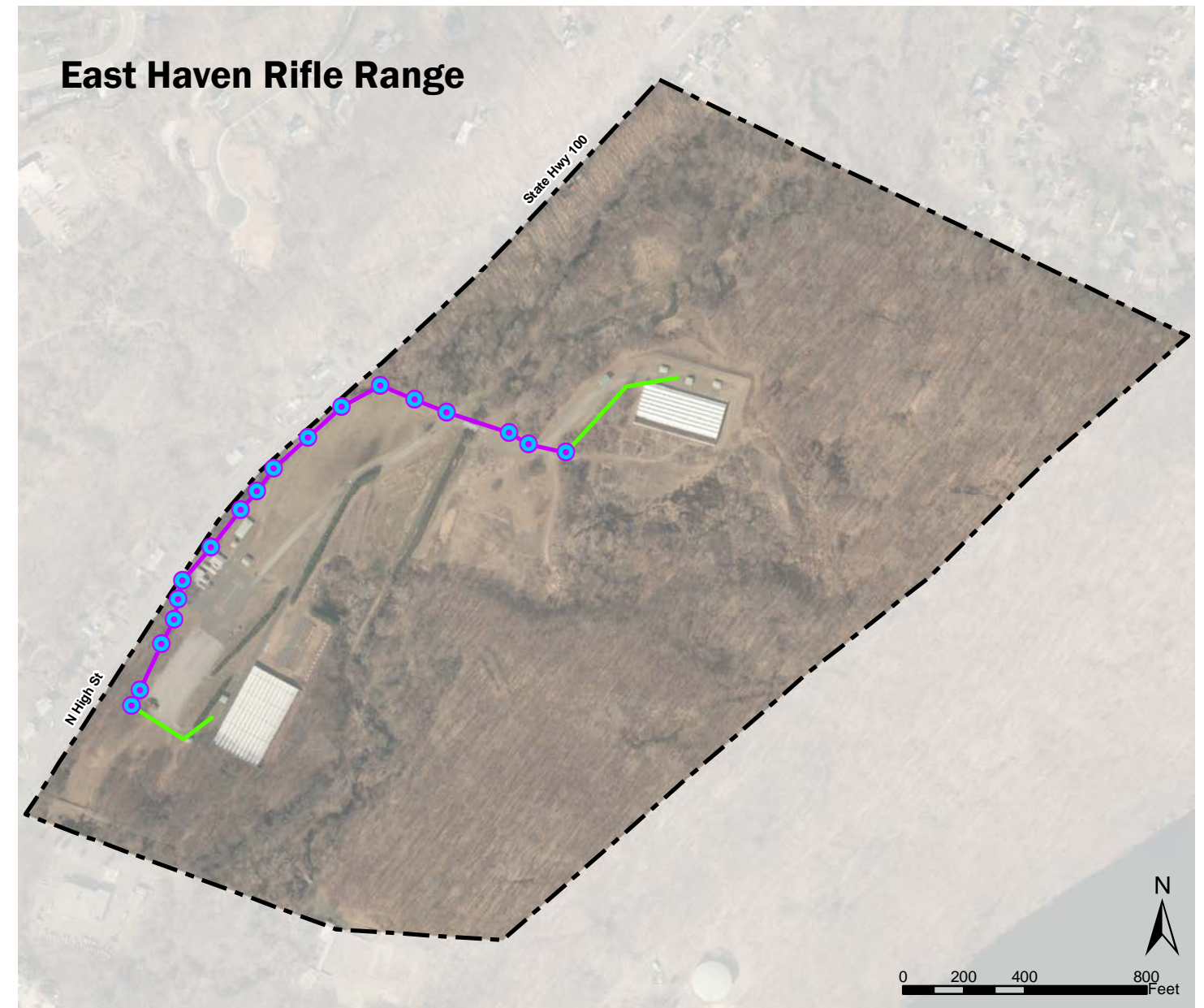
at each of the existing buildings. These transformers would be required to be dual-voltage (5kV and 25kV) to allow for the switchover to 25kV in the future per Eversource Energy request.

### EAST HAVEN RIFLE RANGE DESCRIPTION

The existing overhead CTARNG-owned electrical distribution system is adequate to support the future electrical demand. There are minimal proposed projects on this site. Current NGB funding supports a rating of "Q2" for sustainment activities.



**FIGURE 54: CAMP NIANTIC ELECTRICAL PLAN**



**FIGURE 55: EAST HAVEN ELECTRICAL PLAN**

## CAMP NIANTIC OVERVIEW

Based on available information on the existing installation-wide electrical utility infrastructure, the existing utility is rated for 1,500kVA at 4.8kV and will be able to support the future electrical demand. The current peak demand is 757 kVA.

## CAMP NIANTIC IMPROVEMENTS

- + It is assumed that the existing electrical distribution infrastructure is capable of feeding the existing facilities and assumed to be adequate for the renovation of existing buildings. No cost will be included for electrical distribution to these facilities, unless noted otherwise.
- + It is assumed that the existing underground electric distribution infrastructure (south portion of loop) is capable of feeding the new facilities.
- + It is assumed that the existing overhead electric distribution infrastructure (north portion of loop) is limited in capacity and that a new infrastructure project is required to install and complete the existing underground distribution system. Each existing building will require a pad-mounted transformer to transform power from 4.8kV/25kV (dual-voltage) to the utilization voltage of the building as part of this project.
- + Electrical utilities to the new facilities on the north side will require the completion of the existing MV loop system. The linear foot rough cost estimate for 25kV MV cabling in existing ductbanks is \$50 per foot. The new pad-mounted transformers for each building would be roughly \$18,000. The linear foot rough cost estimate for new low-voltage ductbank system is \$80/ft.
- + Proposed Camp Niantic north loop distribution system is approximately 2,500 feet. Cost will be \$125,000 for 25kV Cabling, \$378,000 for transformers, and \$168,000 for low-voltage secondary transformer fees. This cost shall be a separate Infrastructure Upgrade Project and is not included in any project cost

## EAST HAVEN RIFLE RANGE OVERVIEW

The existing overhead electrical distribution system is owned by CTARNG. Based on the proposed projects, the current overhead distribution is able to support the future electrical load.

**TABLE 11: CAMP NIANTIC PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	1	e	Readiness Center - DET MED DET <sup>1</sup>	\$75	Assumed underground medium-voltage project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
OTHER	1	k	Post Exchange	\$92	Assumed underground medium-voltage project completed and existing overhead service to be transition to underground. Cost includes 300 feet of ductbank from nearest manhole, 2 new manholes, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
MILCON	2	g	Exam Space <sup>1</sup>	\$81	Assumed underground medium-voltage project completed. Cost includes 300 feet of ductbank from nearest manhole, one new manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
MILCON	8	f	RTI Billets	\$0	Assumed the existing electrical infrastructure can handle this addition.
SRM	8	d	DPW - Canopy Building	\$92	Assumed underground medium-voltage project completed and existing overhead service to be transition to underground. Cost includes 300 feet of ductbank from nearest manhole, 2 new manholes, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	10	m	POV/MVP Parking	\$10	Assumed Lighting Branch Circuit can be fed from adjacent building electrical distribution system.
MILCON	12	j	Post HQ	\$50	Assumed underground medium-voltage project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	13	p	Roadway Realignment	\$10	Assumed Lighting Branch Circuit can be fed from adjacent building electrical distribution system.
MILCON	15	h	Dining Facility - Transient (400 PN)	\$50	Assumed underground medium-voltage project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	14	o	804 Renovate back to Barracks <sup>4</sup>	\$0	Assumed the existing electrical infrastructure can handle this renovation.
MILCON	16	c	Chapel	\$50	Assumed underground medium-voltage project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
MILCON	17	b	Troop Dispensary/Medical Clinic <sup>1</sup>	\$50	Assumed underground medium-voltage project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	16	i	General Instruction (The Point)	\$50	Assumed underground medium-voltage project completed. Cost includes 100 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
SRM	17	l	Pedestrian Way	\$10	Assumed Lighting Branch Circuit can be fed from adjacent building electrical distribution system.
SRM	20	n	Physical Fitness Center	\$0	Assumed the existing electrical infrastructure can handle this renovation.
SRM	22	a	Company HQ-Transient	\$65	Assumed underground medium-voltage project completed. Cost includes 200 feet of ductbank from nearest manhole, MV cabling from nearest loop-fed transformer and associated step-down service transformer.
			TOTAL COST	\$685	

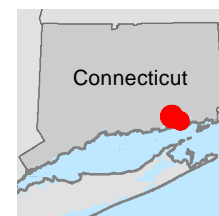
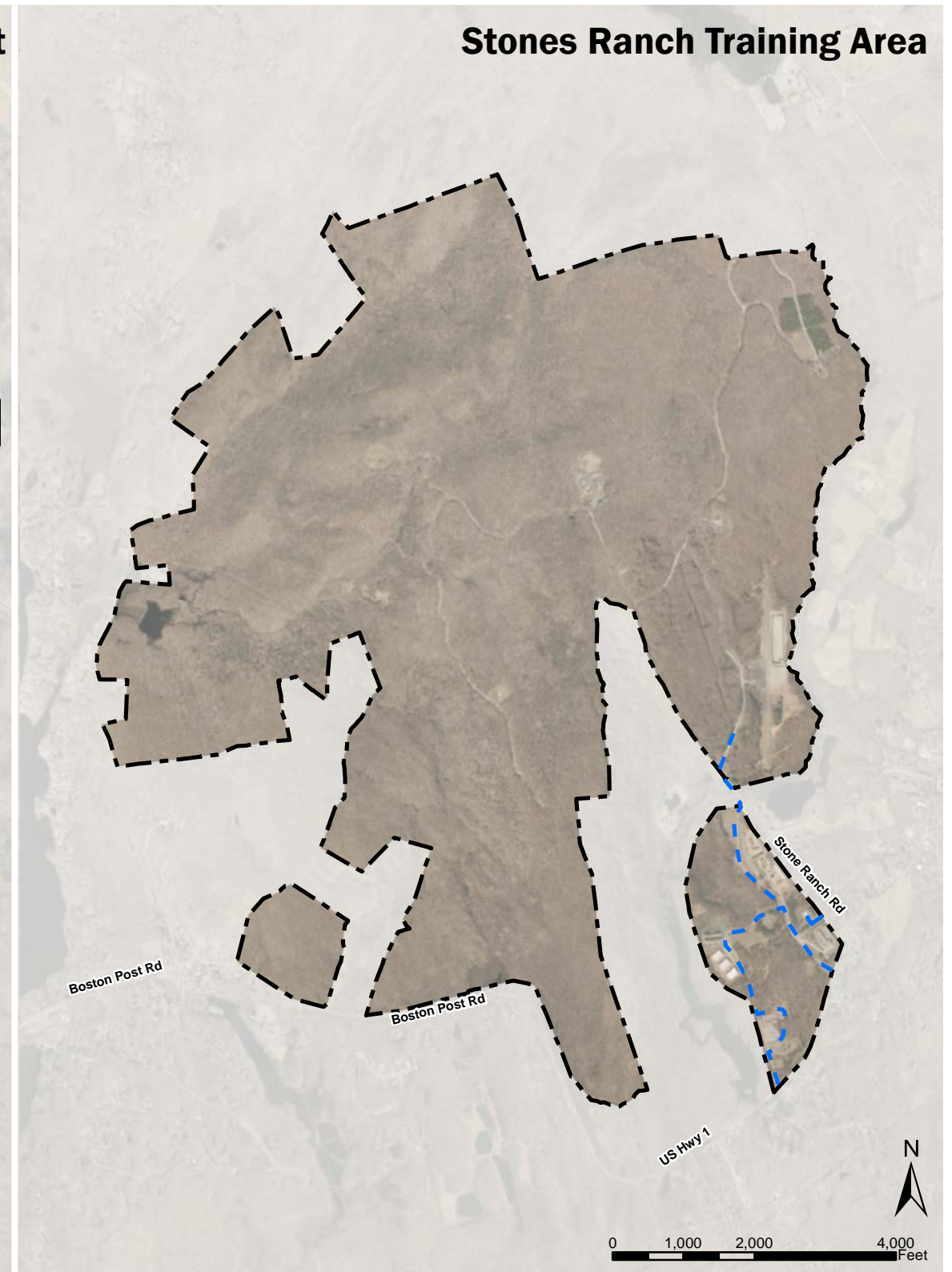
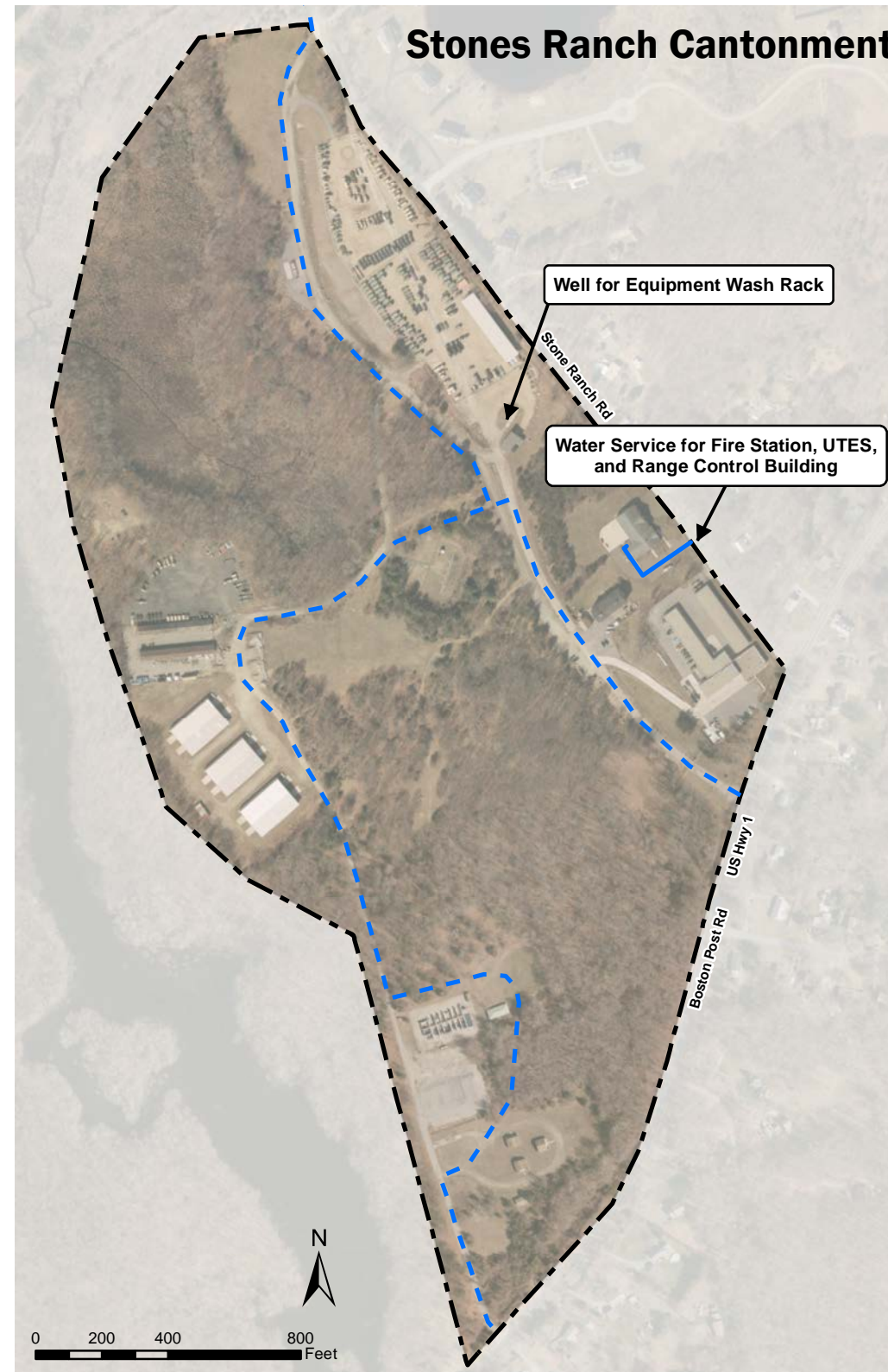
**TABLE 12: EAST HAVEN PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
SRM	1	t	Grounds Maintenance Building	\$0	This building was already under design/construction at time of report.
SRM	2	s	Range Operations	\$0	Assumed the existing electrical infrastructure can handle this renovation.
SRM	5	u	Perimeter/Compound Fencing	\$0	Assumed No Electrical Infrastructure Required.
SRM	15	q	Simulator	\$10	Assumed existing overhead distribution can handle additional load. Cost includes new pad-mounted transformer.
SRM	19	r	Range Instruction Canopies (2)	\$10	Assumed Lighting Branch Circuit can be fed from adjacent building electrical distribution system.
SRM	24	v	Ammunition Holding Area	\$10	Assumed Lighting Branch Circuit can be fed from adjacent building electrical distribution system.
			TOTAL COST	\$30	

# WATER

## STONES RANCH MILITARY RESERVATION DESCRIPTION

The majority of the re-development and new buildings planned at Stones Ranch will require a new water distribution system extended from the East Lyme Water Department's existing water main located in the Boston Post Road right-of-way. A new water main loop is proposed with two connections to the existing water main in the Boston Post Road. The existing water service to the existing Fire Station off the water main in Stones Ranch Road will remain. The existing service to the existing Latrine/Shower Buildings will be abandoned when the facilities for this area are constructed.



- Future Water Line
- Water Line
- Installation Boundary

**FIGURE 56:  
 STONES RANCH  
 WATER PLAN**



STONES RANCH MILITARY RESERVATION IMPROVEMENTS

The existing network of water mains at Stones Ranch is not configured to support the planned projects. The existing water service to the Latrine/Shower buildings is too small to support the proposed buildings and will be abandoned in place or demolished as redevelopment occurs. A new looped network of 8- to 10-inch water mains and hydrants are recommended to support the planned infrastructure. This 5,000 LF of new mains will follow the alignment of the planned roadway network as shown in the schematic.

A 2,800 LF of new water main will need to be extended off the proposed water main loop to provide water service and fire protection to the proposed Range Operations project. The alignment of this water main extension will follow the existing access road as shown on the schematic.

The looped water main configuration is recommended to eliminate dead-end water mains and improved reliability of water service with two points of connection to the East Lyme Water Department's distribution system. Double check valves and water meters are expected to be required at each point of connection to the East Lyme Water Department's distribution system to meter water usage and prevent back flow from the Stones Ranch water distribution system. The industry standard AWWA C900 DR18 PVC pipe will be a likely and suitable material for the new water mains. No additional pressure zones are anticipated for the proposed water main extension.

With regard to fire flows, planned development is anticipated to include similar low-hazard buildings (i.e., office and maintenance buildings), which range from 500 to 1,000 gpm (combined hose stream and sprinkler demand). Since hazard classification, not building size, drives fire flow demands, it is anticipated that development of future similar low hazard facilities can be supported by the existing water main in the Boston Post Road.

TABLE 13: STONES RANCH MILITARY RESERVATION PROJECTS

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	3		Infrastructure Upgrade Project	\$1,100	Cost includes 5,000 feet of 10-inch water main from existing water main, two double check valves in MH for connection to municipal water supply, hydrants, and gate valves.
MILCON	4	N	Readiness Center - 250th Multi-Role Bridge Co <sup>2</sup>	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	3	Q	Loading Ramp	\$0	No water service is scheduled for this project.
MILCON	5	S	ACP (Full) <sup>3</sup>	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	4	S	ACP (Basic) <sup>3</sup>	\$50	Cost includes lateral to building for water service and sprinkler.
MILCON	5	A	Enlisted Barracks - Transient (200 PN)	\$50	Cost includes lateral to building for water service and sprinkler.
MILCON	7	E	Battalion Maintenance Shelter	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	6	F	Range Operations	\$530	Cost includes 2800 feet of 8" water main, hydrants, gate valves, and lateral to building for water service and sprinkler.
SRM	7	M	Ammunition Supply Point	\$0	No water system costs are anticipated with this project.
MILCON	9	P	DPW Warehouse	\$50	Cost includes lateral to building for water service and sprinkler.
MILCON	10	C	Company HQ - Transient	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	9	L	DPW Maintenance/Admin	\$50	Cost includes lateral to building for water service and sprinkler.
MILCON	11	B	Battalion HQ - Transient	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	11	T	DPW Roads and Grounds	\$0	No water system costs are anticipated with this project.
MILCON	13	D	Battalion Support/Ration Break-down	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	12	V	Traffic Circulation (Pave Roadways)	\$0	No water system costs are anticipated with this project.
MILCON	14	O	Unit Training Equipment Site	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	18	U	Vehicle Maintenance Canopy	\$30	Cost includes lateral to building for water service.
SRM	21	K	General Instruction	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	23	R	Wash Rack	\$45	Cost includes lateral to building for water service.
SRM	25	G	Simulator	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	26	H	Simulator	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	27	I	Simulator	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	28	J	Simulator	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	29	P	General Purpose Instruction 3,000 SF add to BNHQ (B)	\$50	Cost includes lateral to building for water service and sprinkler.
		TOTAL COST		\$2555	

**CAMP NIANTIC DESCRIPTION**

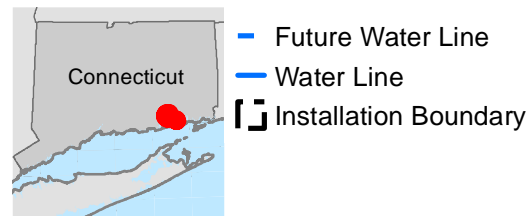
The majority of the redevelopment and new buildings planned at Camp Niantic can be supported by the existing water distribution system. Water services in place for existing buildings can be used to serve new or revitalized buildings in the same or similar footprint. Where new buildings are constructed directly adjacent to those which already have water service, additional water services can be tapped into the existing water mains.

New development proposed on the north side of the Parade Grounds should include a water main extension to serve these new buildings.

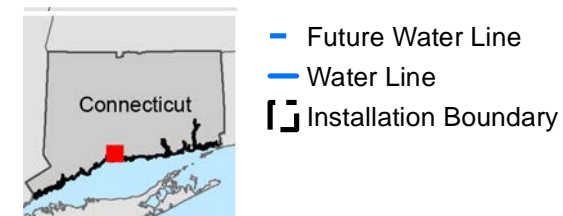
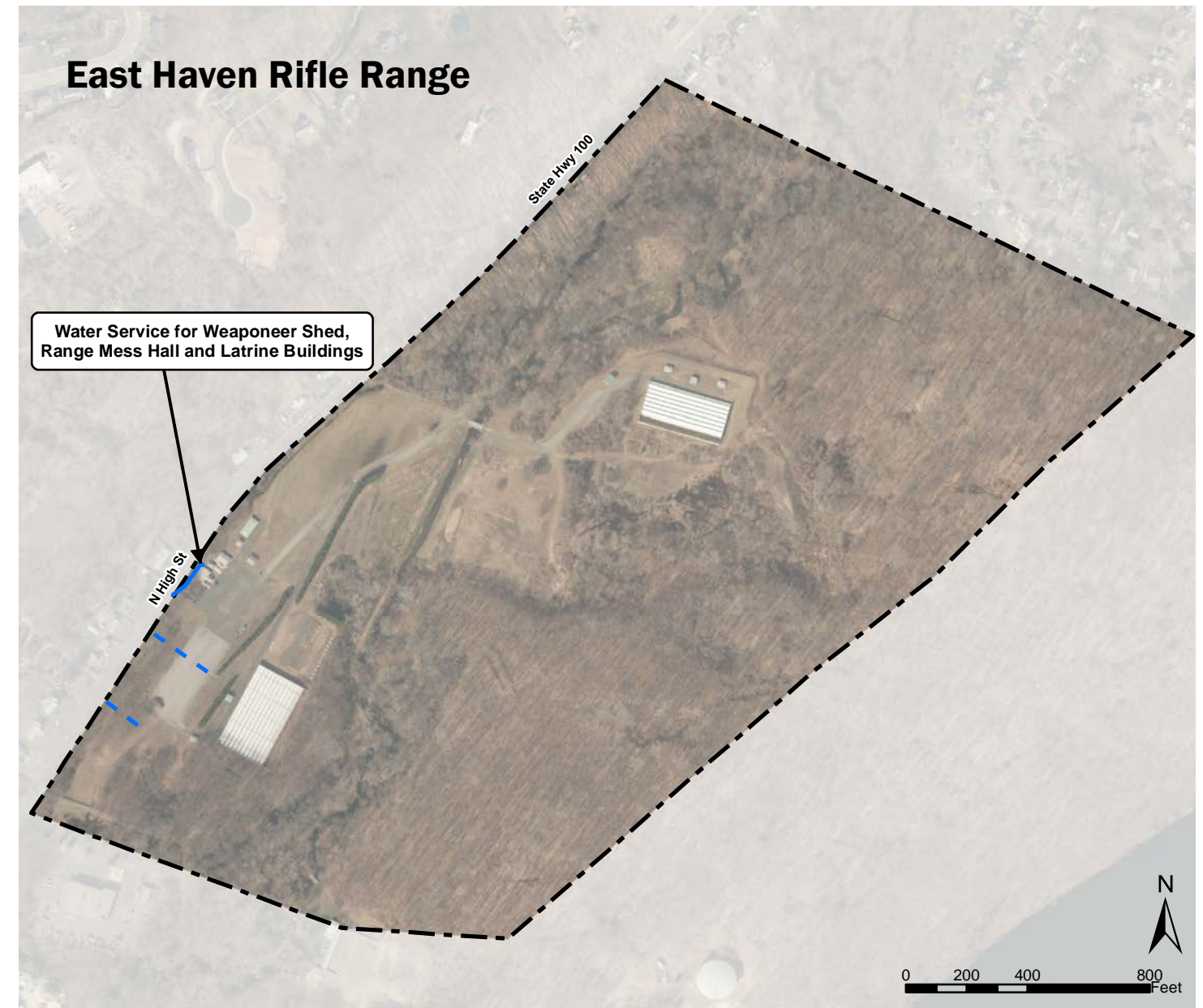
**EAST HAVEN RIFLE RANGE DESCRIPTION**

The majority of the redevelopment and new buildings planned at East Haven can be supported by the existing water distribution system. Water services in place for existing buildings can be used to serve new or revitalized buildings in the same or similar footprint. Where new buildings are constructed directly adjacent to those which already have water service, additional water services can be tapped into the existing South Central

Connecticut Water Authority water main located in the North High Street right-of-way.



**FIGURE 57:  
 CAMP NIANTIC  
 WATER PLAN**



**FIGURE 58:  
 EAST HAVEN  
 WATER PLAN**

## CAMP NIANTIC IMPROVEMENTS

The existing network of water mains at Camp Niantic is configured to support the planned projects except the proposed Company HQ – Transient, Troop Dispensary/Medical Clinic, and Post HQ. A new 8-inch water main and hydrants are recommended to support these planned projects. This 1,500 LF of new main will follow the alignment of the planned pedestrian way as shown in the schematic.

The proposed water main extension configuration is recommended to connect to existing water mains on its east and west ends to eliminate dead-end water mains. The industry standard AWWA C900 DR18 PVC pipe will be a likely and suitable material for the new water mains. No additional pressure zones are anticipated for the proposed water main extension.

With regard to fire flows, planned development is anticipated to include similar low-hazard buildings (i.e., office and maintenance buildings), which range from 500 to 1,000 gpm (combined hose stream and sprinkler demand). Since hazard classification, not building size, drives fire flow demands, it is anticipated that development of future similar low-hazard facilities can be supported by the existing water main network at Camp Niantic.

**TABLE 14: CAMP NIANTIC PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	1	e	Readiness Center - DET MED DET <sup>1</sup>	\$90	Cost includes lateral to building for water service and sprinkler.
OTHER	1	k	Post Exchange	\$50	Cost includes lateral to building for water service and sprinkler.
MILCON	2	g	Exam Space <sup>1</sup>	\$81	Cost includes lateral to building for water service and sprinkler.
MILCON	8	f	RTI Billets	\$75	Cost includes lateral to building for water service and sprinkler.
SRM	8	d	DPW - Canopy Building	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	10	m	POV/MVP Parking	\$0	No water system costs are anticipated with this project.
MILCON	12	j	Post HQ	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	13	p	Roadway Realignment	\$0	No water system costs are anticipated with this project.
MILCON	15	h	Dining Facility - Transient (400 PN)	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	14	o	804 Renovate back to Barracks <sup>4</sup>	\$0	No water system costs are anticipated with this project.
MILCON	16	c	Chapel	\$50	Cost includes lateral to building for water service and sprinkler.
MILCON	17	b	Troop Dispensary/Medical Clinic <sup>1</sup>	\$125	Costs include water main extension, hydrant, lateral to building for water service and sprinkler.
SRM	16	i	General Instruction (The Point)	\$50	Cost includes lateral to building for water service and sprinkler.
SRM	17	l	Pedestrian Way	\$0	No water system costs are anticipated with this project.
SRM	20	n	Physical Fitness Center	\$0	No water system costs are anticipated with this project.
SRM	22	a	Company HQ-Transient	\$125	Costs include water main extension, hydrant, lateral to building for water service and sprinkler.
		TOTAL COST		\$796	

## EAST HAVEN RIFLE RANGE IMPROVEMENTS

The existing water service at East Haven is not configured to support the planned projects. The existing water service to the Weaponry Shed, Range Mess Hall, and Latrine buildings is too small to support the proposed buildings and will be abandoned in place or demolished as redevelopment occurs. New water services are recommended to support the planned infrastructure. Three new water services are recommended for the proposed Simulator – EST, Range Operations, and Grounds Maintenance buildings. These new services will be tapped off the existing South Central Connecticut Water Authority water main in the North High Street right-of-way. Location of the proposed water services is shown in the schematic.

The industry standard AWWA C900 DR18 PVC pipe will be a likely and suitable material for the new water mains. No additional pressure zones are anticipated for the proposed water main extension.

With regard to fire flows, planned development is anticipated to include similar low-hazard buildings (i.e., office and maintenance buildings), which range from 500 to 1,000 gpm (combined hose stream and sprinkler demand). Since hazard classification, not building size, drives fire flow demands, it is anticipated that development of future similar low hazard facilities can be supported by the existing water main in North High Street right-of-way.

**TABLE 15: EAST HAVEN PROJECTS**

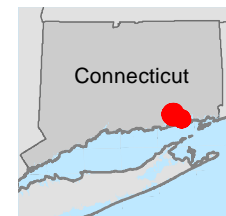
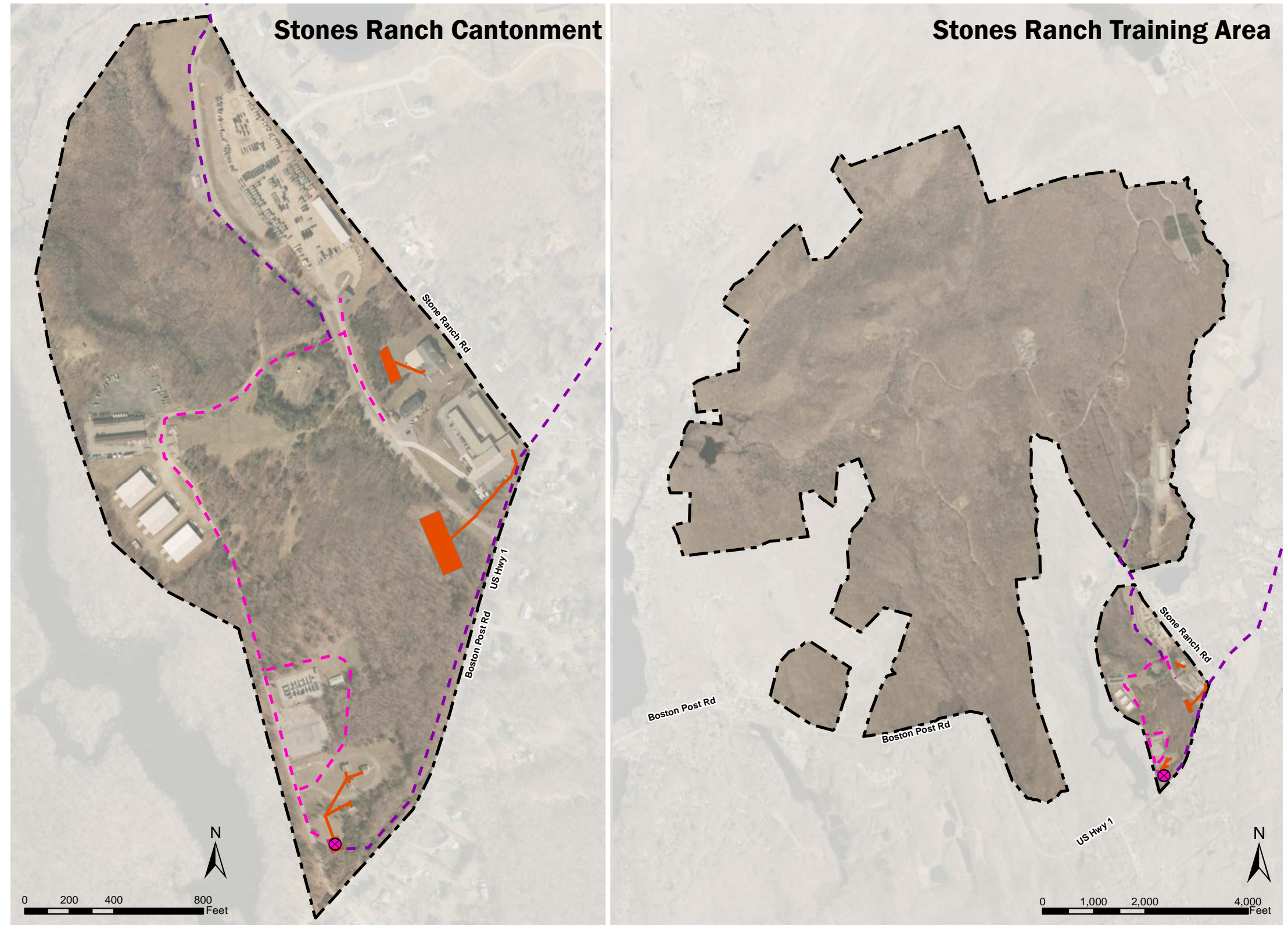
FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
SRM	1	t	Grounds Maintenance Building	\$0	This building is already under design/construction at time of report.
SRM	2	s	Range Operations	\$65	Cost includes lateral to building for water service and sprinkler.
SRM	5	u	Perimeter/Compound Fencing	\$0	No water system costs are anticipated with this project.
SRM	15	q	Simulator	\$100	Cost includes lateral to building for water service and sprinkler.
SRM	19	r	Range Instruction Canopies (2)	\$0	No water system costs are anticipated with this project.
SRM	24	v	Ammunition Holding Area	\$0	No water system costs are anticipated with this project.
		TOTAL COST		\$165	

# WASTEWATER

## STONES RANCH MILITARY RESERVATION DESCRIPTION

The majority of the redevelopment and new buildings planned at Stones Ranch will require a new wastewater collection system, wastewater lift station, and force main to convey wastewater to the existing East Lyme Water wastewater collection system located near the intersection of Boston Post Road and Plum Hill Road. A new gravity sewer main is proposed from the proposed new buildings to the proposed lift station located at the intersection of south accesses road and the Boston Post Road. The existing wastewater septic tanks and drain fields serving the existing UTES and fire station buildings would be abandoned when the facilities for this area are constructed.

The proposed Range Operations project will require a grinder pump station with force main to convey wastewater to the proposed gravity sewer collection system.



- ⊗ Future Wastewater Lift Station
- Future Force Main Sewer Line
- Future Gravity Sewer Line
- Wastewater Line
- Septic Tank and Drain Field
- Installation Boundary

**FIGURE 59:  
STONES RANCH  
WASTEWATER PLAN**

STONES RANCH MILITARY RESERVATION IMPROVEMENTS

The existing on site wastewater disposal systems at Stones Ranch do not have adequate capacity to support the planned projects. The existing on site wastewater disposal systems at Stones Ranch should be abandoned in place or demolished as redevelopment occurs. A new network of 8-inch gravity sewer mains and manholes are recommended to support the planned infrastructure. This 4,000 LF of new sewer mains will follow the alignment of the planned roadway network as shown in the schematic. The industry standard ASTM D3034 SDR35 PVC pipe will be a likely and suitable material for the new sanitary sewer mains.

The Range Operations project will require a duplex grinder pump station and 2,800 LF of force main to convey wastewater from this facility to the gravity sewer collection system. The alignment of the force main will follow the existing access road.

The gravity sewer mains will drain to a lift station located near the intersection of the Boston Post Road and the southern access road to the cantonment area. The proposed lift station will discharge to the existing East Lyme sanitary sewer system located near the intersection of Boston Post Road and Plum Hill Road. This is a distance of approximately 5,500 LF. The proposed 4-inch force main will be located in the Boston Post Road right-of-way. HDPE pipe will be a likely and suitable material for the new force main. Approval from the Town of East Lyme is required for this connection and expansion of the sewer service area.

TABLE 16: STONES RANCH MILITARY RESERVATION PROJECTS

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	3		Infrastructure Upgrade Project	\$1,800	Cost includes lift station, 5,500 feet of force main, 4,000 feet of gravity sewer main, and 12 manholes.
MILCON	4	N	Readiness Center - 250th Multi-Role Bridge Co <sup>2</sup>	\$28	Costs include sewer lateral extension from sewer main to building
SRM	3	Q	Loading Ramp	\$0	Assumed No Wastewater Infrastructure Required.
MILCON	5	S	ACP (Full) <sup>3</sup>	\$28	Costs include sewer lateral extension from sewer main to building
SRM	4	S	ACP (Basic) <sup>3</sup>	\$28	Costs include sewer lateral extension from sewer main to building
MILCON	5	A	Enlisted Barracks - Transient (200 PN)	\$28	Costs include sewer lateral extension from sewer main to building
MILCON	7	E	Battalion Maintenance Shelter	\$28	Costs include sewer lateral extension from sewer main to building
SRM	6	F	Range Operations	\$450	Costs include grinder pump station, 2,800 feet of force main, and sewer lateral to building
SRM	7	M	Ammunition Supply Point	\$0	Assumed No Wastewater Infrastructure Required.
MILCON	9	P	DPW Warehouse	\$28	Costs include sewer lateral extension from sewer main to building
MILCON	10	C	Company HQ - Transient	\$28	Costs include sewer lateral extension from sewer main to building
SRM	9	L	DPW Maintenance/Admin	\$28	Costs include sewer lateral extension from sewer main to building
MILCON	11	B	Battalion HQ - Transient	\$28	Costs include sewer lateral extension from sewer main to building
SRM	11	T	DPW Roads and Grounds	\$0	Assumed No Wastewater Infrastructure Required.
MILCON	13	D	Battalion Support/Ration Break-down	\$28	Costs include sewer lateral extension from sewer main to building
SRM	12	V	Traffic Circulation (Pave Roadways)	\$0	Assumed No Wastewater Infrastructure Required.
MILCON	14	O	Unit Training Equipment Site	\$28	Costs include sewer lateral extension from sewer main to building
SRM	18	U	Vehicle Maintenance Canopy	\$28	Costs include sewer lateral extension from sewer main to building
SRM	21	K	General Instruction	\$28	Costs include sewer lateral extension from sewer main to building
SRM	23	R	Wash Rack	\$38	Costs include sewer lateral extension from sewer main to building
SRM	25	G	Simulator	\$28	Costs include sewer lateral extension from sewer main to building
SRM	26	H	Simulator	\$28	Costs include sewer lateral extension from sewer main to building
SRM	27	I	Simulator	\$28	Costs include sewer lateral extension from sewer main to building
SRM	28	J	Simulator	\$28	Costs include sewer lateral extension from sewer main to building
SRM	29	P	General Purpose Instruction 3,000 SF add to BNHQ (B)	\$28	Costs include sewer lateral extension from sewer main to building
		TOTAL COST		\$2,792	

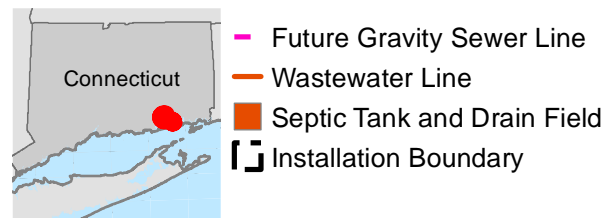
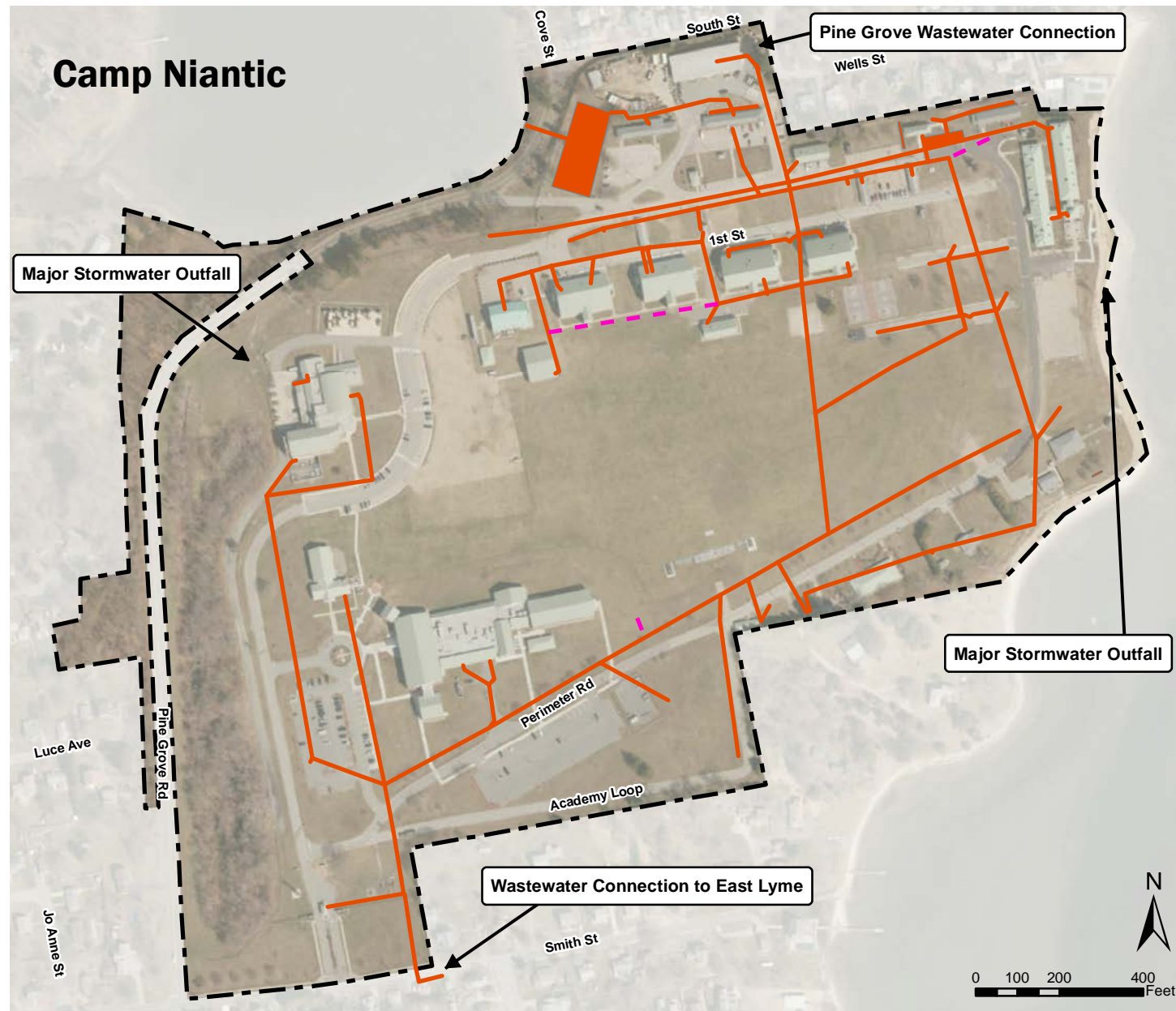
**CAMP NIANTIC DESCRIPTION**

The majority of redevelopment and new buildings planned at Camp Niantic can be supported by the existing wastewater collection system. New wastewater laterals are recommended to serve new or revitalized buildings.

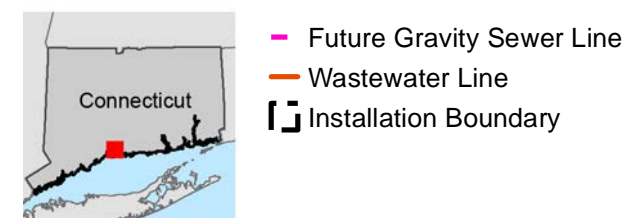
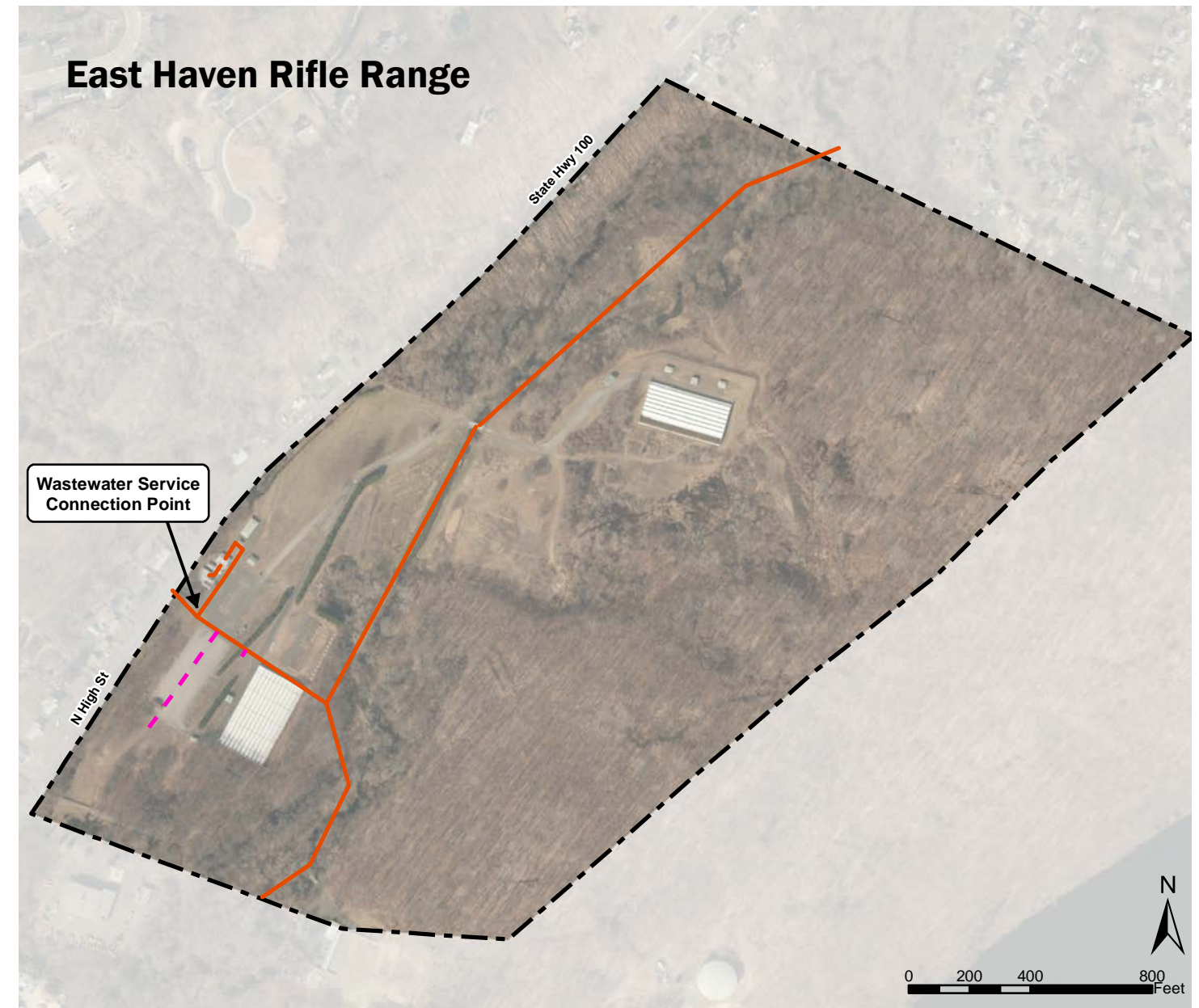
A sanitary sewer extension is required to provide wastewater service to the proposed Company HQ-Transient building and the renovated Fitness Center.

**EAST HAVEN RIFLE RANGE DESCRIPTION**

The redevelopment and new buildings planned at East Haven can be supported by the existing wastewater collection system. Wastewater laterals for new or revitalized buildings can be connected to existing gravity sewer mains at East Haven.



**FIGURE 60:  
 CAMP NIANTIC  
 WASTEWATER  
 PLAN**



**FIGURE 61:  
 EAST HAVEN  
 WASTEWATER  
 PLAN**

### CAMP NIANTIC IMPROVEMENTS

The existing network of gravity sewer mains at Camp Niantic is configured to support the planned projects except the proposed Company HQ – Transient building and the renovated Fitness Center. Two new 8-inch sewer main extensions are recommended to support these planned projects. Each extension is approximately 200 LF of new sewer main. The alignment of the sewer extension are shown in the schematic. The industry standard ASTM D3034 SDR35 polyvinyl chloride (PVC) pipe will be a likely and suitable material for the new sanitary sewer mains. No lift stations are anticipated to be necessary.

The existing on site wastewater disposal system serving the Fitness Center should be abandoned in place or demolished as redevelopment occurs.

### EAST HAVEN RIFLE RANGE IMPROVEMENTS

The existing gravity sewer mains at East Haven are configured to support the planned projects. The existing wastewater lateral to the Weaponry Shed, Range Mess Hall, and Latrine buildings should be abandoned in place or demolished as redevelopment occurs. New wastewater laterals are recommended to support the planned infrastructure. Three new wastewater laterals are recommended for the proposed Simulator – EST, Range Operations, and Grounds Maintenance buildings. These new laterals will be connected to the existing gravity sewer main on East Haven. Location of the proposed wastewater laterals are shown in the schematic.

The industry standard ASTM D3034 SDR35 PVC pipe will be a likely and suitable material for the new wastewater mains. No lift stations are anticipated to be necessary.

**TABLE 17: CAMP NIANTIC PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	1	e	Readiness Center - DET MED DET <sup>1</sup>	\$35	Costs include sewer lateral extension from sewer main to building
OTHER	1	k	Post Exchange	\$25	Costs include sewer lateral extension from sewer main to building
MILCON	2	g	Exam Space <sup>1</sup>	\$25	Costs include sewer lateral extension from sewer main to building
MILCON	8	f	RTI Billets	\$25	Costs include sewer lateral extension from sewer main to building
SRM	8	d	DPW - Canopy Building	\$25	Costs include sewer lateral extension from sewer main to building
SRM	10	m	POV/MVP Parking	\$0	Assumed No Wastewater Infrastructure Required.
MILCON	12	j	Post HQ	\$75	Costs include sewer main extension and sewer lateral to building.
SRM	13	p	Roadway Realignment	\$0	Assumed No Wastewater Infrastructure Required.
MILCON	15	h	Dining Facility - Transient (400 PN)	\$25	Costs include sewer lateral extension from sewer main to building
SRM	14	o	804 Renovate back to Barracks <sup>4</sup>	\$0	Assumed No Wastewater Infrastructure Required.
MILCON	16	c	Chapel	\$25	Costs include sewer lateral extension from sewer main to building
MILCON	17	b	Troop Dispensary/Medical Clinic <sup>1</sup>	\$75	Costs include sewer main extension and sewer lateral to building.
SRM	16	i	General Instruction (The Point)	\$25	Costs include sewer lateral extension from sewer main to building
SRM	17	l	Pedestrian Way	\$0	Assumed No Wastewater Infrastructure Required.
SRM	20	n	Physical Fitness Center	\$0	Assumed No Wastewater Infrastructure Required.
SRM	22	a	Company HQ-Transient	\$75	Costs include sewer main extension and sewer lateral to building.
TOTAL COST				\$435	

**TABLE 18: EAST HAVEN PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
SRM	1	t	Grounds Maintenance Building	\$0	This building was already under design/construction at time of report.
SRM	2	s	Range Operations	\$25	Costs include sewer lateral extension from sewer main to building
SRM	5	u	Perimeter/Compound Fencing	\$0	Assumed No Wastewater Infrastructure Required.
SRM	15	q	Simulator	\$35	Costs include sewer lateral extension from sewer main to building
SRM	19	r	Range Instruction Canopies (2)	\$0	Assumed No Wastewater Infrastructure Required.
SRM	24	v	Ammunition Holding Area	\$0	Assumed No Wastewater Infrastructure Required.
TOTAL COST				\$60	

# STORMWATER

## GENERAL OVERVIEW

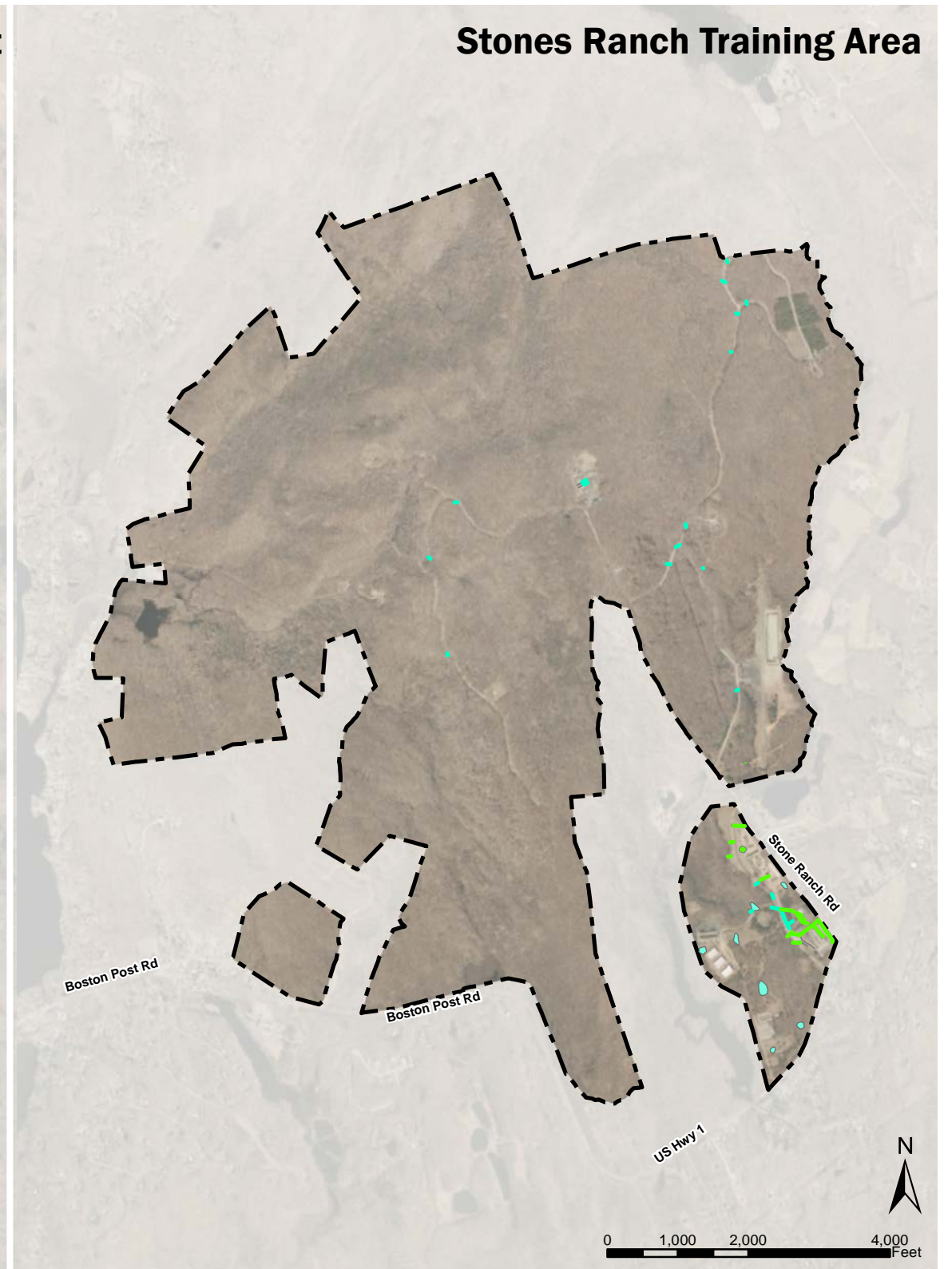
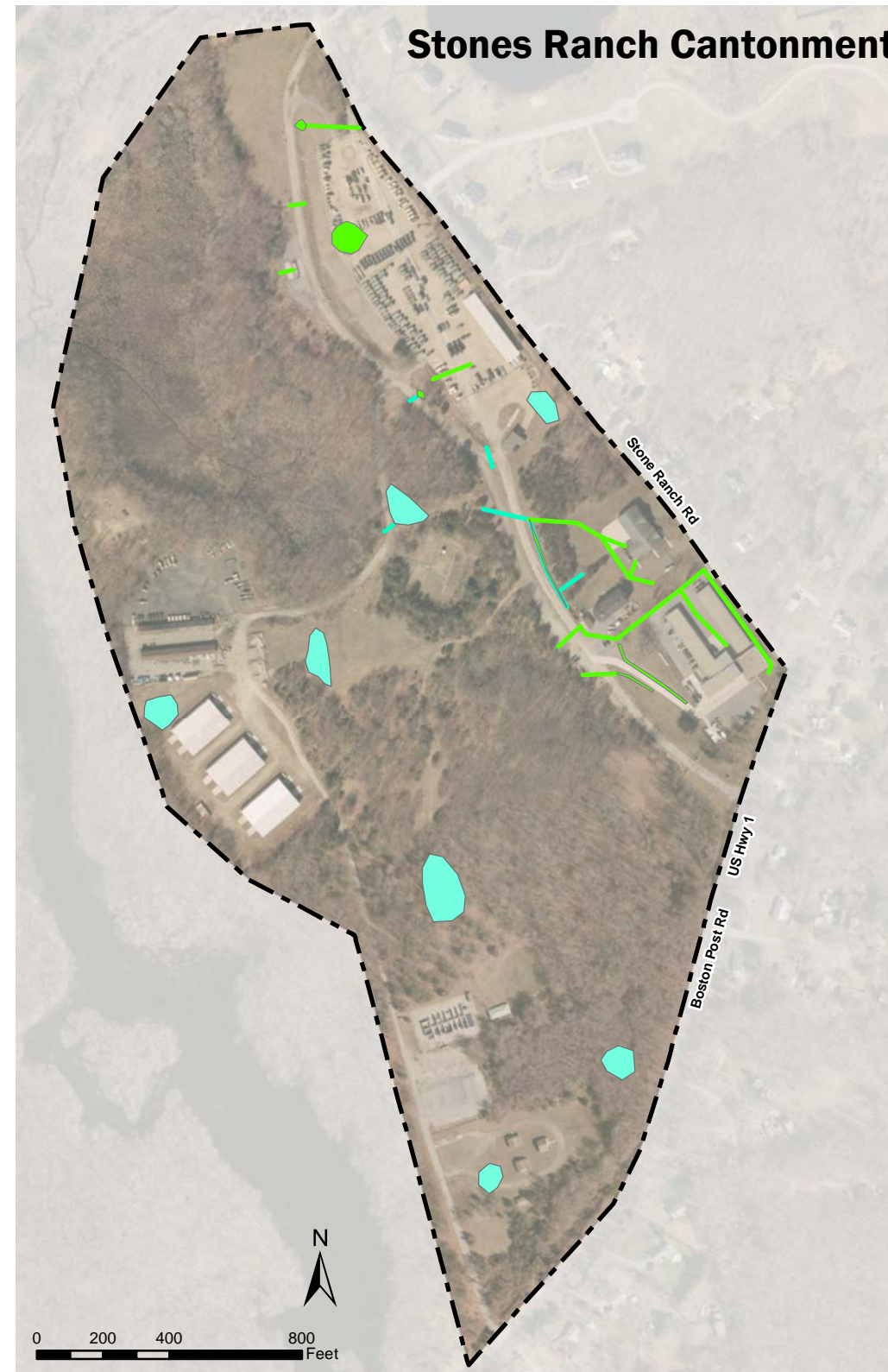
- + First priority for stormwater management at all projects is infiltration on-site.
- + Use of low-impact development (LID) techniques is required. This includes practices such as porous paving, bioretention, vegetated roofs, and rainwater harvesting.
- + Consider grouped or subregional stormwater management facilities for cost savings compared to project specific storm water management facilities.
- + A comprehensive study of infiltration capacity for on-site soils (using methods required by local/state regulatory authorities) would facilitate planning efforts for individual future projects and help determine the feasibility of combined stormwater treatment facilities.
- + All projects must comply with NPDES permit requirements for erosion control during construction and post construction storm water management including 80 percent total suspended solids removal.
- + All projects must comply with NPDES permit requirements for erosion control during construction and post construction storm water management including 80 percent total suspended solids removal.

The conceptual facilities shown in this section are based on general information for the sites and on the Connecticut Stormwater Quality Manual for sizing infiltration basins. The sizing is based on the following assumptions:

- + On-site stormwater management facilities will be required and soils belong to Hydrologic Group C.
- + The Water Quality Volume to be retained on site is the volume of runoff generated by one inch of rainfall.
- + Groundwater is greater than 10 feet below existing ground surface.

In general, the facility sizes and the costs shown represent conservative assumptions and the actual design facilities will be about as shown or smaller. The following basic assumptions have been made:

- + A management facility will be required for each project and that a credit for existing impervious surfaces will not be allowed.
- + There are no regional management facilities.
- + Infiltration is feasible at all sites (an infiltration rate of 0.5 inches per hour is assumed for Group C soils).
- + Each improvement project will construct a stand-alone surface water management facility specific to that improvement.



- Future Stormwater Drainage Basin Area
- Stormwater Open Drainage Area
- Stormwater Line
- Culvert
- Installation Boundary

**FIGURE 62:**  
**STONES RANCH**  
**STORMWATER PLAN**



Each of these assumptions should be verified with more extensive investigation at the beginning of each project and, depending on findings, area uses should be adjusted accordingly. For example, if soils are found to be not feasible for infiltration in the project area, then drainage might need to be conveyed to another area of the site where infiltration is feasible.

### STONES RANCH MILITARY RESERVATION DESCRIPTION

The re-development and new buildings planned at Stones Ranch will require a new stormwater treatment and conveyance systems.

### STONES RANCH MILITARY RESERVATION IMPROVEMENTS

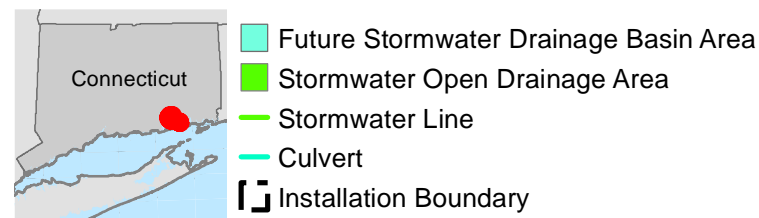
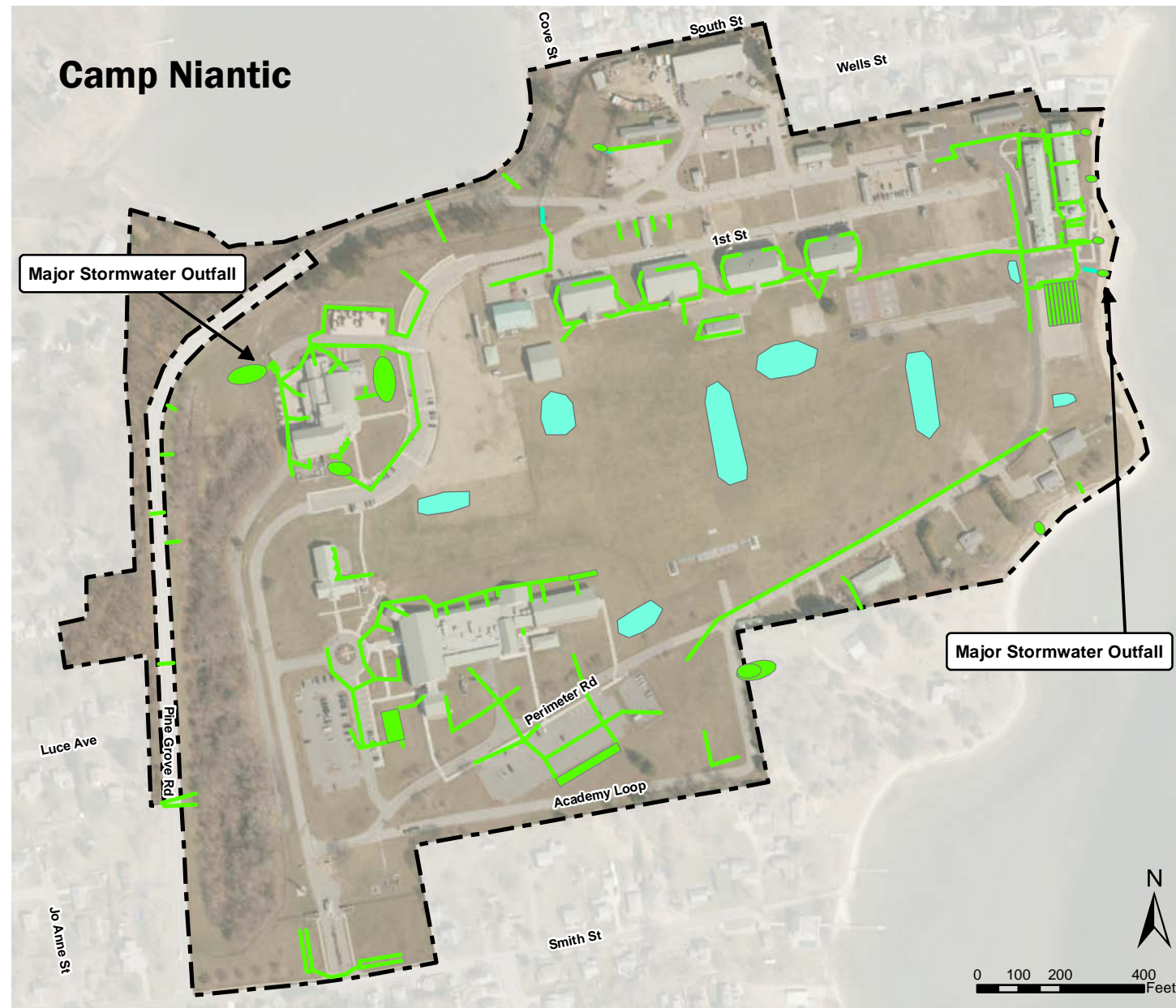
The existing stormwater conveyance facilities at Stones Ranch is not configured to support the planned projects and do not provide the stormwater treatment required for new construction. New stormwater infiltration basins are recommended to infiltrate stormwater runoff from the planned infrastructure. New swirl separators are recommended to pre-treat stormwater runoff from parking lot areas before discharge to the infiltration basins.

**TABLE 19: STONES RANCH MILITARY RESERVATION PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	3		Infrastructure Upgrade Project	\$0	No stormwater management costs have been included in the Infrastructure Upgrade Project. LID practices require stormwater management as close to the building project so they cannot be constructed before the building project is designed.
MILCON	4	N	Readiness Center - 250th Multi-Role Bridge Co <sup>2</sup>	\$60	Infiltration area for building. Assumed a 2-acre drainage area and an infiltration area that is 8,000 SF.
SRM	3	Q	Loading Ramp	\$85	Infiltration area for project assumed an 2.6-acre drainage area and a total infiltration area that is 11,000 SF.
MILCON	5	S	ACP (Full) <sup>3</sup>	\$30	Assume that there will be a filter swale or other linear stormwater treatment approximately 300 feet long
SRM	4	S	ACP (Basic) <sup>3</sup>	\$30	Assume that there will be a filter swale or other linear stormwater treatment approximately 300 feet long
MILCON	5	A	Enlisted Barracks - Transient (200 PN)	\$117	Infiltration area for building and portion of parking lot. Assumed a 3-acre drainage area and an infiltration area that is 12,000 SF.
MILCON	7	E	Battalion Maintenance Shelter	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
SRM	6	F	Range Operations	\$25	Rain garden or filter strip assumed.
SRM	7	M	Ammunition Supply Point	\$10	Rain garden or filter strip assumed.
MILCON	9	P	DPW Warehouse	\$60	Infiltration area for building. Assumed a 2-acre drainage area and an infiltration area that is 8,000 SF.
MILCON	10	C	Company HQ - Transient	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
SRM	9	L	DPW Maintenance/Admin	\$30	Infiltration area for building. Assumed a 2-acre drainage area and an infiltration area that is 8,000 SF.
MILCON	11	B	Battalion HQ - Transient	\$60	Infiltration area for project assumed 1.5 acre combined drainage area and a total infiltration area that is 5,000 SF.
SRM	11	T	DPW Roads and Grounds		
MILCON	13	D	Battalion Support/Ration Break-down	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
SRM	12	V	Traffic Circulation (Pave Roadways)	\$0	Assume no stormwater management is required.
MILCON	14	O	Unit Training Equipment Site	\$85	Infiltration area for project assumed an 2.6-acre drainage area and a total infiltration area that is 11,000 SF.
SRM	18	U	Vehicle Maintenance Canopy	\$30	Infiltration area for building. Assumed a 2-acre drainage area and an infiltration area that is 8,000 SF.
SRM	21	K	General Instruction	\$125	Infiltration area for building. Assumed a 4-acre drainage area and an infiltration area that is 16,000 SF.
SRM	23	R	Wash Rack	\$85	Infiltration area for project assumed an 2.6-acre drainage area and a total infiltration area that is 11,000 SF.
SRM	25	G	Simulator	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
SRM	26	H	Simulator	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
SRM	27	I	Simulator	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
SRM	28	J	Simulator	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
SRM	29	P	General Purpose Instruction 3,000 SF add to BN HQ (B)	\$60	Infiltration area for project assumed 1.5 acre drainage area and a total infiltration area that is 5,000 SF.
		TOTAL COST		\$1,312	

**CAMP NIANTIC DESCRIPTION**

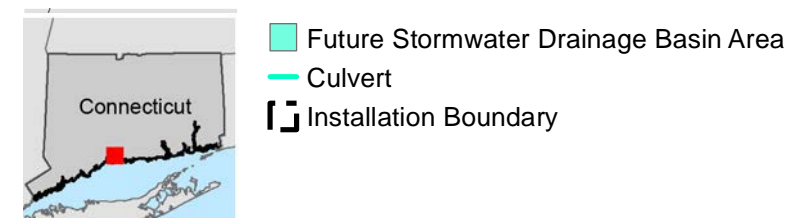
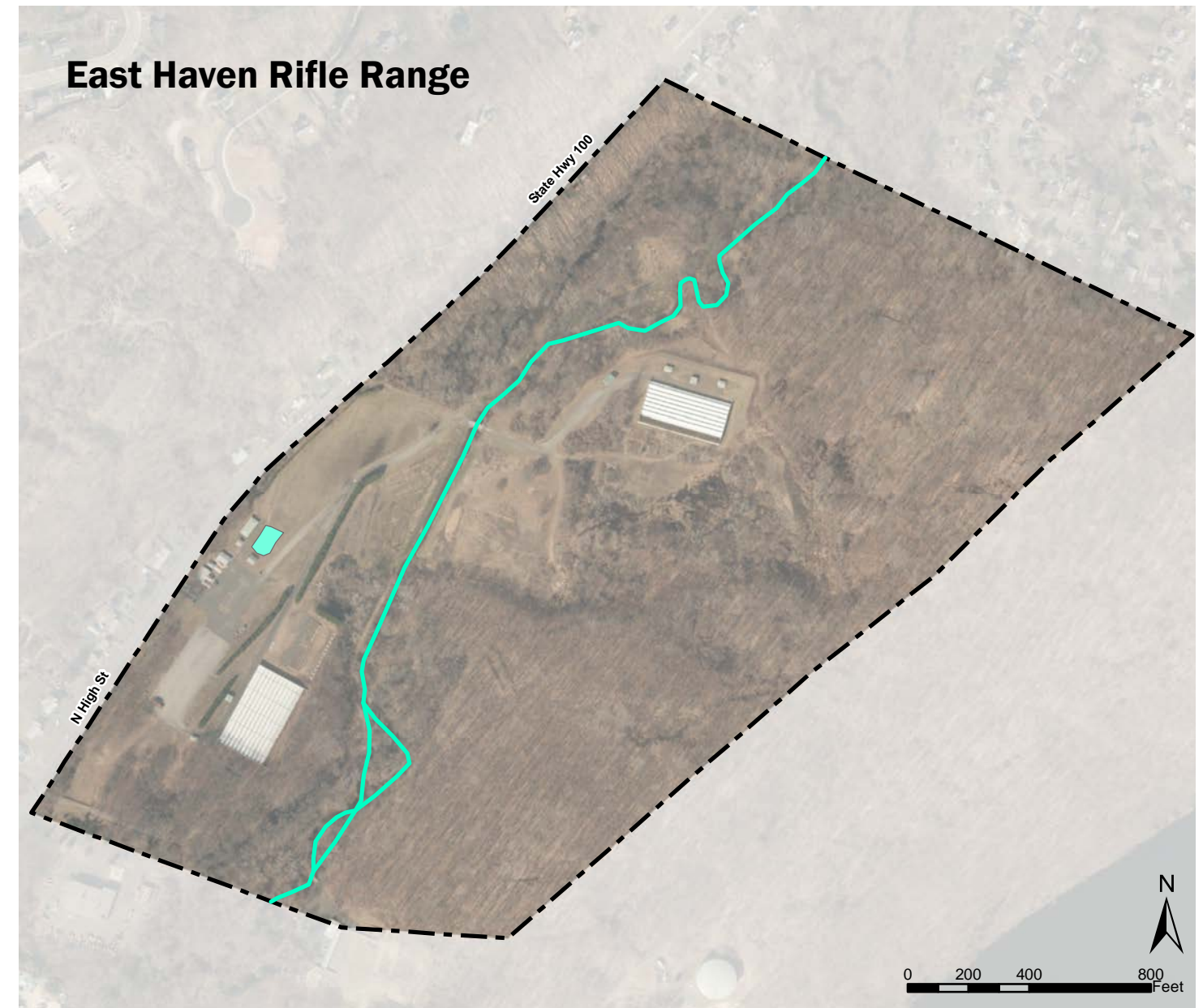
The redevelopment and new buildings planned at Camp Niantic will require a new stormwater treatment and conveyance systems. The existing stormwater treatment facilities at Camp Niantic may have been designed to treat additional runoff from future projects. Design calculations and regulatory agency approvals should be reviewed to determine how much, if any, capacity is available in the existing stormwater treatment facilities.



**FIGURE 63:  
 CAMP NIANTIC  
 STORMWATER PLAN**

**EAST HAVEN RIFLE RANGE DESCRIPTION**

The redevelopment and new buildings planned at East Haven will require a new stormwater treatment and conveyance system.



**FIGURE 64:  
 EAST HAVEN  
 STORMWATER PLAN**

### CAMP NIANTIC IMPROVEMENTS

The existing stormwater treatment facilities at Camp Niantic may have been designed to treat additional stormwater runoff from future projects. Design calculations and regulatory agency approvals should be reviewed to determine how much, if any, capacity is available in the existing stormwater treatment facilities. New stormwater infiltration basins are recommended to infiltrate stormwater runoff from the planned infrastructure that do not drain to the existing stormwater treatment facilities or exceed the design capacity of the existing stormwater treatment facilities. New swirl separators are recommended to pre-treat stormwater runoff from new parking lot areas before discharge to the infiltration basins.

### EAST HAVEN RIFLE RANGE IMPROVEMENTS

The existing stormwater conveyance facilities at East Haven are not configured to support the planned projects and do not provide the stormwater treatment required for new construction. New stormwater infiltration basins are recommended to infiltrate stormwater runoff from the planned infrastructure.

**TABLE 20: CAMP NIANTIC PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	1	e	Readiness Center - DET MED DET <sup>1</sup>	\$75	Infiltration area for project assumed a 2-acre drainage area and a total infiltration area that is 10,000 SF.
OTHER	1	k	Post Exchange	\$60	Infiltration area for building. Assumed a 2-acre drainage area and an infiltration area that is 8,000 SF.
MILCON	2	g	Exam Space <sup>1</sup>	\$60	Infiltration area for project assumed a 2-acre area and a total infiltration area that is 8,000 SF.
MILCON	8	f	RTI Billets	\$60	Infiltration area for project assumed a 2-acre area and a total infiltration area that is 8,000 SF.
SRM	8	d	DPW - Canopy Building	\$0	Assumed No Stormwater Infrastructure Required.
SRM	10	m	POV/MVP Parking	\$405	Infiltration area for project assumed a 2-acre drainage area and a total infiltration area that is 10,000 SF. Plus assumed 13 acres of pavement and 55,000 square foot infiltration area between two different ponds
MILCON	12	j	Post HQ	\$22.5	Assumed drainage area is 3/4 acre and infiltration area is 3,000 SF.
SRM	13	p	Roadway Realignment	\$75	Infiltration area for project assumed a 2-acre drainage area and a total infiltration area that is 10,000 SF.
MILCON	15	h	Dining Facility - Transient (400 PN)	\$30	Infiltration area for project assumed a 1-acre drainage area and a total infiltration area that is 4,000 SF.
SRM	14	o	804 Renovate back to Barracks <sup>4</sup>	\$0	Assumed No Stormwater Infrastructure Required.
MILCON	16	c	Chapel	\$30	Infiltration area for project assumed a 1-acre drainage area and a total infiltration area that is 4,000 SF.
MILCON	17	b	Troop Dispensary/Medical Clinic <sup>1</sup>	\$75	Infiltration area for project assumed a 2-acre drainage area and a total infiltration area that is 10,000 SF.
SRM	16	i	General Instruction (The Point)	\$60	Infiltration area for projects 9 and 18. Assumed a 2-acre combined drainage area and a total infiltration area that is 8,000 SF.
SRM	17	l	Pedestrian Way	\$0	Assumed No Stormwater Infrastructure Required.
SRM	20	n	Physical Fitness Center	\$0	Assumed No Stormwater Infrastructure Required.
SRM	22	a	Company HQ-Transient	\$20	Assume the drainage area is only the building plus landscape around building, 1/2 acre and a 2,000 square foot infiltration area.
		TOTAL COST		\$972.5	

**TABLE 21: EAST HAVEN PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
SRM	1	t	Grounds Maintenance Building	\$0	This building was already under design/construction at time of report.
SRM	2	s	Range Operations	\$22	Infiltration area for project assume drainage area is 0.75 acres and total infiltration area is 3,000 SF.
SRM	5	u	Perimeter/Compound Fencing	\$0	Assumed No Stormwater Infrastructure Required.
SRM	15	q	Simulator	\$22	Infiltration area for project assume drainage area is 0.75 acres and total infiltration area is 3,000 SF.
SRM	19	r	Range Instruction Canopies (2)	\$0	Assumed No Stormwater Infrastructure Required.
SRM	24	v	Ammunition Holding Area	\$0	Assumed No Stormwater Infrastructure Required.
		TOTAL COST		\$44	

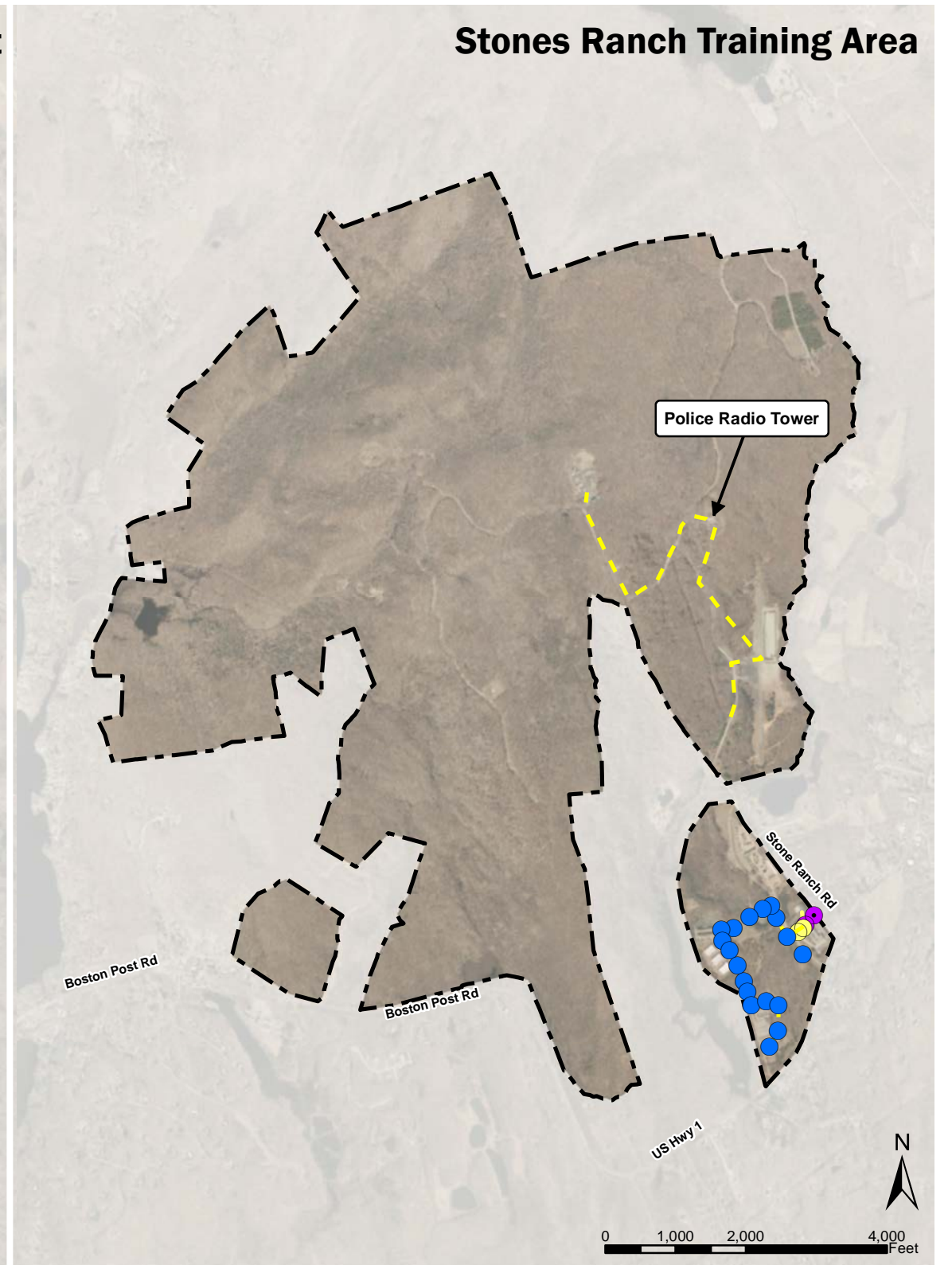
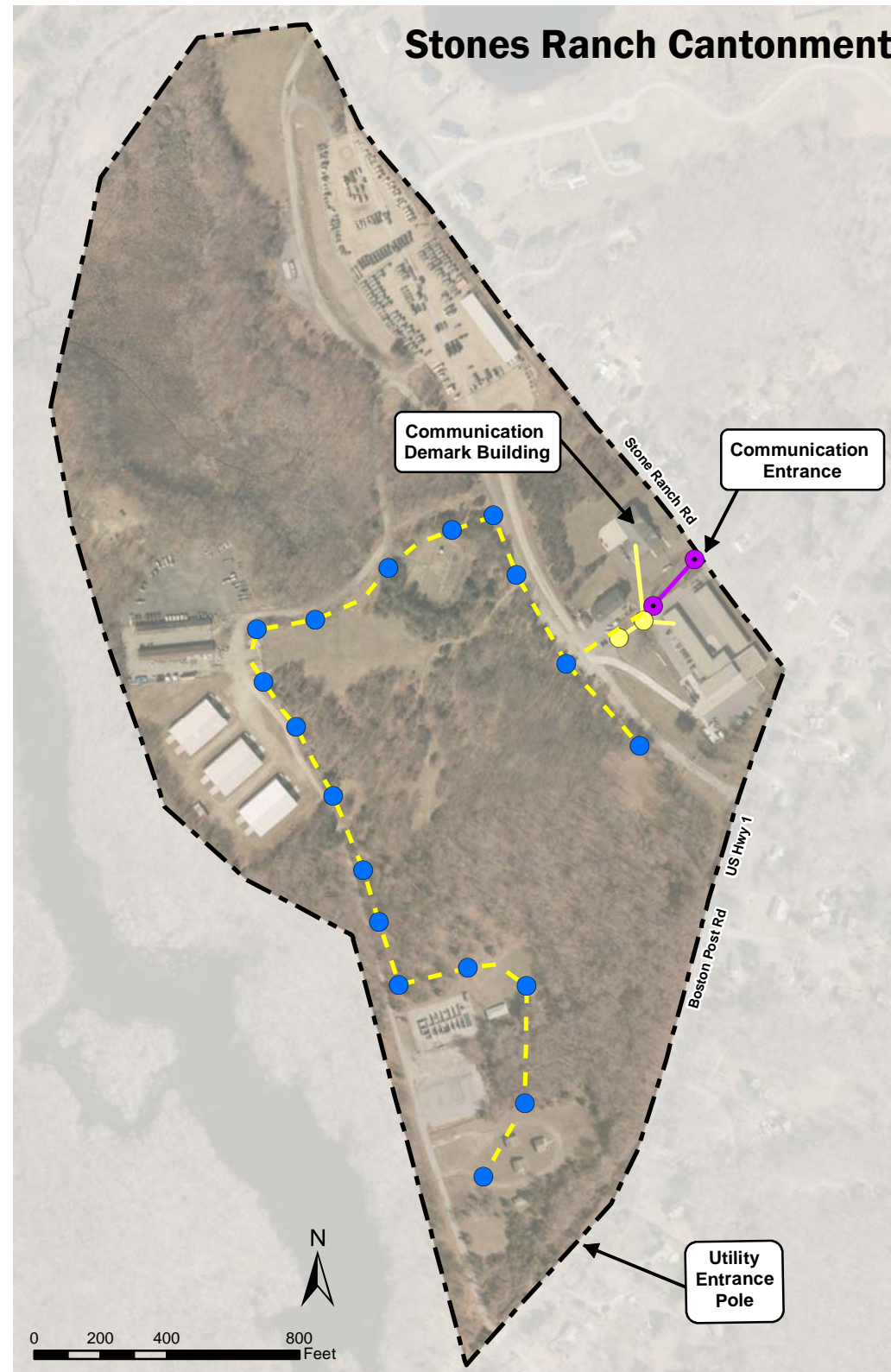
# COMMUNICATIONS

## STONES RANCH MILITARY RESERVATION DESCRIPTION

The existing communication infrastructure within the Stones Ranch cantonment area is limited and will not support the future buildings. The current communication infrastructure is limited to the eastern corner of the site near the existing maintenance building and fire station. An Infrastructure Upgrade Project will be required to provide a communication ductbank system throughout the cantonment area.

There is an existing police radio tower within the Stones Ranch training area. Further investigation will be required to see if the Police Department will allow for the co-use of this tower to provide communication infrastructure within the Training Area.

Additional underground communication duct bank systems have been indicated by the dashed yellow lines on the map and are labeled "Future Communication Line" in the legend.



- Future Communication Handhole
- Future Communication Line
- Communication Handhole
- Overhead Communication Pole
- Underground Communication Conduit
- Overhead Communication Line
- Installation Boundary

**FIGURE 65:**  
**STONES RANCH**  
**COMMUNICATIONS**  
**PLAN**

## STONES RANCH MILITARY RESERVATION OVERVIEW

The existing communication infrastructure within Stones Ranch cantonment area is limited to the far east corner. In its current configuration, it will not be able to support the future communication requirements on the site.

## STONES RANCH MILITARY RESERVATION IMPROVEMENTS

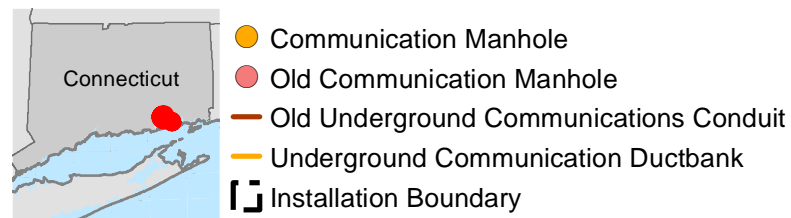
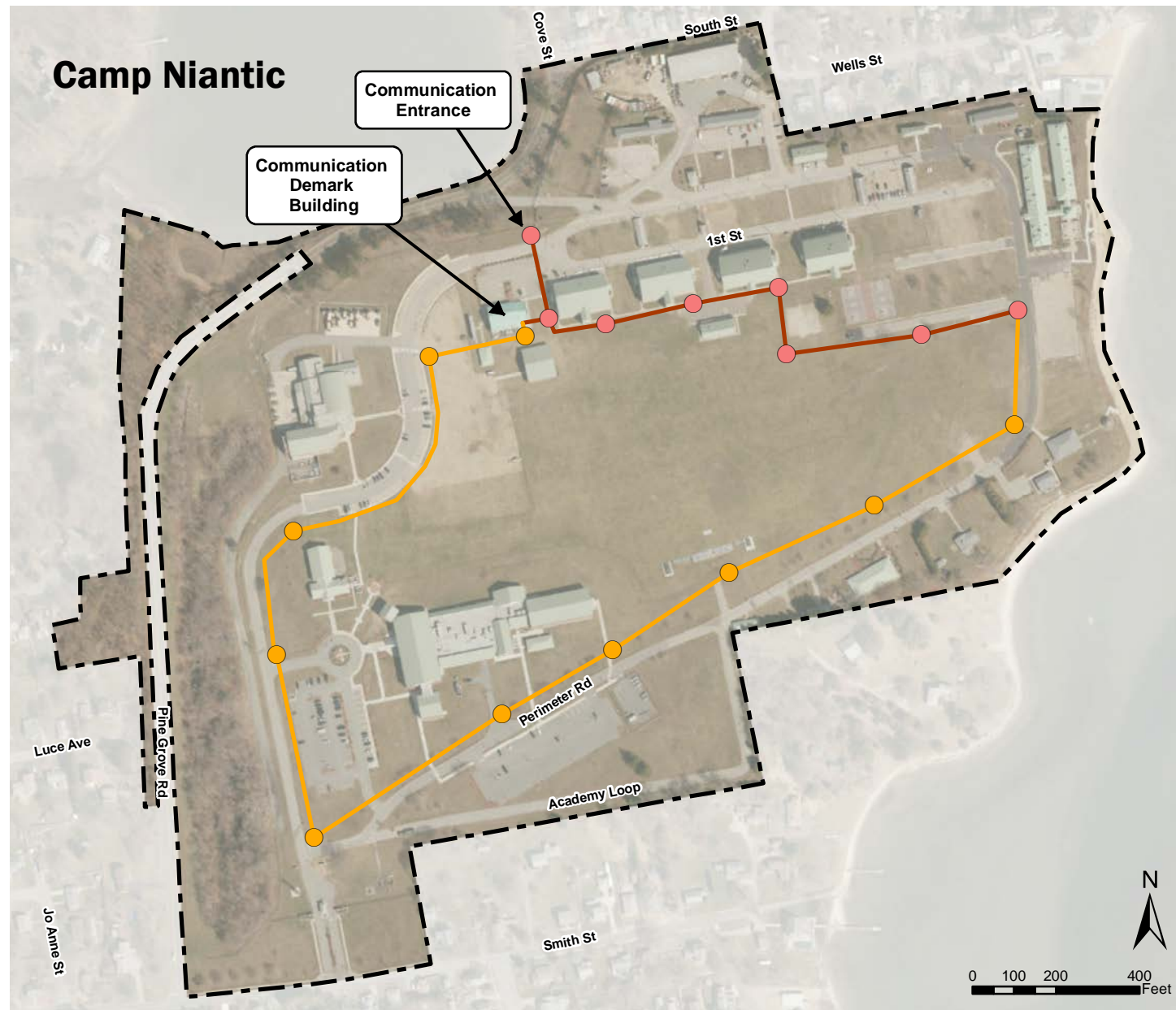
- + It is assumed that a separate communication infrastructure project will be required to provide the necessary infrastructure in place for the future build-out of the Stones Ranch cantonment area.
- + Infrastructure for the cantonment area would include a new communication duct bank system that would comprise four 4-inch conduits (at a minimum), encased in concrete and supported by manholes spaced every 400 feet. The linear foot rough cost estimate for communication ductbank is \$100 per foot, including conductors. Each communication manhole would cost \$8,000.
- + Proposed Stones Ranch cantonment communication distribution system is approximately 5,000 feet. Cost will be \$500,000 for ductbank and \$96,000 for manholes. This cost shall be a separate Infrastructure Upgrade Project and is not included in any project cost.
- + Infrastructure for the training area would include a new communication duct bank system that would comprise two 4-inch conduits (at a minimum) supported by handholes spaced every 400 feet. The linear foot rough cost estimate for communication ductbank is \$40 per foot, including conductors. Each communication handhole would cost \$2,000.
- + Proposed Stones Ranch cantonment communication distribution system is approximately 1,200 feet. Cost will be \$48,000 for ductbank and \$8,000 for handholes. This cost shall be a separate Infrastructure Upgrade Project and is not included in any project cost. Any costs associated with the physical equipment required on the radio tower is not included in these costs.

**TABLE 22: STONES RANCH MILITARY RESERVATION PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	3		Infrastructure Upgrade Project	\$596	Refer to improvements paragraph for cost breakdown.
MILCON	4	N	Readiness Center - 250th Multi-Role Bridge Co <sup>2</sup>	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	3	Q	Loading Ramp	\$0	Assumed No Communication Infrastructure Required.
MILCON	5	S	ACP (Full) <sup>3</sup>	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes total of 500 feet (split between two locations)of ductbank from nearest manhole and 5 handholes.
SRM	4	S	ACP (Basic) <sup>3</sup>	\$50	Assumed Infrastructure Upgrade Project completed. Cost includes total of 500 feet (split between two locations)of ductbank from nearest manhole and 5 handholes.
MILCON	5	A	Enlisted Barracks - Transient (200 PN)	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
MILCON	7	E	Battalion Maintenance Shelter	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	6	F	Range Operations	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	7	M	Ammunition Supply Point	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
MILCON	9	P	DPW Warehouse	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
MILCON	10	C	Company HQ - Transient	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	9	L	DPW Maintenance/Admin	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
MILCON	11	B	Battalion HQ - Transient	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	11	T	DPW Roads and Grounds	\$0	Assumed No Communication Infrastructure Required.
MILCON	13	D	Battalion Support/Ration Break-down	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	12	V	Traffic Circulation (Pave Roadways)	\$0	Assumed No Communication Infrastructure Required.
MILCON	14	O	Unit Training Equipment Site	\$0	Assumed No Communication Infrastructure Required.
SRM	18	U	Vehicle Maintenance Canopy	\$0	Assumed No Communication Infrastructure Required.
SRM	21	K	General Instruction	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	23	R	Wash Rack	\$0	Assumed No Communication Infrastructure Required.
SRM	25	G	Simulator	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	26	H	Simulator	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	27	I	Simulator	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	28	J	Simulator	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	29	P	General Purpose Instruction 3,000 SF add to BNHQ (B)	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
		TOTAL COST		\$888	

### CAMP NIANTIC DESCRIPTION

The existing underground communication infrastructure within Camp Niantic is adequate to support the future buildings. The current underground infrastructure is a combination of both the original communication conduit system and the newer ductbank installation which was installed when the power was relocated underground on the south side of the site.

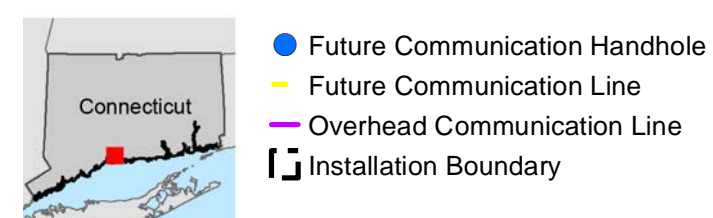
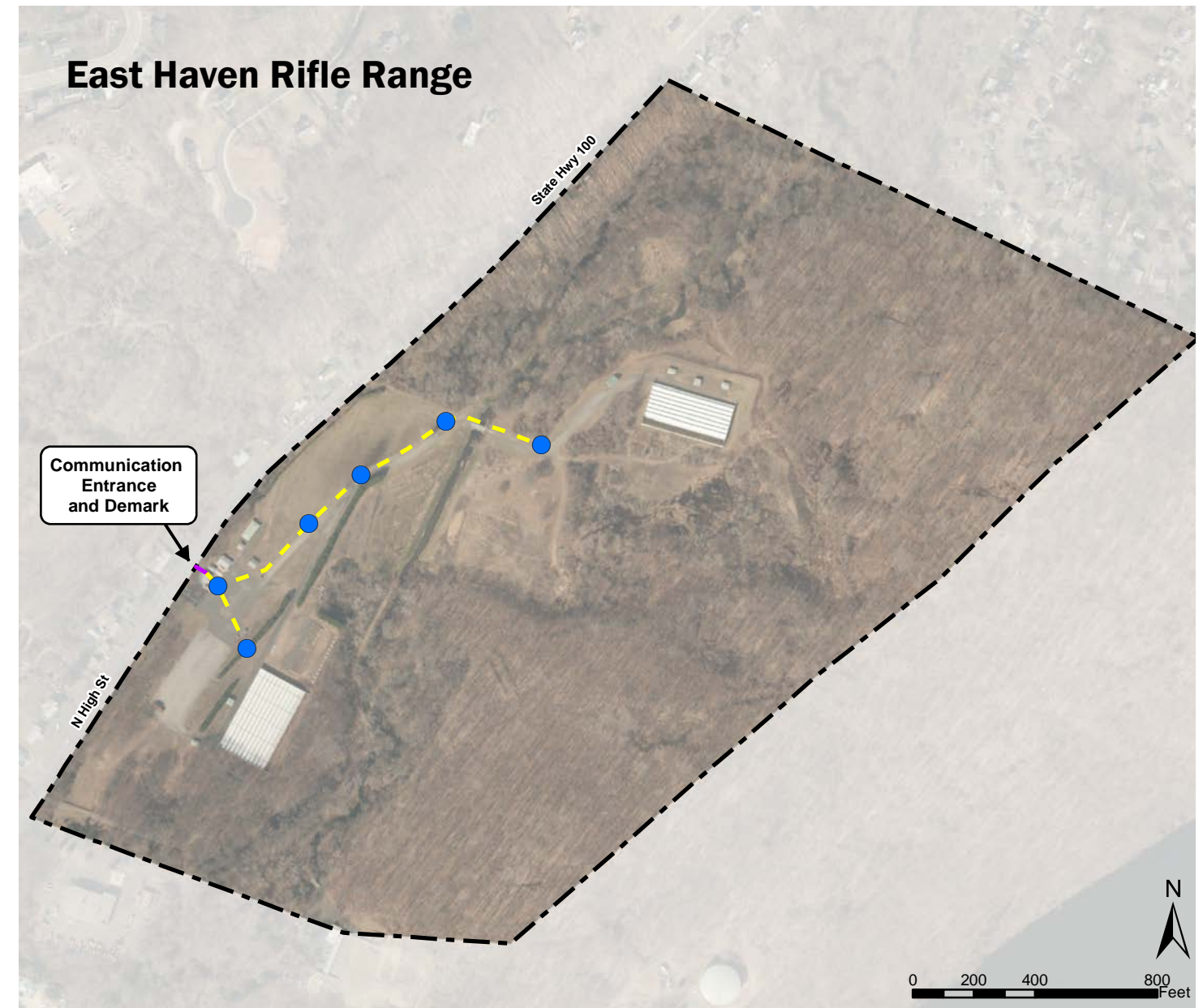


**FIGURE 66:  
CAMP NIANTIC  
COMMUNICATIONS  
PLAN**

### EAST HAVEN RIFLE RANGE DESCRIPTION

The existing underground communication infrastructure within East Haven will be extended from the existing demarcation point to a manhole to allow for future building communication requirements. Future buildings will be required to provide conduit to the nearest communication manhole and required cabling back to the base demarcation point.

Additional underground communication duct bank systems have been indicated by the dashed yellow lines on the map and are labeled "Future Communication Line" in the legend.



**FIGURE 67:  
EAST HAVEN  
COMMUNICATIONS  
PLAN**

### CAMP NIANTIC OVERVIEW

The existing underground communication infrastructure within Camp Niantic is adequate to support the future buildings. Future buildings will be required to provide conduit to the nearest communication manhole and required cabling back to the base demarcation point. This is the cost indicated in the adjacent table.

### EAST HAVEN RIFLE RANGE OVERVIEW

The existing underground communication infrastructure within East Haven will be extend to support the future buildings. Future buildings will be required to provide conduit to the nearest communication manhole and required cabling back to the base demarcation point.

### EAST HAVEN RIFLE RANGE IMPROVEMENTS

It is assumed a separate communication infrastructure project will be required to provide the necessary infrastructure in place for the future build-out of the East Haven Rifle Range.

- + Infrastructure for the rifle range area would include a new communication duct bank system that would comprise two 4-inch conduits (at a minimum) supported by handholes spaced every 400 feet. The linear foot rough cost estimate for communication is \$40 per foot. Each communication handhole would cost \$2,000.
- + Proposed East Haven Rifle Range communication distribution system is approximately 2,000 feet. Cost will be \$80,000 for ductbank and \$12,000 for handholes. This cost is included in the Simulator - EST project cost.

**TABLE 23: CAMP NIANTIC PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
MILCON	1	e	Readiness Center - DET MED DET <sup>1</sup>	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
OTHER	1	k	Post Exchange	\$0	Assumed the existing communication infrastructure can handle this renovation.
MILCON	2	g	Exam Space <sup>1</sup>	\$36	Assumed Infrastructure Upgrade Project completed. Cost includes 300 feet of ductbank from nearest manhole and three handholes.
MILCON	8	f	RTI Billets	\$0	Assumed the existing electrical infrastructure can handle this addition.
SRM	8	d	DPW - Canopy Building	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	10	m	POV/MVP Parking	\$0	Assumed No Communication Infrastructure Required.
MILCON	12	j	Post HQ	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	13	p	Roadway Realignment	\$0	Assumed No Communication Infrastructure Required.
MILCON	15	h	Dining Facility - Transient (400 PN)	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	14	o	804 Renovate back to Barracks <sup>4</sup>	\$0	Assumed the existing communication infrastructure can handle this renovation.
MILCON	16	c	Chapel	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
MILCON	17	b	Troop Dispensary/Medical Clinic <sup>1</sup>	\$36	Assumed Infrastructure Upgrade Project completed. Cost includes 300 feet of ductbank from nearest manhole and three handholes.
SRM	16	i	General Instruction (The Point)	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
SRM	17	l	Pedestrian Way	\$0	Assumed No Communication Infrastructure Required.
SRM	20	n	Physical Fitness Center	\$0	Assumed the existing communication infrastructure can handle this renovation.
SRM	22	a	Company HQ-Transient	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
		TOTAL COST		\$156	

**TABLE 24: EAST HAVEN PROJECTS**

FUNDING SOURCE	PRIORITY RANKING	MAP ID	DESCRIPTION	COST (000)	COMMENTS
SRM	1	t	Grounds Maintenance Building	\$0	This building was already under design/construction at time of report.
SRM	2	s	Range Operations	\$0	Assumed the existing communication infrastructure can handle this renovation.
SRM	5	u	Perimeter/Compound Fencing	\$0	Assumed No Communication Infrastructure Required.
SRM	15	q	Simulator	\$92	Refer to East Haven Improvements Paragraph for cost associated with this project.
SRM	19	r	Range Instruction Canopies (2)	\$0	Assumed No Communication Infrastructure Required.
SRM	24	v	Ammunition Holding Area	\$12	Assumed Infrastructure Upgrade Project completed. Cost includes 100 feet of ductbank from nearest manhole and one handhole.
		TOTAL COST		\$104	

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A charrette was held 4-8 December at Stones Ranch Military Reservation. During the charrette, stakeholders collaborated with the planning team to develop three courses of action (COAs), which were then refined to create the preferred plan presented in this document.

## COURSES OF ACTION

During the charrette, stakeholders were divided into three groups, and each group was tasked with creating a COA based on specific guidelines. The alternatives and guidelines are presented on the following pages. Discussion regarding these COAs helped define the preferred plan.

*This appendix presents the alternatives considered in the development of the preferred alternative for the IMP.*



**KEY FEATURES**

- + Consolidated TMC and Exam Rooms
- + Introduced Transient Training Requirements at Stones Ranch
- + Moved Cantonment Area functions into Maneuver Area at Stones Ranch
- + East Haven Sim Center

# COA 1





### KEY FEATURES

- + Introduced Transient Training Requirements (Billets, Classrooms, DFAC, Supply Administration) into Stones Ranch
- + Moved Cantonment Area functions into Maneuver Area (Range Control and Ammunition Holding Area) at Stones Ranch
- + Building 804 back to billets
- + Added TMC space
- + Added Med Det space

# COA 3

# CONFERENCE MINUTES

The following pages contain notes from the Senior Leader Vision Session and the outbrief from the charrette.



***This appendix presents conference minutes that document the development of the CTC IMP.***

# SENIOR LEADERSHIP VISIONING SESSION



## MEETING NOTES

<b>Meeting:</b>	Connecticut Air National Guard, Connecticut Training Site Senior Leadership Visioning Session
<b>Date / Time:</b>	09 November 2017, 11:00
<b>Location:</b>	Governor William A. O'Neill State Armory 360 Broad Street Hartford, CT 06105-3706
<b>Attendees:</b>	See Attached Meeting Sign-in Sheet
<b>Note Taker:</b>	Ryan Kacirek

Representatives from Tetra Tech and Mead and Hunt (the Project Team) held a senior leadership visioning session with members from the Connecticut Army National Guard, including the Connecticut Adjutant General Major General Thaddeus Martin. The meeting was held at the Governor William A. O'Neill State Armory building located at 360 Broad Street, Hartford, CT 06105-3706. An attendance sheet is attached to this summary of the meeting. Meeting notes were recorded during the meeting. A summary of the topics discussed at the meeting along with information and discussion associated with each topic is provided below.

### Meeting Summarization

- Introduction of the Project and Description of the Purpose of the Project
  - Visioning session starts at 11:00
  - Jeff Turner, of Mead and Hunt, began the presentation by explaining the premise of the meeting and the goals for the meeting including gathering information from the Adjutant General (TAG) on what he envisions for the Connecticut (CT) Training Site.
  - Mr. Turner explained that the ultimate goal is to complete the Installation Master Plan (IMP) in the vision of the TAG, senior leadership, and key stakeholders
  - Mr. Turner stated that the Stones Ranch Training Site (SRTS) is currently a level 4 training center and is a Combat Training Center (CTC) but is missing some requirements of a level 4 facility.
  - Mr. Turner provided a key planning assumption, and the TAG confirmed, that the SRTS is an enduring site and that the mission of SRTS is an enduring mission.
- Project Schedule
  - Mr. Turner provided the project schedule to the TAG.
  - A number of team members had questions on how the schedule was established.
  - The Project Team confirmed with the TAG and senior leadership that a draft of the Master Plan is due 30 April 2018 and the finalized plan is due September 1. The Environmental Assessment (EA) is due September 1, pending funding.
  - The Project Team confirms that at 65% completion of the project, a formal presentation of the Plan will be provided to the key stakeholders of Connecticut National Guard.
- Army National Guard, CT ARNG, and CT Training Center and Mission and Vision Confirmation
  - Mr. Turner presented the Mission and Vision statements for the Army National Guard, CT ARNG and CT Training Center.
  - The TAG confirmed that the mission and vision statements were correct.

- Planning Criteria
  - Mr. Turner presented the planning criteria for the SRTS project and stated that previous plans are to be followed.
- Planning Assumptions
  - TAG stated that old work and previous plans should be followed. TAG requested that the Project Team revalidates projects on previous plans and reevaluates ranking of projects from previous plan.
  - TAG requested that the plan take into consideration the scoring process for Federal funding priorities and requested that the plan be aligned with the current scoring environment.
  - TAG stated that rule set 1 is "you got a plan, move it forward."
  - TAG stated that the Stones Ranch Readiness Center is a placeholder right now, in large part because previous plans and stakeholder groups identified the difficulty of getting a sewer line to the facility as a hindrance to the Readiness Center.
  - TAG emphasized that the unit in New London needs a readiness center. TAG asked the planning team to consider how a readiness center fits into the current scoring system.
  - TAG emphasized that projects slotted in the near term of the master plan need to fit the scoring system.
  - TAG emphasized that Camp Niantic needs more building space and building space is needed in order to accommodate a Troop Medical Clinic (TMC).
  - TAG noted that the TMC project is identified in the current master plan but in the undeveloped portion of that master plan.
  - TAG asked the planning team to consider if the TMC can be funded by Sustainment, Restoration, and Modernization (SRM) dollars.
  - TAG requested that creative ways be considered to utilize SRM dollars on modernization projects.
  - TAG requested that multiple funding sources be established.
  - Mr. Turner responded that the master plan will establish thresholds and will look at funding avenues.
- Facility Users
  - Mr. Turner explained that the plan will consider the needs of every user of the site.
  - Senior leadership noted that the facility user slide presented during the visioning session included both users of the SRTS and customers of the SRTS.
  - Senior leadership suggested that the Coast Guard be invited to the charrette process. TAG confirmed.
  - Senior leadership confirmed that they will examine the customer list and facility user list and determine the correct groups and individuals to invite to the charrette.
- Master Planning Process
  - Mr. Turner explained that the goal of the charrette is to establish a Preferred Alternative and, in order to make the charrette successful, the vision of the TAG is needed as the foundation for the Preferred Alternative.
- TAG Foundation for Preferred Alternative
  - Camp Niantic
    - The previous plan should be the basis for this plan.
    - The parade field at Camp Niantic can be used as additional development area.
    - There are no sacred cows with regard to older facilities.
    - Buildings are up for grabs for demolition to allow for a more functional building.

# SENIOR LEADERSHIP VISIONING SESSION

- Demolition can occur, but only when a replacement building has been established and funded.
- No Controlled Humidity Preservation (CHP) on Niantic Facility.
- If a running track is placed on the Niantic Facility, it needs to be a mile long and located off the road way for safety.
- Stones Ranch
  - TAG envisioned this area as being an area to enhance with training.
  - The runway should remain open.
  - A readiness center is viable, but not a top priority.
- East Haven
  - There is not much buildable space nor is much planned for the site other than what on the current plan.
  - TAG would like to see if there is an engineering solution or new technologies to cover deployment training events with weapons qualifications at the site.
- Charrette Week
  - Rudy Bauer, a representative from Tetra Tech, explained the charrette process and the intent of gathering information from key stakeholders.
  - Mr. Bauer provided an overview of the 5-day process including activities that will occur on each day.
  - Mr. Bauer and senior leadership staff discussed the importance of getting people to the charrette and the most important days for senior leadership to be present.
  - Mr. Bauer provided a schedule of the charrette week and established a location for the charrette with senior leadership.
  - Mr. Bauer provided an overview of work that will occur between the senior leadership visioning session and the week of the charrette.
- Meeting Adjourned

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# 35% REVIEW COMMENTS



CONNECTICUT ARMY NATIONAL GUARD  
CONSTRUCTION AND FACILITIES MANAGEMENT OFFICE

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## REVIEW COMMENTS

Date:

PROJECT NO.:  
PROJECT: [Installation Master Plan](#)

ATFP Security Office  
CS Construction Supervision  
DPM Design and Project Management  
ENV Environmental  
FMM Maintenance  
FMO Facilities Management Officer  
FMR Resources  
PnP Planning and Programming  
SAF Safety  
Unit

No.	Reference	Comment	By	Response	Fwd'd
<b>General</b>					
1	ES-2	CFMO should be Office not officer	FMO	Concur; change made.	
2	ES-4	Please label existing facilities	FMO	Concur; labels have been added where available by provided GIS	
3	ES-4	Show demo UTES space to be utilized how?	FMO	Concur; will show site as demo, convert to parking	
4	ES-4	simulator space is disconnected from sleeping area	FMO	Simulator space moved to new cantonment area	
5	ES-4	mess capability at SRMR	FMO	Mess capability has been programmed into the barracks space	
6	ES-4	E, BN maintenance shelter how different from U? and location ?	FMO	vehicle maintenance canopy for DPW and related functions in that area	
7	ES-4	Transient HQ don't match 200 PAX footprint	FMO	Building footprint reflects a 3 story building	
8	ES-4	Incorporate transient into RC?	FMO	Plan intended to split out from RC for costing reasons	
9	ES-5	CFMO admin should be incorporated into DPW	FMO	CFMO admin added to DPW	
10	ES-5	static display pads	FMO	Concur; static display pads have been added	
11	ES-5	range ops building closer to gate/road	FMO	Building updated to correct location	
	ES-6	Need to synch with LRCP	FMO	Concur; LRCP synched based on CFMO priorities provided	
	11	EHRH page with photo of Niantic Readiness Center	DFMO	Concur; changed to a Camp Niantic picture.	
	12	Demolition Range, maybe show 5lb limit, show ARC	DFMO	Arc not added to be left addressed by Range plan	
	13	Only state live fire training, we have demo range at SRMR	DFMO	Concur; language was updated	
	20	What about police radio tower, potential co-use?	DFMO	Concur; communications text updated	
	26	Constraints- add ARC for Demo range	DFMO	Concur; arc added to demo range.	
	ES-4	EHRH not shown (red dot) on CT map at bottom, and on all other pages	PnP	Concur; Maps updated with accurate EHRH	
	ES-4 & 5	Possibly callout existing facilities that are to remain	PnP	Concur; labels add to preferred plan	
	ES-5	River bank callout on Camp Niantic base map, please remove all	PnP	Concur; label removed	
	10	Delete Building 29 Dining Facility - Building has been demolished	PnP	Concur; building deleted	
	10	Add Building 49 - Simulation Building; 7,100 SF	PnP	Concur; building added	
	12	UTES - Unit Training Equipment Site not storage	PnP	Concur; label will be updated	
	16	Well for equipment Wash Rack is pointing to the Buffalo Filling Station. The well is located by the Wash Rack adjacent to the GOV parking area.	PnP	Label updated	
	17	Niantic Water & Fire describes the sanitary system and not the water system	PnP	Concur; section updated	
	18	Stones Ranch 3 Septic systems: Latrines/Showers; UTES; Range Control and Fire Station	PnP	Concur; change made.	
	18	Photo of storm water culvert is at the sea wall at Niantic and not Stones ranch	PnP	Concur; section updated and includes language about	
	20	Change Cold Storage to Unheated Storage	PnP	Concur; change made.	
	20	The photo of the communication tower is the State Police	PnP	Concur; adjusted caption	
	22	image.	PnP	Concur; road coloring adjusted	
	23	Parking area north of RC is GOV not POV	PnP	Concur; map to be adjusted	
	23	Parking area south of RTI is POV (large) and GOV (small)	PnP	Concur; map to be adjusted	
	23	Parking area north of 1st Street is POV	PnP	Concur; map to be adjusted	
	23	No reference of access to private residence	PnP	Concur; language to be updated	
	37	Readiness Center for the MED DET and TMC to be combined into single facility?	PnP	Facilities have been located next to each other	
	37	What is the proposed project at the existing Warehouse? Not called out only DPW	PnP	DPW maintenance building expanded and CFMO relocated	
	37	Is the intent to install new fence at East Haven to go over the river	PnP	Fence to be built to both sides of river in order to fence off road and parking lot associated with the neighboring property	
	9-11	review ISR ratings	PnP	Concur; ISR ratings to be reviewed	
	ES-6	Camp Niantic Readiness Center will include SRP/medical clinic space	PnP	Concur; added to description of project 8 here and in Section 3.	

COMMENTS

*This appendix presents in-progress review comments received during the CTC IMP process.*



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**REVIEW COMMENTS**

Date:

PROJECT NO.:  
 PROJECT: [Installation Master Plan](#)

ATFP Security Office  
 CS Construction Supervision  
 DPM Design and Project Management  
 ENV Environmental  
 FMM Maintenance  
 FMO Facilities Management Officer  
 FMR Resources  
 PnP Planning and Programming  
 SAF Safety  
 Unit

	ES-6	combine simulator project, one would include all the requirements	PnP	Project located near eachother and given similar priority rankings but left separate in order to make funding easier
	ES-6	Bundle more projects	FMO	Projects have grouped in accordance to phone call of 35% review
	ES-6	move (The Point) to SRM	FMO	Concur; Moved project i from the MILCON list to the SRM list and placed it at the bottom.
	ES-6	new rule \$2 Million cap, move more to SRM less MILCON	FMO	Concur; Will be adjusted during ROM Cost update
	ES-6	add renovate 804 back to barracks	FMO	Added to list
	26	add aquifer to constraints	FMO	Information is requested from town but not available at this time
	B2	remove USPFO warehouse bullet	FMO	Concur; text adjusted.
	36	slide ASP south	COS	Concur; Map to be adjusted.
	CIS list	nothing should be 85 Troop Command- maybe should be CTC	PnP	Adjusted
	32	<b>NOT A TRUE STATEMENT</b> brick and CMU choices should be implemented at Stones Ranch	PnP	Concur; will adjust text and caption on page 32.

# 65% REVIEW COMMENTS



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## REVIEW COMMENTS

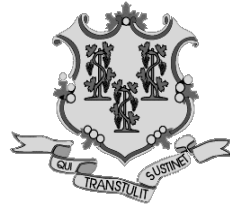
Date:

PROJECT NO.:  
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ATFP Security Office  
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FMM Maintenance  
FMO Facilities Management Officer  
FMR Resources  
PnP Planning and Programming  
SAF Safety  
Unit

No.	Reference	Comment	By	Response	Fwd'd
		Priority 1 (typical) They should be readiness center, not reserve center	CFMO	Noted. Updated in list	
		Priority 3, Range Ops not a MILCON project. IF the thought is to get a really large MILCON, that will have to slide down the priority.	CFMO	Noted. Has been changed to SRM project	
		Priority 4, MILCON to renovate 804? Make it an SRM	CFMO	Noted. Has been changed to SRM project	
		Several missing priorities (sequence skipped?)	CFMO	Priorities were addressed with FMO and CFMO and adjusted	
		Priority 10, ASP, needs to be much higher as it is a requirement for other projects	CFMO	Noted. Priority was adjusted.	
		Priority 12, Enlisted Barracks, is it really needed?	CFMO	Requirements analysis was double checked and based on projects proposed in the plan, additional barrack space was needed.	
		Priority 14, DO ACPs need to be in place before other projects	CFMO	ACPs moved up in priority list.	
		Priority 15, Why Aviation Sims at SRMR?	ATAG	Simulator change to generic place holder.	
		Priority 15.2, Do they mean C-12 or C-21? And change UH-64 to UH-60	CFMO	Simulators changed to generic place holder.	
	Page 14	typo "Entrance" not Enterance"	CFMO	Noted. Typo corrected	
	Page 26	Eight mile aquifer not shown	CFMO	Still waiting on receiving aquifer location information from the town	
	Page 27	Perimeter road misspelled "perimeter"	CFMO	Noted. Typo corrected	
	Page 41	Is this protected pedestrian way new? Are we really proposing 660 bollard around perimeter road? Please eliminate them and propose a different traffic calming solution	CFMO	Noted. Protected pedestrian way changed to a stripped protection.	
	Page 41	Agree with circulation plan, like it	CTC	Noted	
	Page 47	figure 43 text is jumbled	CFMO	Noted. Jumbled text removed.	

# 90% REVIEW COMMENTS



CONNECTICUT ARMY NATIONAL GUARD  
CONSTRUCTION AND FACILITIES MANAGEMENT OFFICE

360 Broad Street, Hartford, CT 06105-3795  
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## REVIEW COMMENTS

Date:

PROJECT NO.:

PROJECT: [Installation Master Plan](#)

ATFP	Security Office
CS	Construction Supervision
DPM	Design and Project Management
ENV	Environmental
FMM	Maintenance
FMO	Facilities Management Officer
FMR	Resources
PnP	Planning and Programming
SAF	Safety
Unit	

	No.	Reference	Comment	By	Response	Fwd'd
<b>General</b>						
	1	ES-4, ES-5	Happens at various points throughout the plan--no project should be a reserve center, they are all "Readiness Centers"	FMO	All reserve center text has been changed to Readiness Center	
	2	52	What is the definition of short, medium, long term projects? They don't synch up with the priorities listed?	FMO	The term of the projects is to provide context to the scale of the project. These are defined on page 1 of the plan - short term: 0-5 years; medium term: 6-10 years; long term: 11-20 years. Also added to table footnotes on page 52.	
	3	53	Numbering is out of order between table and maps	CFMO	Numbering has been corrected	
	4	52	Text references page 49 but page 49 does not provide information	CFMO	Text reference has been updated	

# NGB REVIEW COMMENTS

## Camp Niantic RPMP Notes

1. Section 1. Plan Alignment, Master Plan Planning Goals: Need to have objectives where the planning goals are elaborated upon by including measures of progress or statements on how the goals will be achieved.  
**Reply:** A planning objectives page has been added to Section 1.
2. Section 3, Framework Plan: Figures are needed for each district. Camp Niantic Framework Plan, Stones Ranch Framework Plan, East Haven Framework Plan are to be included in the Framework Plan or Vision Plan chapter. Although the purpose of a Framework Plan is well described, figures are needed in the case of the three small sites/districts that include any landmarks, nodes, transportation routes, land uses etc. that influence development.  
**Reply:** A framework plan for each of the three sites has been added to Section 3.
3. Section 3. Framework Plan, Visual Character, Building Materials, Materials and Colors, Building Envelope Standards, General Building Envelope Standards: Recommend either having a separate chapter called Installation Planning Standards or breaking out the Building Standards and including Street Envelope and Landscape standards within the Framework Plan Chapter.  
**Reply:** Street Envelope Standards and Landscape standards have been added to Section 3.
4. Section 3 Framework Plan, Circulation Plan, Figure 41, Proposed one-way road structure, Figure 42 Camp Niantic Circulation Plan: Need to address each road classification with a section. These standards need to show traffic lane widths, curb-radii, sidewalk and planting area dimensions and parking configurations for each street type.  
**Reply:** Road classifications have been added to section 3. These standards show traffic lane widths, sidewalk and planting areas for each road classification.
5. Landscape Standards are needed. These standards would address components such as appropriate type and placement of landscape elements etc. Must address street tree placement and type.  
**Reply:** Landscape standards are included in section 3. Landscape standards detail and utilize potential building and streetscape landscaping.
6. Capital Investment Strategy, needs to have RPLANS requirement data incorporated. One way of demonstrating this would be through an individual table for each catcode that gives the catcode description, existing area and either the excess or surplus. For example 11111-AAAAA enter catcode and description and include this table, 11111-AAAAA, 22222-BBBBBB and so forth. Apply this format all the way down to cover all the catcodes by each catcode group. Include a description of the requirement that you have and reference 415-12, 5-3 etc. Should list all the assets within each catcode in a table showing authorized space. For example all of the different types of spaces associated with a Readiness Center. Army National Guard Tenants should also be included.  
**Reply:** A requirement analysis was completed during the Charrette and the results of the RA are included in Appendix D.
7. Sustainability Planning Strategies: Need to incorporate strategies such as compact and infill development, recycling, and energy efficiency. Should also discuss examples of the proposed renewable or energy conservation strategies.  
**Reply:** A page has been added to section 1 to describe Sustainability Planning Strategies and practices that are incorporated through the entire plan. The framework plan addresses and implements many of the sustainability planning strategies.
8. Section 2. Existing Conditions, Constraints, Stones Ranch Military Reservation, Camp Niantic and East Haven, East Haven Rifle Range, Figure 29, Stones Ranch Constraints, Figure 30: Camp Niantic Constraints, Figure 31: East Haven Constraints: Probable cultural sensitive areas are noted. However, more actions are needed to demonstrate natural, cultural and historic resource management, such as land preservation, mission compatibility, and consideration of impacts to resources from projects.  
**Reply:** Probable cultural sensitive areas are detailed in the constrains map and developable areas maps. Constraints maps list the cultural sensitive areas and provide detail gathered during the charrette process and GFI collection stage. More detailed information on these resources is needed and will be collected during the Environmental Assessment. The developable areas map recommends limited development in culturally sensitive areas as a form of land preservation.
9. Healthy Community Planning Strategies: Recreational zones are discussed however actual recreational opportunities need to be mentioned. These opportunities aside from the coastal area should include walking trails, open space, bicycle routes, MWR facilities such as a physical fitness center and community gardens etc. Consider adding many of these features through a green infrastructure map for each site.  
**Reply:** The plan for Camp Niantic, the primary cantonment and transient site, includes the redevelopment of the physical fitness center, development of a pedestrian pathway connecting the reserve center area, transient area, and coastal area. Included with the pedestrian pathway is a dedicated one mile protected sidewalk around the installation. Additionally, the existing basketball courts are to remain. Stones Ranch has incorporate street designs that include sidewalks. As Stones Ranch develops and adds transient housing, healthy community planning strategies will be incorporated during the site plan phase.
10. Defensible Planning Strategies: More information is needed on how the installation is prepared for or has considered AT/FP. Some figures or diagrams demonstrating required standoffs would help in this regard.  
**Reply:** AT/FP standards are addressed in the Building Envelope Standards page in section 3 and in the constraints map in section 2. The CTC is limited in developable area at all three locations and because of this must primarily address AT/FP and defensible planning standards through construction techniques that improve the resiliency of new buildings. The developable areas map provides a mandatory 40' perimeter setback at each location.

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# REFERENCES

***This appendix presents the sources and references that support the development of the CTC IMP.***

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# DEFINITIONS

## A

A	Ampere (amp)
ACP	access control point
AHA	ammo-holding area
ASP	ammunition supply point
AT/FP	antiterrorism/force protection

## B

BES	building envelope standards
BN	battalion
BRL	building restriction line

## C

CFMO	Construction and Facilities Management Office
CI	Condition Index
CIS	capital investment strategy
CMU	concrete masonry units
CO	company
CPQC	Combat Pistol Qualification Course
CTARNG	Connecticut Army National Guard
CTC	Connecticut Training Center
CZ	clear zone

## D

DET	detachment
DOD	Department of Defense
DPW	Directorate of Public Works

## E

ECM	earth-covered magazine
ESQD	explosive safety quantity distance
EST	Engagement Skills Trainer

## F

FEMA	Federal Emergency Management Agency
FISP	Facility Inventory and Stationing Plans
FOB	Forward Operating Base

## G

GIS	geographic information system
GOV	government-owned vehicle
GP	general purpose
gpd	gallons per day
gpm	gallons per minute

## H

HAZMAT	hazardous materials
HDPE	high-density polyethylene
HQ	headquarters

## I

I	interstate
IBD	inhabitable building distance
IMP	installation master plan
IPR	in-progress review
ISR	Installation Status Report

## J

JFHQ-CT	Joint Force Headquarters-Connecticut
JLUS	joint land use study

## K

kV	kilovolt
kVA	kilovolt-ampere

## L

LED	light-emitting diode
LID	low-impact development
LZ	landing zones

# ACRONYMS AND ABBREVIATIONS

***This appendix presents the definitions of all acronyms and abbreviations contained in this CTC IMP.***

## M

MED	medical
MILCON	Military Construction
MOUT	Military Operations in Urban Terrain
MP	Military Police
MTT	Mobile Training Teams
MV	medium voltage
MVP	military vehicle parking

## N

NGB	National Guard Bureau
-----	-----------------------

## P

PN	personnel
POI	Program of Instruction
POV	privately owned vehicle
PTR	public traffic route
PVC	polyvinyl chloride
PX	post exchange

## R

RMTK	Range Management Tool Kit
ROM	rough order of magnitude
RPI	Real Property Inventory
RPLANS	Real Property Planning and Analysis System
RTI	Regional Training Institute

## S

SDZ	safety danger zones
SF	square feet
SRM	Sustainment, Restoration, and Modernization
SRP	Sustainable Range Program
SRP	Soldier Readiness Processing
SWOT	strengths, weaknesses, opportunities, and threats

## T

TAG	The Adjutant General
TMC	Troop Medical Center

## U

UO	urban operations
USPFO	United States Property and Fiscal Office
UTES	Unit Training Equipment Site

# SPREADSHEETS

See the following page for the ROM costs calucations spread-sheets.



***This appendix presents the spreadsheet used to calculate ROM costs for this CTC IMP.***

**TABLE 25: STONES RANCH ROM COST CALCULATIONS**

PROJECT	ROM COST	CATCODE	UTILITY COST (000)					TOTAL UTILITY COST	BUILDING SIZE (SF)	AREA ADJUSTMENT	PAX AVERAGE BUILDING SIZE (SF)	SIZE RATIO	ADJUSTMENT FACTOR	UOM COST (\$/UOM)	BUILDING COST
			Electrical	Water	Wastewater	Stormwater	Communications								
Infrastructure Upgrade	\$4,547,000		1051	1100	1800	0	596	\$4,547,000							
Readiness Center - 250th Multi-Role Bridge Co	\$19,070,279	17140	75	50	28	60	12	\$225,000	64,960	1.15	50,000	1.299	0.974	259	\$18,845,279
Loading Ramp	\$228,581	14970	10	0	0	85	0	\$95,000	5,000	--	--	--	--	--	\$133,581
ACP (Full)	\$3,413,507	14113	50	50	28	30	50	\$208,000	4,190	1.15	4,190	1.000	1	665.25	\$3,205,507
ACP (Basic)	\$450,708	14113	50	50	28	30	50	\$208,000	250	1.15	4,190	0.060	1.269	665.25	\$242,708
Enlisted Barracks - Transient	\$15,048,530	72114	50	50	28	117	12	\$257,000	60,000	1.15	41,000	1.463	0.97	221	\$14,791,530
Battalion Maintenance Shelter	\$3,730,816	21409	50	50	28	60	12	\$200,000	13,000	1.15	14,039	0.926	1.005	235	\$3,530,816
Range Operations	\$2,676,610	17122	25	530	450	25	12	\$1,042,000	5,000	1.15	1,800	2.778	0.92	309	\$1,634,610
Ammunition Supply Point	\$32,000		10	0	0	10	12	\$32,000	200						See note 5
DPW Warehouse	\$3,161,825	44220	50	50	28	60	12	\$200,000	10,000	1.15	25,000	0.400	1.275	202	\$2,961,825
Company HQ - Transient	\$2,563,693	14184	50	50	28	60	12	\$200,000	8,222	1.15	11,000	0.747	1.033	242	\$2,363,693
DPW Maintenance/Admin	\$3,094,355	21418	50	50	28	30	12	\$170,000	5,405	1.15	18,360	0.294	1.275	369	\$2,924,355
Battalion HQ - Transient	\$2,043,710	14184	50	50	28	60	12	\$200,000	5,196	1.15	11,000	0.472	1.275	242	\$1,843,710
DPW Roads and Grounds	\$2,501,471	85110	0	0	0	0	0	\$0	32465 SY	1.15--	--	--	--	67-	\$2,501,471
Battalion Support/Ration Breakdown	\$1,276,965	44224	50	50	28	60	12	\$200,000	7,204	1.15	2,800	2.573	0.942	138	\$1,076,965
Traffic Circulation (Pave Roadways)	\$220,602	85110	0	0	0	0	0	\$0	20626 SY	1.15--	--	--	--	9.3-	\$220,602
Unit Training Equipment Site	\$8,269,821	21409	50	50	28	85	0	\$213,000	31,885	1.15	14,039	2.271	0.935	235	\$8,056,821
Vehicle Maintenance Canopy	\$849,821	14179	50	30	28	30	0	\$138,000	5,000	1.15	2,600	1.923	0.945	131	\$711,821
General Instruction	\$1,004,159	17120	50	50	28	125	12	\$265,000	3,513	1.15	40,000	0.088	1.275	287	\$739,159
Wash Rack	\$793,288	14955	50	45	38	85	0	\$218,000	10,000	1.15-	1600	6.25	.92	108.75	\$575,288
Simulator	\$2,506,449	44220	50	50	28	60	12	\$200,000	6,500	1.15	25,000	0.260	1.175	202	\$2,306,449
Simulator	\$2,506,449	44220	50	50	28	60	12	\$200,000	6,500	1.15	25,000	0.260	1.175	202	\$2,306,449
Simulator	\$2,506,449	44220	50	50	28	60	12	\$200,000	6,500	1.15	25,000	0.260	1.175	202	\$2,306,449
Simulator	\$2,506,449	44220	50	50	28	60	12	\$200,000	6,500	1.15	25,000	0.260	1.175	202	\$2,306,449
General Purpose Instruction 3,000 SF add to Battalion HQ	\$831,221	17120	50	50	28	60	12	\$200,000	3,000	1.15	40,000	0.075	1.275	287	\$631,221
<b>TOTAL</b>	<b>\$83,624,896</b>		<b>2,071</b>	<b>2,555</b>	<b>2,792</b>	<b>1,312</b>	<b>8,88</b>	<b>\$9,618,000</b>							<b>\$76,216,756</b>

1. ACP (Full) utilized CATCODE 14113 and included a Visitors Control Center, Search Office/Sentry Building, Gatehouse, and Guard Booth.
2. ACP (Basic) utilized CATCODE 14113 but only considered a 250 SF ACP, which was determined to be the minimum area for development of an ACP that provides only the critical, physical aspects of an ACP needed to ensure a controlled access. The 250SF was determined during the requirement analysis conducted during the charrette.
3. Battalion Maintenance Shelter utilized CATCODE 21409 Army Reserve Vehicle Maintenance Shop, Medium to determine the cost of the building.
4. Range Operations utilized CATCODE 17122 Operations/Storage Bld - Small.
5. Ammunition Holding Area does not provide a ROM cost at this time. During the charrette, the CTC indicated that single unit magazine would be used as the AHA. A request to vendors to explore the cost of installing a single unit magazine has been placed but mission critical information is needed to determine the cost; thus no cost is provided here.
6. DPW warehouse utilized CATCODE 44220, Hi-Bay, >16' Clear Stack Height.
7. Company HQ - Transient utilized CATCODE 14184 BN HQ - Transient Training (ORTC) as CATCODE 14186 did not contain sufficient information to develop a ROM cost.
8. DPW Maintenance/Admin utilized CATCODE 21418 Area Maintenance Support Activity/ECS, 0-60,000 SF.
9. DPW Roads and Grounds utilized CATCODE 85110 10" Thick, Reinforced Concrete Pavement. DPW Roads and Grounds project will upgrade pavement in the DPW area at Stones Ranch along with upgrading road pavement servicing the area.

**TABLE 26: CAMP NIANTIC ROM COST CALCULATIONS**

PROJECT	ROM COST	CATCODE	UTILITY COST (000)					TOTAL UTILITY COST	BUILDING SIZE (SF)	AREA ADJUSTMENT	PAX AVERAGE BUILDING SIZE (SF)	SIZE RATIO	ADJUSTMENT FACTOR	UOM COST (\$/UOM)	BUILDING COST
			Electrical	Water	Wastewater	Stormwater	Communications								
Readiness Center - DET MED DET	\$5,433,848	17140	75	90	35	75	12	\$287,000	15,000	1.15	50,000	0.300	1.152	259	\$5,146,848
Post Exchange	\$5,548,873	44220	92	50	25	60	0	\$227,000	12,346	1.15	25,000	0.494	1.098	202	\$5,321,873
Exam Space	\$4,363,775	55010	81	81	25	60	36	\$283,000	10,000	1.15	34,000	0.294	1.175	302	\$4,080,775
RTI Billets	\$16,009,201	72114	0	75	25	60	0	\$160,000	64,960	1.15	41,000	1.584	0.96	221	\$15,849,201
DPW - Canopy Building	\$490,243	14179	92	50	25	0	12	\$179,000	2,000	1.15	2,600	0.769	1.033	131	\$311,243
DPW - Canopy Building renovate existing warehouse	\$1,293,911	44220						\$0	10,000	1.15	25,000	0.400	1.114	202	\$1,293,911
POV/MVP Parking	\$3,747,472	85210	10	0	0	405	0	\$415,000	33308 SY	1.15	--	--	--	87	\$3,332,472
Post HQ	\$2,637,530	61050	50	50	75	23	12	\$209,500	5,703	1.15	4,700	1.213	0.982	377	\$2,428,030
Roadway Realignment & RC POV Parking	\$85,000		10	0	0	75	0	\$85,000							See note 15 for further explanation
Dining Facility - Transient (400PN)	\$8,017,475	72212	50	50	25	30	12	\$167,000	15,000	1.15	18,000	0.833	1.025	444	\$7,850,475
804 Renovate back to Barracks	\$1,607,206	72114	0	0	0	0	0	\$0	10,764	1.15	41,000	0.263	1.175	221	\$1,607,206
Chapel	\$2,116,517	73017	50	50	25	30	12	\$167,000	4,000	1.15	23,000	0.174	1.232	344	\$1,949,517
Troop Dispensary/Medical Clinic	\$4,361,896	55010	50	125	75	75	36	\$361,000	10,000	1.15	34,000	0.294	1.152	302	\$4,000,896
General Instruction (The Point)	\$2,625,508	17120	50	50	25	60	12	\$197,000	13,000	1.15	40,000	0.325	1.132	287	\$2,428,508
Pedestrian Way	\$71,018	93220	1010	0	0	0	0	\$10,000	5470 SY	1.15	--	--	--	9.7	\$61,018
Physical Fitness Center	\$706,366	74028	0	0	0	0	0	\$0	3,854	1.15	62,000	0.062	1.275	250	\$706,366
Company HQ Transient	\$1,901,018	14184	65	125	75	20	12	\$297,000	5,317	1.15	11,000	0.483	1.084	242	\$1,604,018
<b>TOTAL</b>	<b>\$60,705,661</b>		<b>685</b>	<b>796</b>	<b>435</b>	<b>973</b>	<b>156</b>	<b>\$3,044,500</b>							<b>\$57,972,357</b>

10. Pave Roadways utilized CATCODE 85110 3" Thick Plant Mix AC Paving. This project looks to improve pavement throughout Stones Ranch.
11. General Instruction utilized CATCODE 17120 with a 50% cost reduction to the ROM Cost estimate applied as General Instruction is a renovation project and not new construction.
12. Each Simulator project utilized CATCODE 44220 Hi-Bay,>16' Clear Stack Height and applied a 30% increase for additional air-conditioning.
13. Post Exchange utilized CATCODE 44220 Hi-Bay,>16' Clear Stack Height and applied a 30% increase for additional air-conditioning.
14. DPW - Canopy Building Renovate Existing Warehouse utilized CATCODE 44220 Hi-Bay,>16' Clear Stack Height and applied a 50% cost decrease to the ROM Cost estimate because it is a renovation project. The cost of the new canopy is built into the project cost.
15. Post HQ utilized CATCODE 61050 Administrative Fac, General Purpose, Small and added an additional 30%.
16. Roadway realignment utilized CATCODE 11110 Pavement Markings, Taxiway, Painting White or Yellow Stripes and 85110 10" Thick, Reinforced Concrete Pavement. 134,628.22 SF of pavement are planned to be restriped at a cost of \$1.3 per SF. A total of 6170.18 SY of new roads will be created at a cost of \$67 per SY. The ROM Cost for striping will be \$175,017 and the ROM Cost for the new roads will be \$413,402.
17. 804 renovate back to barracks utilized CATCODE 72114 ORTC Transient Training Barracks and applied a 50% cost reduction to the ROM Costs as this project is a renovation project.
18. General Instruction (The Point) utilized CATCODE 17120 General Instruction Building and applied a 50% cost reduction to the ROM Cost estimate because it is a renovation project.
19. Pedestrian Way utilized CATCODE 93220 Landscape and Planting Mix & Spread Conditioned Soil. This project will utilize an existing path but improvements along the path to the soil to plant trees and create a more pedestrian friendly environment are needed and are reflected in this ROM Cost.
20. Physical Fitness Center utilized CATCODE 74028 Physical Fitness Center and applied a 50% cost reduction to the ROM Cost estimate because it is a renovation project.
21. Perimeter/Compound Fencing utilized CATCODE 87210 6' Hi, 9 GA Galv Steel 3 Strands Barb Wire, SCH 40, W.2" Posts @ 10' OC, INCL Excav & Conc.
22. Range Instruction Canopies utilized CATCODE 75061 to account for the two proposed range instruction canopies.

**TABLE 27: EAST HAVEN ROM COST CALCULATIONS**

PROJECT	ROM COST	CATCODE	UTILITY COST (000)					TOTAL UTILITY COST	BUILDING SIZE (SF)	AREA ADJUSTMENT	PAX AVERAGE BUILDING SIZE (SF)	SIZE RATIO	ADJUSTMENT FACTOR	UOM COST (\$/UOM)	BUILDING COST
			Electrical	Water	Wastewater	Stormwater	Communications								
Grounds Maintenance Building	\$5,532,337	44220	0	0	0	0	0	\$0	23,697	1.15	25,000	0.948	1.005	202	\$5,532,337
Range Operations	\$815,593	17122	0	65	25	22	0	\$112,000	2,000	1.15	1,800	1.111	0.99	309	\$703,593
Perimeter/Compound Fencing	\$100,811	87210	0	0	0	0	0	\$0	2705.6 LF	1.15	-	-	-	32.4	\$100,811
Simulator - EST	\$2,565,449	44220	10	100	35	22	92	\$259,000	6,500	1.15	25,000	0.260	1.175	202	\$2,306,449
Range Instruction Canopies (2)	\$279,672	75061	10	0	0	0	0	\$10,000	1,200	1.15	134,836				\$269,672
Ammunition Holding Area	\$22,000		10	0	0	0	12	\$22,000	200						See note 5
<b>TOTAL</b>	<b>\$8,770,455</b>		<b>30</b>	<b>165</b>	<b>60</b>	<b>44</b>	<b>104</b>	<b>\$403,000</b>							<b>\$8,912,861</b>