FINAL
ENVIRONMENTAL ASSESSMENT

Veterans' Cemetery

Middletown, Connecticut
DCS Project No. BI-C-283
MMI #1266-37

NOVEMBER 2014

Sponsoring Agency:
U.S. Department of Veterans Affairs
and
State of Connecticut
Department of Veterans' Affairs

Participating Agencies:
State of Connecticut
Division of Construction Services

Prepared by:
Milone & MacBroom, Inc.
In Consultation with
Division of Construction Services
Environmental Planning

Project: Middletown Cemetery Expansion

Project Number: BI-C-283

Location: Middletown, Connecticut (See Figure 1)

Sponsoring Agency: U.S. Department of Veterans Affairs and Connecticut Department of Veterans' Affairs
Participating Agencies: Division of Construction Services (DCS)

Date: November 2014

EA Distribution List:
CT Department of Energy and Environmental Protection
CT Council on Environmental Quality
CT Office of Policy and Management
CT State Historic Preservation Office

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1.0 INTRODUCTION

1.1 Project Background

Located at 317 Bow Lane in Middletown, Connecticut, the State Veterans' Cemetery is the largest State-operated cemetery in Connecticut. The site is set on 24 acres of land, approximately 12 of which are developed. The site currently accommodates approximately 7,400 occupied burial sites, an administration building within which is a non-denominational chapel, and an internal vehicular travelway to access the burial sites. The cemetery was established in 1985.

The cemetery is under the administrative control of the Connecticut Department of Veterans' Affairs (CTDVA). Those eligible for burial include veterans who served at least 90 days of active duty and were released from the Armed Forces under honorable conditions and who either entered the service as a resident of the State of Connecticut or died as a Connecticut resident. The spouses of veterans meeting these requirements are also eligible for burial.

Partial funding for this project would be through a United States Department of Veterans Affairs (USDVA) Grant.

1.2 Purpose and Need

Current issues of concern at the Veterans' Cemetery include limited capacity for additional grave sites, an inadequate internal access road system, loss of sections of the cemetery due to high water table, code compliance within the administration building, and inadequate parking.

As of 2012, a total of 7,123 gravesites were utilized. Projected gravesite utilization for 2013 is 479, bringing total utilization to 7,602 by December 2013. Based on the rate of filling, the cemetery is anticipated to be depleted of space in approximately 4.6 years.

CTDVA intends to construct a 3,000-niche columbarium, 3,200 feet of access driveway, limited parking, and improvements to the existing administration building. These improvements are needed in order to bring the building up to code, including handicapped access, and to extend the life of the cemetery by approximately ten years, thus providing the necessary time for CTDVA to locate and develop a new state cemetery. Each element is described in greater detail below.

Columbarium – A columbarium is similar to a mausoleum, but instead of spaces for caskets, a columbarium has niches for urns that contain cremated remains (sometimes called cremains). The proposed columbarium at the Veterans' Cemetery will consist of walkways that access constructed walls containing cremains. While the layout has not yet been designed, it is anticipated that the walls will be constructed to a height of approximately five feet. The area will be surrounded by a berm on three sides.

Access Driveway – The proposed access driveway extension will be internal to the site and generally on the periphery of the existing grave sites. The new access drive will obtain the maximum benefit of the remaining burial sites. New roadway will also gain access to the proposed columbarium.

Administration Building Upgrades – The administration building houses the administration and facilities offices as well as a small chapel that seats 35 to 45 people. The building requires ADA/code improvements as well as updates to the restroom facilities to bring them up to current code requirements. All planned improvements are internal to the existing building and sidewalk footprint. Building expansion is not contemplated.

Site Work – The new access drive and columbarium will require a limited amount of site work, including installation of new stormwater drainage systems. The existing stormwater collection system may also require upsizing to accommodate the additional stormwater flow.

2.0 ALTERNATIVES

2.1 Development of Alternatives

The following alternatives were developed for consideration:

a. No Action
b. Expansion of the Existing Facility
c. Siting and Construction of a New Facility
d. Use of Other Existing Facilities

2.2 Alternatives Retained for Detailed Analysis

The following alternatives were retained for detailed analysis:

a. No-Action (No-Build) Alternative: Under the No-Action Alternative, the CTDVA would be unable to meet its obligations beyond the year 2018. The No-Action Alternative is counter to the CTDVA's core values and mission of "Serving Those Who Served." For this reason, the No-Action Alternative was not considered further.

b. Expansion of the Existing Facility (Proposed Action): The Proposed Action contemplates expansion of the existing facility to extend its useful life by at least ten years. The

proposed columbarium provides an alternative to traditional burial and occurs within a significantly smaller footprint, thus retaining the newly accessible grave sites for casket burial.

c. Siting and Construction of a New Facility: It is possible that a new cemetery could be cited and constructed in Middletown or at another location in Connecticut. In fact, such an endeavor will be necessary, as even with the proposed expansion, the Middletown site has a finite capacity. Siting of a new cemetery is anticipated to take on the order of ten years from planning through implementation and the current projections forecast the Middletown cemetery with less than five years of capacity. For this reason, this alternative was not considered further.

d. Use of Other Existing Facilities: There are only two other cemeteries in Connecticut available for veterans. One is located in Rocky Hill near the Veterans' Hospital. This is a small cemetery that is reserved for veterans at the hospital. The site has constraints, including the presence of wetlands and floodplains. A second cemetery is located in Darien that dates back to the 1800s. The site was closed after it reached capacity. Neither of these locations is suitable to provide for the short-term or long-term needs for veterans in Connecticut. Therefore, these options were not considered further.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES OF THE ALTERNATIVES

3.1 Aesthetics

The Veterans' Cemetery is located on Bow Lane, a local roadway in the City of Middletown. The area hosts a mix of low density single story residential dwellings, multi-story institutional, religious, and commercial buildings, as well as open spaces and fields. Bow Lane is a well maintained roadway, lined with mature trees and an abundance of green space adjacent to it.

The proposed columbarium, access drive, and site improvements are consistent with the current aesthetics of site and the surrounding neighborhood. No building construction is proposed at the site and the proposed access road, grave sites, and columbarium will have an aesthetic quality that is similar to the existing site and surrounding neighborhood.

3.2 Land Use & Zoning

The land uses surrounding the Veterans' Cemetery include the following:

To the North: Institutional development associated with Connecticut Valley Hospital (CVH) is located to the north across Bow Lane. The CVH complex is characterized by a mix of buildings, parking areas, and maintained lawn.

To the East: A private cemetery, known as Calvary Cemetery of Saint Mary's is located immediately to the east of the Veteran's Cemetery.

To the Southeast: A large undeveloped wooded area is located to the southeast of the site.

To the South and Southwest: A commercial complex hosting building and parking areas is located to the south, accessed from Saybrook Road. To the southwest near the terminus of Holmes Road is a medical building complex with two buildings and a large parking lot. This site is also accessed from Saybrook Road, which runs adjacent and parallel to Route 9.

To the West: Numerous residential dwellings are located along Holmes Drive, all of which are owned by CVH.

The existing cemetery and the expansion areas are currently zoned ID (Institutional Development). According to the City of Middletown Zoning regulations, permitted uses in the zone are limited to governmental, health, educational, charitable, and religious organizations. The expansion of the cemetery is consistent with the charitable mission of CTDVA and the religious needs of the State's veterans.

Residential zones (R-30 and R-45) are located to the east and north of the existing cemetery, respectively. While residences, farming, residential businesses, assisted elderly housing, and accessory apartments are permitted uses in this zone, special exception uses include cemeteries, educational institutions, and group homes. Calvary Cemetery is located adjacent to the Veterans' Cemetery in the R-30 zone, and CVH is located in the R-45 zone consistent with the two latter special exception uses noted. The expansion of the cemetery is consistent with zoning designations and adjacent parcels to the north and east.

The MX zone is located to the south of the cemetery. Permitted uses include single and two-family dwellings and residential businesses, while special exception uses include a variety of other residential, light commercial, and light industrial uses, including private club and service organizations and religious facilities. The expansion of the cemetery is consistent with the zoning of adjacent parcels to the south.

The proposed action will not change the overall land use of the area. It will convert a portion of land that is currently open lawn to uses that are consistent with the existing cemetery. The proposed expansion is also consistent with existing zoning of the site and surrounding area.

3.3 Air Quality

The State of Connecticut is designated as meeting attainment goals for carbon monoxide, nitrogen dioxide, lead, sulfur dioxide, and particulate matter (less than 10 micrometers in diameter or PM_{10}). Middletown has attainment status for $PM_{2.5}$ as well. Middletown, along with a significant portion of the state, is designated non-attainment for 8-hour ozone (80 parts per billion (ppb) actual as compared to the 75 ppb standard).

The cemetery does not utilize air emitting equipment that would require an air quality permit. Cremation does not take place on-site. The existing administrative building is heated with oil. No air emitting equipment will be placed or used on site associated with the proposed action.

Primary short-term air quality concerns associated with the proposed action center on construction related activities and their potential to generate fugitive dust and mobile source emissions. Various methods of controlling fugitive dust include the use of water or wetting agents on exposed soil and gravel areas, periodic sweeping and daily rinsing of truck tires, and proper maintenance of portable generators, on-site machinery, and vehicles. Best management practices will be required of contractors relative to fugitive dust and air emissions. Contractors will be responsible for maintaining all construction equipment and adherence to DCS's contract specifications controlling diesel emissions.

The proposed construction will generate a minor amount of temporary increased traffic to the site, resulting in an increase in vehicular emissions. The increased traffic and associated emissions are expected to have a minimal temporary impact on air quality.

3.4 Cultural Resources

The State and Federal National Registers of Historic Places were consulted. Neither the site nor the general area surrounding it is listed on either registry. The site is not located within an historic district, nor is it eligible. The cemetery was brought into service in 1985, less than 30 years ago. The only structure on-site is the administration building, which was constructed in the early 1980s. No modifications or renovations are proposed to any historic structure. The land on which the existing cemetery and proposed expansion is not associated with tribal lands.

Section 106 review requires Federal agencies to evaluate the impacts of federally funded or permitted projects on historic properties. The Veteran's Administration's Federal Preservation Officer (FPO) and the Connecticut State Historic Preservation Office (SHPO) were contacted during the preparation of the subject EA. Copies of related correspondence are included in Appendix A.

SHPO's response indicates the proposed project "…may have an adverse effect on archaeological resources due to the moderate to high archaeological sensitivity in the project area and undisturbed nature of the property." The project planning and design will be fully coordinated with SHPO and the USDVA FPO as appropriate; however, given the age of the existing administration building and the nature of the land, no significant impact to cultural resources is expected.

3.5 Geology and Soils

The geology of the project area is glacial till (Stone, et. al., 2005). Surficial soils mapping available from the Connecticut Department of Energy & Environmental Protection (DEEP) indicates the presence of Ludlow silt loam throughout most of the expansion area, a limited area of Wethersfield loam near the Administration Building, and extremely stony Ridgebury, Leicester, and Whitman soils throughout the northern portion of the expansion area. The latter are poorly drained State of Connecticut wetland soils; although wetland areas are not associated with the open lawn areas (see Section 3.9).

The proposed action will locally affect the surficial materials in the footprint of the proposed access drive and columbarium and at individual burial sites. Proposed access drives will be constructed at grade. A small berm is proposed around the columbarium; however, the amount of fill is not expected to be significant. No deep excavation is proposed and bedrock is not anticipated to be encountered. The project will utilize appropriate soil and erosion controls during construction. Impacts to geology and soils will be of a minor and local nature. Stormwater runoff from soils will be managed. Refer to Section 3.6.

3.6 Hydrology and Water Quality

The site has a mild slope, with local runoff trending northeast towards Bow Lane. An existing stormwater catch basin and grassed lined swale runs along the northern portion of the project site. This storm drainage system is conveyed to a series of catch basins located within Bow Lane. A bituminous lined swale is located along the southeastern portion of the site and conveys stormwater to a catch basin located adjacent to the existing access drive.

New driveways will collect stormwater and discharge to the systems located within the existing access drive and Bow Lane. Pipe conveyance capacities and best management practices will be evaluated during the design phase.

3.7 Wildlife and Habitat

The existing environment largely consists of open grassy areas and is topographically flat. A few isolated trees have been documented on site, including American sycamore and Norway maple. The grassy fields are routinely mowed and wildlife habitat is relatively low in value due to the lack of diverse vegetative communities. The Connecticut Natural Diversity Data Base mapping (December 2012) was consulted. No protected species are mapped (i.e. no NDDB polygons) in the project area.

Similar habitat conditions are anticipated to exist following construction of the proposed expansion, which will include vegetated earthen berms and maintained lawn areas.

3.8 Noise

The project area is a quiet mixed use neighborhood, with the closest highway (Route 9) located less than a quarter mile away. None of the existing land uses or activities on or adjacent to the site produces significant noise.

A minor amount of construction related noise is anticipated associated with the construction of the access drive, columbarium, and improvements to the administration building. These will be localized, temporary, and limited to daytime hours. Long-term noise levels will be consistent with existing conditions.

3.9 Floodplains, Wetlands, and Coastal Zone Management

The project site is located approximately 0.8 miles from the Connecticut River and is located outside of any designated floodplain, floodway, or coastal zone management area.

According to the Natural Resource Conservation Service (NRCS) soil survey resource mapping, the site may contain poorly drained wetland soils (Ridgebury series) along the northern portion of the site. A site evaluation by a certified soil scientist and professional wetland scientist revealed that there are no poorly drained wetland soils on this site. The soils encountered consist of Udorthents (fill soils). These soils can be classified as being moderately well drained. Seasonal ponding may occur during heavy rains in certain areas on site due to restrictive soil layers (i.e. hardpan) observed within the upper 24 inches of the soil solum along the northern portion of the site.

No active groundwater table was observed within the upper 18 inches of the soil solum on the site. A manmade wet meadow wetland was observed off site and adjacent to the southern property line. No impacts to this wetland are anticipated, since it is located on adjacent properties that will not be disturbed as part of this project.

In summary, no impacts to floodplain, wetlands, or coastal zone management areas will occur as a result of this project.

3.10 Socioeconomics

The Veterans' Cemetery provides a free service to eligible veterans and their families. There are no fees or charges for the burial plots, for the opening or closing of a grave, or for the perpetual care of the headstone and gravesite. Headstones are uniform (white, upright marble markers) that are provided by the Federal Government free of charge and installed by cemetery personnel at no cost.

3.11 Community Services

The Veterans' Cemetery provides a service to a very specific community of Armed Forces and their spouses. Implementation of the proposed action will enable that service to continue. Due to the nature of the site, it does not significantly rely upon community services beyond service connections to public water, sewer, and stormwater utilities. Middletown police are employed only occasionally associated with the funeral service of a dignitary.

Based on the nature and magnitude of the proposed action, no negative impacts to community facilities or services are anticipated.

3.12 Solid and Hazardous Materials

No solid or hazardous waste materials are used or generated on-site except for normal office paper waste. No solid or hazardous materials will be generated associated with the proposed action. The lawn areas are treated for grub control and are fertilized by a contract professional lawn care service. Pesticides are not used.

3.13 Transportation and Parking

An existing network of access driveways allow for vehicular traffic within the site. The main public entrance is located off Bow Lane, as is a separate employee entrance. Existing parking is limited to the edges of the access drive. When funeral services are being held, parking renders all drives to one way travel, as there is not sufficient pavement width to park and accommodate two-way traffic. Formal parking is proposed for a limited number of vehicles, to be located near the proposed columbarium.

Burials are held Monday through Friday between 9:00 a.m. and 2:00 p.m. and Saturday between 9:00 a.m. and noon. As such, episodic traffic does occur at the site; however, outside of burial services, traffic to and from the site is limited. Construction will be coordinated so as to not interrupt funeral services.

A temporary increase in equipment and large vehicles will occur during the limited construction phase of this project. However, this will be temporary and minor.

3.14 Utilities

The administrative building and surrounding site are served by Middletown public water and sewer. Electricity is provided by Northeast Utilities (Connecticut Light & Power). Telephone service is provided by AT&T. No gas or cable is delivered to the site.

No new utility services will be required as a result of the proposed action. New storm drainage structures will be constructed associated with the proposed access roads. These will be designed consistent with the Connecticut Council on Soil and Water Conservation *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* to protect nearby wetlands and watercourses.

3.15 Environmental Justice

Middletown has not been identified as an environmental justice community. Neither the existing cemetery nor the proposed expansion will negatively impact minority or low-income populations. The project is not likely to significantly change air, water, land, buildings, or natural resources that will affect low income or minority groups.

3.16 Cumulative Impacts

Cumulative impacts are those that result from the incremental impact of a proposed action when added to other past, present, or reasonably foreseeable future actions. A minor amount of cumulative traffic will be generated as a result of burial services and visitors; additional land will be utilized for burial sites and the proposed columbarium; and additional impervious surfaces will be introduced as a result of the proposed access road and walkways. However, these cumulative effects will be minor, localized, and consistent with existing site uses.

3.17 Potential for Generating Substantial Controversy

This project is unlikely to generate substantial controversy, given the scale, scope, and consistency with existing and adjacent land uses and aesthetics.

4.0 PUBLIC INVOLVEMENT

Initial outreach efforts have included informal discussions with CVH representatives and initial consultation has taken place with the Connecticut SHPO and the FPO in the USDVA Office of Construction and Facilities Management. Public involvement may be sought as the project progresses.

5.0 MITIGATION

Numerous controls are proposed for minimizing short-term impacts to air quality from fugitive dust and other pollutant emissions. The following mitigation measures have been identified for reducing the length of time that soils are exposed, off-site tracking, and vehicle and equipment emissions:

1. Construction will be properly phased to minimize the length of time that soils are exposed before final materials are placed and landscaping is completed.

2. Exposed earth will be stabilized with grass, pavement, or other cover as early as possible.

3. Periodic sweeping of the construction site and driveway will be performed.

4. Truck tires and equipment leaving the construction site will be periodically cleaned.

5. Portable generators, on-site machinery, and vehicles will be properly maintained.

6. Adherence to DCS's contract specifications controlling diesel emissions will be achieved through the use air pollution control devices and "clean" fuels, including ultra-low sulfur diesel fuel (15 ppm sulfur). Additionally, anti-idling regulations and contract specifications will be followed.

The project is not expected to result in significant noise impacts. As such, mitigation measures are not proposed. While state regulations exempt construction related noise, with respect to noise generated during construction, noise abatement measures included in project construction specifications may include installation and maintenance of properly functioning muffler devices on construction equipment and compliance with the State of Connecticut noise performance standards.

The following additional measures will be undertaken to mitigate potential short-term, localized construction-related impacts:

1. Major excavation is not an element of this project. The proposed expansion will occur at or very near existing grades. Disposal any excavated soils will proceed in accordance with pertinent local, state, and federal regulations.

2. Potential construction-related water quality and runoff impacts will be mitigated through the proposed stormwater management plan and erosion control plan. Construction-related erosion controls will be designed and installed in accordance with The Connecticut Council on Soil and Water Conservation *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* to protect nearby wetlands and watercourses.

6.0 CONCLUSIONS

Based on the foregoing analysis, the proposed action is unlikely to have a significant impact on the surrounding environment.

7.0 LIST OF PREPARERS

The following individuals assisted in the preparation of this document:

Jeanine Armstrong Gouin, P.E., Vice President, Milone & MacBroom, Inc. was the primary author.

Matthew J. Sanford, Professional Wetland Scientist, Associate, Milone & MacBroom, Inc. contributed to the assessment of wetlands and wildlife habitat.

Scott J. Bighinatti, M.S., Senior Environmental Scientist, Milone & MacBroom, Inc. provided technical support relative to zoning, geology, surficial soils, and geographic information systems.

Jeffrey Bolton, Supervising Environmental Analyst, Division of Construction Services provided technical and administrative input.

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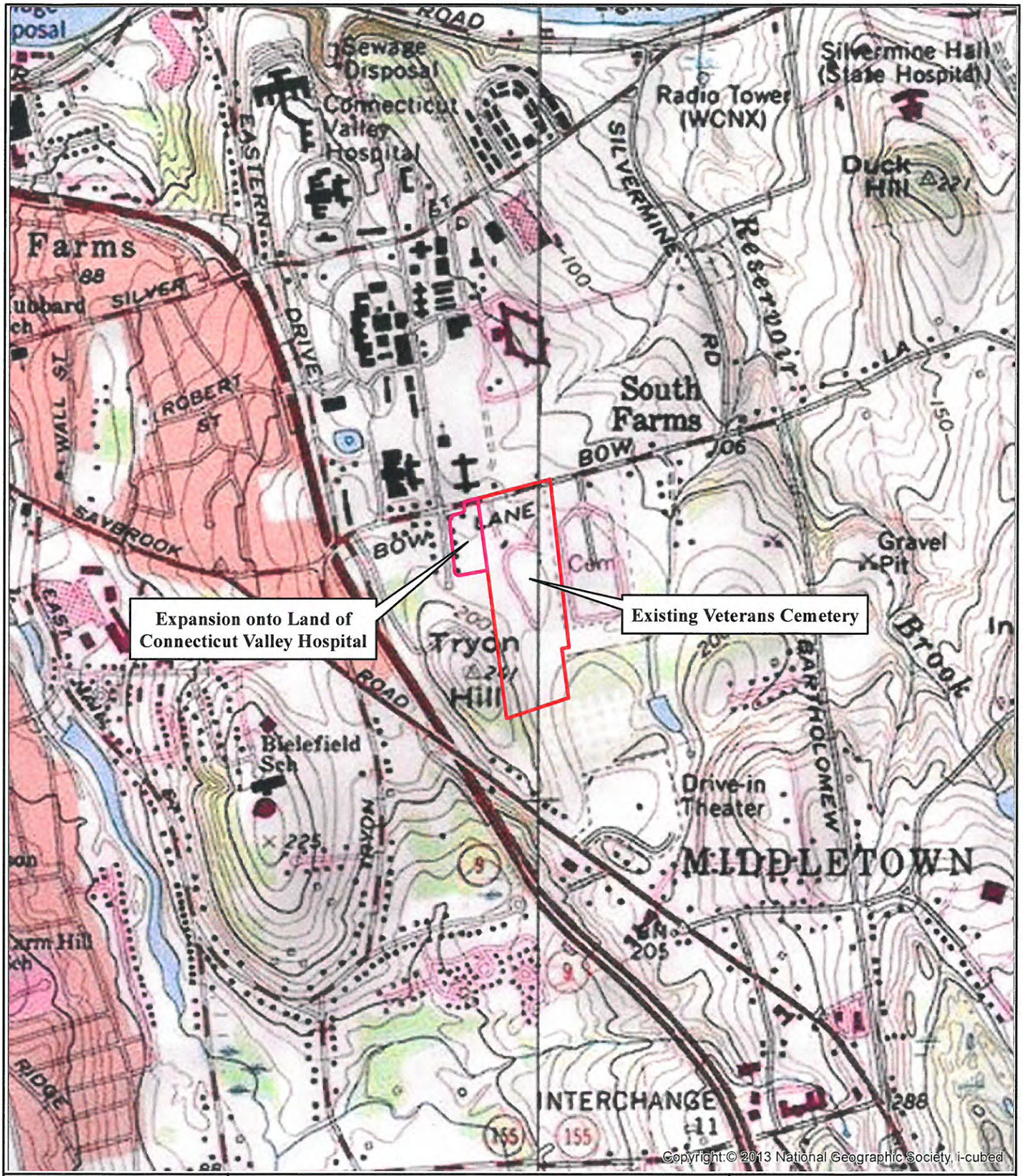
9.0 LIST OF ACRONYMS AND ABBREVIATIONS

CTDVA	CT Department of Veterans' Affairs
CVH	Connecticut Valley Hospital
DCS	CT Division of Construction Services
DEEP	CT Department of Energy and Environmental Protection

EA	Environmental Assessment
FPO	Federal Preservation Office
MMI	Milone & MacBroom, Inc.
NDDB	Natural Diversity Data Base
NEPA	National Environmental Policy Act
NRCS	Natural Resource Conservation Service
ppb	parts per billion
SHPO	State Historic Preservation Office
USDVA	United States Department of Veterans Affairs

~End~

APPENDED FIGURES



SOURCE(S):
USGS Topographic Map from ESRI
Parcel Mapping from CT DEEP
Expansion Area based on BL sketch 8/3/12

Figure 1: USGS Topographic Map

LOCATION:
Middletown, CT

N

Middletown Cemetery Expansion
Project Number: BI-C-283

MXD: W:\Design\1266-37-DE\GIS\Maps\Figure1.mxd

Map By: scottb
MMI#: 1266-37
Original: 6/3/2013
Revision: 6/3/2013
Scale: 1 inch = 1,000 feet

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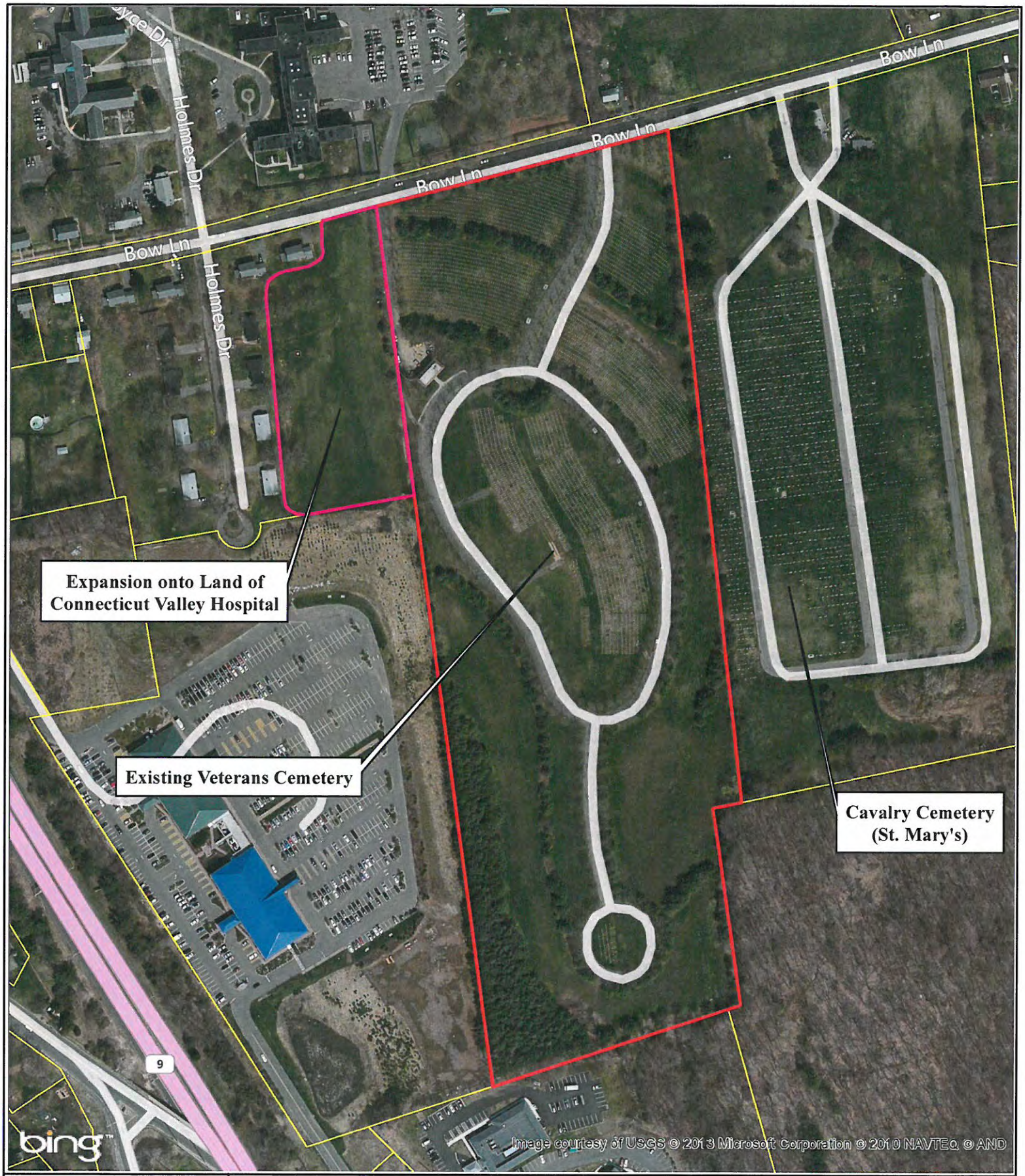

SOURCE(S):
2010 Aerial Photograph from Bing
Parcel Mapping from CT DEEP
Expansion Area based on BL sketch 8/3/12

Figure 2: Proposed Action - Plan View

LOCATION:
Middletown, CT

N

Middletown Cemetery Expansion
Project Number: BI-C-283

MXD: W:\Design\1266-37-DE\GIS\Maps\Figure2.mxd

Map By: scottb
MMI#: 1266-37
Original: 6/3/2013
Revision: 6/3/2013
Scale: 1 inch = 250 feet

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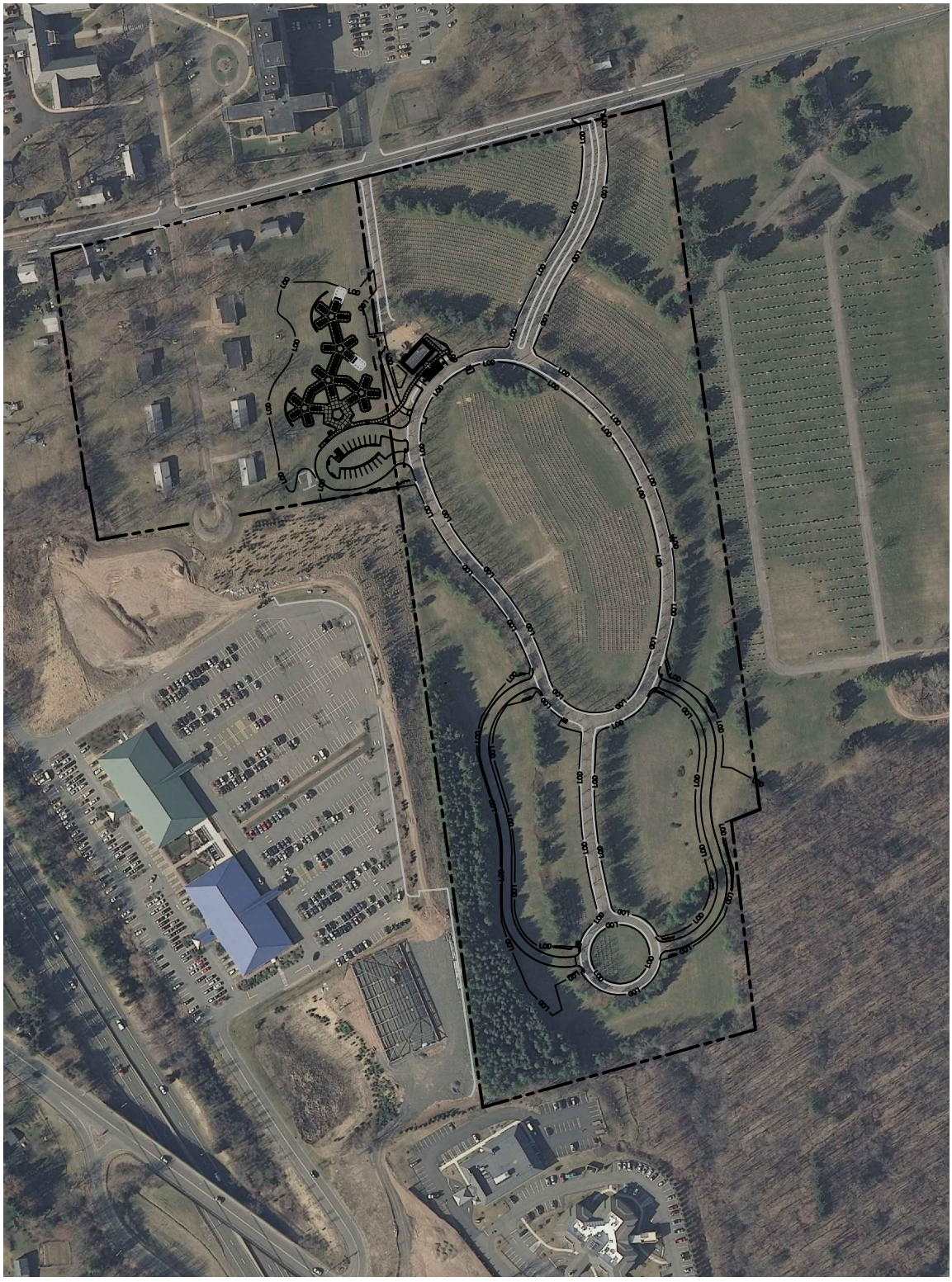

OVERALL PLAN WITH PROPOSED IMPROVEMENTS

PROJECT NORTH

1/26/2012 2:13 PM, JKELLEHER, G:\JOBS12\12C4226\DWG\GRAPHIC-OP12C422600.DWG, GRAPHIC-OP-0 8.5X11-200SC.
Xrefs: ; BD12C422602; XZ12C422601; XC12C422601; XY12C422601

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STATE OF CONNECTICUT
STATE VETERANS CEMETERY
MIDDLETOWN, CONNECTICUT
PROJECT NO. BI-C-283

Drawn By: JAK	Origin: –
Checked By: RG	DWG. Ref: C.0.0
Project No. 12C4226	Scale: 1"=300'
CAD File: GRAPHIC-OP12C422600	Date: 11/07/2014
Title: SK.C.0.0.2	

APPENDIX A
FPO and SHPO Correspondence

Engineering,
Landscape Architecture
and Environmental Science

MILONE & MACBROOM®

June 4, 2013

Ms. Kathleen Schamel
Federal Preservation Officer
Office of Construction & Facilities Management
Department of Veteran Affairs
811 Vermont Avenue NW
Washington, DC 20420

RE: Veterans' Cemetery Expansion
Middletown, Connecticut
NEPA Environmental Assessment
Project Number: BI-C-283
MMI #1266-37-1

Dear Ms. Schamel:

Milone & MacBroom, Inc. has been retained by the Connecticut Department of Construction Services (DCS) to undertake an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) for a proposed expansion of the Veterans' Cemetery at 317 Bow Lane in Middletown, Connecticut. The facility is available to Connecticut veterans who have served in the Armed Forces and their spouses.

The Middletown cemetery became operational in 1985. The site spans some 24 acres, approximately 12 of which are developed. The proposed expansion includes construction of a 3,000-niche columbarium, approximately 3,200 feet of access driveway, a limited amount of parking, and interior improvements to an existing administration building. The expansion will extend the capacity of the cemetery, which is projected to run out of space within the next five years. The areas of anticipated disturbance are shown on the attached sketch plan prepared by BL Companies.

The proposed roadway extension will be internal to the site and generally adjacent to the existing site access drive network. The roadway will gain access to the new columbarium and obtain the maximum benefit of the remaining burial sites. These improvements will require site work and additional stormwater drainage.

At this time, we respectfully request that your office review the potential project for cultural resource sensitivity. The EA must be completed by June 14, 2013, therefore, DCS respectfully requests that your review proceed on an expedited time line.

Should you have any questions, please do not hesitate to contact me at (203) 271-1773 or Jeffrey Bolton of DCS at (860) 713-5706.

Very truly yours,

MILONE & MACBROOM, INC.

Jeanine Armstrong Gouin, P.E.
Vice President

Enclosure

cc: Jeffrey Bolton, CT DCS

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Engineering,
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and Environmental Science

MILONE & MACBROOM®

June 3, 2013

Ms. Stacey Vairo
Deputy State Historic Preservation Officer
State Historic Preservation Office
Offices of Culture and Tourism
Department of Economic and Community Development
One Constitution Plaza, 2nd Floor
Hartford, CT 06103

RE: Veterans' Cemetery Expansion
Middletown, Connecticut
NEPA Environmental Assessment
Project Number: BI-C-283
MMI #1266-37-1

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The Middletown cemetery became operational in 1985. The site spans some 24 acres, approximately 12 of which are developed. The proposed expansion includes construction of a 3,000-niche columbarium, approximately 3,200 feet of access driveway, a limited amount of parking, and interior improvements to an existing administration building. The expansion will extend the capacity of the cemetery, which is projected to run out of space within the next five years. The areas of anticipated disturbance are shown on the attached sketch plan prepared by BL Companies.

The proposed roadway extension will be internal to the site and generally adjacent to the existing site access drive network. The roadway will gain access to the new columbarium and obtain the maximum benefit of the remaining burial sites. These improvements will require site work and additional stormwater drainage.

At this time, we respectfully request that your office review the potential project for cultural resource sensitivity. The EA must be completed by June 14, 2013 as a requirement for submittal of an agency grant application for the proposed facility expansion. As such, DCS requests that your review proceed on an expedited time line.

Should you have any questions, please do not hesitate to contact me or Jeffrey Bolton of DCS at (860) 713-5706.

Very truly yours,

MILONE & MACBROOM, INC.

Jeanine Armstrong Gouin, P.E.
Vice President

Enclosure

cc: Jeffrey Bolton, CT DCS

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Department of Economic and Community Development
State Historic Preservation Office

Connecticut
still revolutionary

April 3. 2013

Jeanine Armstrong Gouin, P. E.
Vice President, Milone & MacBroom, Inc.
99 Realty Drive
Cheshire, CT 06410

Subject: Veteran's Cemetery Expansion
Middletown, CT
NEPA Environmental Assessment
Project Number: BI-C-283
MMI #1266-37-1

Dear Ms. Armstrong Gouin:

The State Historic Preservation Office (SHPO) has reviewed the information submitted for the above-named project pursuant to the provisions of the National Environmental Policy Act (NEPA) and Section 106 of the National Historic Preservation Act.

Based on the information provided, the proposed expansion including the construction of a 3,000-niche columbarium, approximately 3,200 feet of access driveway, limited parking and interior improvements to an existing administration building may have an adverse effect on archaeological resources due to the moderate to high archaeological sensitivity in the project area and undisturbed nature of the property. As a result, the SHPO recommends that a professional reconnaissance level archaeological survey be undertaken within the project area.

For further information please contact me at (860) 256-2766 or stacey.vairo@ct.gov.

Sincerely,

Stacey Vairo

Stacey Vairo
Deputy State Historic Preservation Officer

cc: Jeffrey Bolton, CT DCS

APPENDIX B
List of Environmental Permits Required

List of Environmental Permits Required

Federal Permits – Since no wetland impacts are anticipated to occur at this site, a Section 404 permit will not be required from the Army Corps of Engineers. Similarly, a Section 10 permit will not be required for work in navigable waterways.

State Permits – A Flood Management Certificate may be required for storm drainage improvements at the site. Since wetlands will not be impacted, a 401 Water Quality Certificate is not believed to be required. No other state environmental permits have been identified at this time.

Local Permits – The DVA is a state agency. As such, this project will be exempt from local permitting.

APPENDIX C
Archeological Investigations

HISTORICAL PERSPECTIVES INC.

October 28, 2014

Catherine Labadia, Environmental Reviewer – Archeology
State Historic Preservation Office
Dept. of Economic & Community Development
One Constitution, Second Floor
Hartford, CT 06103

RE: ARCHAEOLOGICAL SURVEY
VETERANS CEMETERY EXPANSION
317 BOW LANE, MIDDLETOWN,
MIDDLESEX COUNTY, CONNECTICUT

Dear Ms Labadia,

The State Veterans Cemetery at 317 Bow Lane in Middletown is the largest State operated cemetery in Connecticut. The cemetery, established in 1985, is under the administrative control of the Connecticut Department of Veterans Affairs (CTDVA). The cemetery has limited capacity for additional grave sites, and the CTDVA has proposed expansion into an adjacent parcel, the Cemetery Expansion Site.

In general conformance with the CTDVA NEPA Interim Guidance for Projects and Section 106 requirements, Historical Perspectives, Inc. (HPI) completed the standard archaeological Phase I assessment of the Cemetery Expansion Site, as outlined in Connecticut's *Environmental Review Primer* (Primer). The enclosed document includes both a Phase IA Archaeological Assessment based on documentary research and a site inspection, as well as an addendum on limited testing. Limited testing was completed based on the IA recommendation to establish the actual presence/ absence of intact natural strata that might be sensitive for precontact archaeological resources and the need for standard, 15-meter interval shovel testing.

HPI recommends no additional testing or investigations for the Cemetery Expansion Site. Please contact me directly if you have questions on our findings.

Sincerely,

Cece Saunders
203-226-7654; cece@historicalperspectives.org

encl.
cc: J. Gouin, Milone & MacBroom

PHASE IA ARCHAEOLOGICAL ASSESSMENT

VETERANS CEMETERY EXPANSION

317 BOW LANE, MIDDLETOWN, MIDDLESEX COUNTY, CONNECTICUT

PHASE IA ARCHAEOLOGICAL ASSESSMENT
VETERANS CEMETERY EXPANSION
317 BOW LANE, MIDDLETOWN,
MIDDLESEX COUNTY, CONNECTICUT

Prepared For:

Milone & MacBroom
99 Realty Drive
Middletown, CT 06410

Prepared By:

Historical Perspectives, Inc.
P.O. Box 529
Westport, CT 06881

Author:

Faline Schneiderman, MA, RPA

October 2014

EXECUTIVE SUMMARY

The State Veterans Cemetery at 317 Bow Lane in Middletown is the largest State operated cemetery in Connecticut. The site is set on 24 acres of land, approximately 12 of which are developed. The site currently accommodates approximately 7,400 occupied burial sites, an administration building within which is a nondenominational chapel, and an internal vehicular travelway to access the burial sites. The cemetery, established in 1985, is under the administrative control of the Connecticut Department of Veterans Affairs (CTDVA). The cemetery has limited capacity for additional grave sites, and is expanding into an adjacent parcel, the Cemetery Expansion Site, where CTDVA Intends to construct a 3,000 - niche columbarium, 3,200 feet of access driveway, limited parking, and improvements to the existing administration building. These improvements would extend the life of the cemetery by approximately ten years, thus providing the necessary time for CTDVA to locate and develop a new state cemetery.

In response to Section 106 requirements, Historical Perspectives, Inc. (HPI) has completed the standard initial archaeological assessment of the Cemetery Expansion Site as outlined in Connecticut's *Environmental Review Primer* (Primer), a Phase IA Archaeological Assessment. To address the concerns of the review agencies, HPI conducted the survey on the Area of Potential Effect (APE), defined as any location within the limited project site that will experience new subsurface disturbance. Such IA Assessments, as outlined in the *Primer*, address the potential for significant archaeological features from both the historical era and the prehistoric era. The subsequent IB Testing is the standard process to determine presence/absence of the assessed project landscape.

HPI undertook the Phase IA of the project site in order to: 1) identify any potential archaeological resources that might have been present on the site; 2) ascertain the historical impacts/disturbances on the project parcel; and, 3) to inspect the project parcel for obvious signs of disturbance and establish existing conditions.

Documentary research found that the project site is in an area of known precontact use, and has the potential to produce precontact resources where it has not been previously disturbed. The documentary study found also that the there was no historical use of the project site beyond agriculture, so it only has minimal sensitivity for historical period resources, particularly unmapped agricultural-related outbuildings. The field inspection identified catch basins, utilities, and contouring that have impacted the project site.

Limited Phase IB subsurface testing is recommended to determine the actual presence/absence of intact natural strata that might be sensitive for precontact archaeological resources and the need for standard, 15-meter interval shovel testing.

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1.0 INTRODUCTION

The State Veterans Cemetery at 317 Bow Lane in Middletown is the largest State operated cemetery in Connecticut. The site is set on 24 acres of land, approximately 12 of which are developed. The site currently accommodates approximately 7,400 occupied burial sites, an administration building within which is a nondenominational chapel, and an internal vehicular travelway to access the burial sites. The cemetery, established in 1985, is under the administrative control of the Connecticut Department of Veterans Affairs (CTDVA). The cemetery has limited capacity for additional grave sites, and is expanding into an adjacent parcel, the Cemetery Expansion Site, where CTDVA Intends to construct a 3,000 - niche columbarium, 3,200 feet of access driveway, limited parking, and improvements to the existing administration building. These improvements would extend the life of the cemetery by approximately ten years, thus providing the necessary time for CTDVA to locate and develop a new state cemetery.

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2.0 RESEARCH DESIGN

The research design for the Phase IA Archaeological Assessment was based on the Secretary of the Interior's *Standards and Guidelines for Archeology and Historic Preservation* (48 Federal Register 44716-44740), the U.S. Department of the Interior Guidelines for Evaluating and Registering Archaeological Properties (Little et al. 2000), and the Connecticut Commission on Culture and Tourism, State Historic Preservation Office's (SHPO) *Environmental Review Primer for Connecticut's Archaeological Resources* (Poirier 1987). These standards assure compliance with the review procedures of the Connecticut SHPO.

2.1 Resource Definitions

The basic unit used in determining the historical significance of archaeological resources is the *site*; any potentially *in situ* cultural material or feature 50 years of age or older. An *isolate* or an *isolated find* is the term used to describe a single artifact with no associated cultural material(s) or feature(s).

2.2 Area of Potential Effect (APE)

The Area of Potential Effect (APE) is defined as the area that will experience subsurface impacts as a result of the proposed cemetery expansion. The APE also includes locations that would be impacted by the construction, utility infrastructure installation, paving, interments, and similar activities (e.g., landscaping and grading). For the Cemetery Expansion Site, the APE is considered to coincide with the entire parcel to be acquired, which encompasses the proposed access road, grave sites, and columbarium (Figure 2).

2.3 Design and Methodology

The purpose of a Phase IA and IB investigation is to determine the presence or absence of precontact and historic period archaeological resources within the APE. Generally, a Phase I investigation consists of detailed documentation of the existing cultural resources that might be affected by the project and a determination of sensitivity for potential resources that might be present within the APE (Phase IA). Subsequent Phase I investigations (Phase IB) consist of the systematic shovel testing of areas that are lacking prior disturbance. Testing entails the hand excavation of a series of Shovel Tests (STs) placed at regular intervals, generally 15 meters [m] (49 feet) as per state standards, in order to verify the presence or absence of buried cultural deposits.

The documentary review, or Phase IA, is designed to address two major questions: what is the potential for the Cemetery Expansion Site APE in Middletown to have hosted precontact and historic era archaeological resources of significance and, what is the likelihood that such resources have survived the subsurface disturbances concomitant with subsequent use of the site, including past farm-related activities.

In order to evaluate the potential of recovering precontact cultural remains in the APE, it was essential to:

- Establish the predevelopment conditions of the project site to determine if it may have been hospitable for use by Native Americans;
- Understand regional precontact settlement strategies in each of the Cultural Periods to determine how the project site may have been utilized by Native Americans;
- Establish the historical use of the property and any residential, industrial, or recreational episodes; and,
- Document prior disturbance episodes that may have eliminated potential archaeological site integrity.

Sufficient information was gathered to compare, both horizontally and vertically, the precontact past, the historical past, and the subsurface disturbance record. In particular, research focused on establishing the extent of prior subsurface disturbance caused by twentieth century residential and recreational development. In order to answer these questions, a series of research tasks was undertaken to collect, synthesize, and review pertinent data in order to establish if Phase IB field testing was warranted. The following tasks were undertaken in the Phase IA study:

Documentary Research: In order to place the project site in a historical context, local and regional histories were reviewed. Prior archaeological and historical research in Middlesex County helped to provide a basis for much of the contextual overview, but additional materials were reviewed at the

Middletown Historical Society and the Archives and Special Collections at the Thomas J. Dodd Research Center, University of Connecticut.

Site File Search: A site file search for inventoried archaeological and historical sites was conducted on both the local and state levels. Nomination and designation files for any pertinent and/or neighboring properties were also researched. Recent work in the area by both professional and amateur archaeologists was reviewed.

Cartographic Review: A cartographic review was conducted to identify land ownership and use of the land through time. This was essential for establishing historical and modern deposition and disturbance episodes. Historical maps and atlases were collected from the UCONN MAGIC website, the Middletown Historical Society, and from various on-line sources. Historical maps provided information on land owners and development, while more modern maps were sought to establish any historical disturbance.

Walkover Survey: A photographic record of the current conditions of the property was completed on September 19, 2014. The walkover survey noted the current conditions of surface integrity and obvious signs of prior subsurface disturbance in the Cemetery Expansion Site APE.

3.0 ENVIRONMENTAL SETTING

This section presents a brief outline of the existing and past physical landscape of the project site. Research into the condition of the landscape prior to the era of Euro-American settlement is an essential component of assessing archaeological sensitivity. The existing conditions of the project site have been shaped by geologic events largely associated with the last ice age, Connecticut's continental climate, and the actions of plant, animal, and human biological communities. The effects of human activity have strongly modified the overall physical aspect of the land in the past three centuries as Euro-American settlement throughout Connecticut has substantially altered the landscape and resource base. However, the Precontact topography and environmental conditions of the project site have an effect on when and where Native American and early Euro-American site use occurred. Therefore, information on the Precontact conditions of the project site can aid in determining which locations may or may not be sensitive for Precontact and early historic archaeological resources.

3.1 Geological and Natural Setting

The Town of Middletown is situated in Middlesex County, immediately west of the Connecticut River and south of the junction of Routes 84 and 9. It encompasses roughly 42 square miles, and, because of its irregular shape, is bordered by multiple towns including Haddam, Durham, Middlefield, Meriden, Berlin, Cromwell, Portland and East Hampton. Middletown is located in the southern part of the Triassic Valley, a broad central lowland containing prominent basalt ridges in central Connecticut. The topography of the Town consists mainly of gently rolling hills sloping down to the Connecticut River. The west side of Middletown is flanked by the Metacomet Ridge—a mountainous trap rock ridgeline that stretches from Long Island Sound to nearly the Vermont border.

The Town of Middletown in the Connecticut River Valley is divided between two geological provinces in Connecticut. Bedrock belonging to the Mesozoic Basin lies beneath the majority of the Town, while bedrock belonging to the Eugeosyncline Sequence underlies the northwestern portion of the Town. Mesozoic Basin rocks contain characteristic sedimentary conglomerates, sandstones, and mudrocks that usually bear a red or brownish appearance from an abundance of iron oxide minerals (chiefly hematite and limonite). Eugeosyclinal rocks are typically more deformed, metamorphosed, and intruded by small to large igneous plutons.

Connecticut bedrock geology is comprised of several "terranes," which are geological regions that reflect the role of plate tectonics in Connecticut's natural history. The Iapetos Terrane is split into two by the Newark Terrane (formed from the great crack or the splitting apart of Pangaea). The Iapetos Terrane underlies the southwest hills of the western uplands and the Windham hills of the eastern uplands, and is comprised of the remnants of the Iapetos Ocean (Bell, 1985). Middletown sits on the Hartford Basin of the Newark Terrane, which separates the basin from older Iapetos or oceanic terrane (Rodgers 1985). The basin dates to the Mesozoic, and the APE is in a unit of Portland Arkose, a Jurassic formation dating to 150 to 200 million years ago. Arkose is like sandstone, but contains large amounts of iron that gives it a reddish color.

The surface of the land is the product of erosion. The erosion of the portions above sea level during each period has furthermore been carried to varying degrees of completion. The result has been to divide Connecticut into three geographic provinces, the Central Lowland, and the Eastern and Western Highlands. The Central Lowland trends nearly north and south across the central part of the State and extends northward across Massachusetts, and encompasses throughout most of its length the broad valley of the Connecticut River.

The vast majority of the Town is covered by glacial till, which contains an unsorted mixture of clay, silt, sand, gravel and boulders deposited by glaciers as a ground moraine. This area includes most of the northwestern, central, and southeastern portions of Middletown – including the project site. The remainder of the Town consists primarily of stratified sand and gravel areas associated with major rivers and brooks throughout the Town. These deposits accumulated by glacial meltwater streams during the outwash period following the latest glacial recession.

3.2 Soils

The geology of the project area is glacial till (Stone, et. al., 2005). Surficial soils mapping available from the Connecticut Department of Energy & Environmental Protection (DEEP) indicates the presence of Ludlow silt loam throughout most of the expansion area, a limited area of Wethersfield loam near the Administration Building, and extremely stony Ridgebury, Leicester, and Whitman soils throughout the northern portion of the expansion area. The latter are poorly drained State of Connecticut wetland soils. According to the Natural Resource Conservation Service (NRCS) soil survey resource mapping (Appendix A) and the Environmental Assessment (EA) prepared for the property,

> the site may contain poorly drained wetland soils (Ridgebury series) along the northern portion of the site. A site evaluation by a certified soil scientist and professional wetland scientist revealed that there are no poorly drained wetland

> soils on this site. The soils encountered consist of Udorthents (fill soils). These soils can be classified as being moderately well drained. Seasonal ponding may occur during heavy rains in certain areas on site due to restrictive soil layers (i.e. hardpan) observed within the upper 24 inches of the soil solum along the northern portion of the site. (Milone & MacBroom 2013)

In summary, while portions of the APE are characterized by loam, other portions are characterized by introduced levels of fill that are moderately well drained. The origin of the fill is unknown, but could originate from excavations at the adjacent Veterans Cemetery to the east or from the Connecticut Valley Hospital to the north.

3.3 Current Conditions

A site visit was conducted by archaeologist Cece Saunders on September 19, 2014. At that time, obvious signs of disturbance were noted, and a photographic record of current conditions was completed (see Figure 2 Photo Key and Photographs 1-7).

The APE borders a residential neighborhood to the west, Bow Lane to the north, the existing Veterans Cemetery to the east, and a medical complex off of Saybrook Road to the south (Photographs 1-7). It is currently a relatively level grassy field situated immediately east of a row of houses fronting onto Holmes Drive, and north of several houses fronting onto Bow Lane (Photograph 1). The southern end of the APE is bordered by an embankment that has been planted with evergreens that serve as a visual buffer between the medical center to the south and the residential neighborhood on Holmes Drive (Photograph 2). Most of the site is relatively level (Photographs 3 and 4), however there are several areas of evident prior disturbance. At the central western part of the site is an above-ground electrical box that connects to underground electrical lines originating on Holmes Drive (Photograph 5). Just north of this is man-made drainage swale (Photographs 6). North of this near the northwestern corner of the APE is a culvert that connects to another drainage pipe on Holmes Drive (Photograph 7). The houses that border the northwestern corner of the APE are built on artificially elevated land, which serves to funnel water downhill to the culvert.

4.0 CULTURAL OVERVIEW

As part of the federal legislative framework governing the treatment of cultural resources, the SHPO in each of the 50 states has developed a series of historic and thematic contexts within which cultural properties may be understood and evaluated. Historic contexts are generally organized according to time periods and geographic regions within each state, while thematic contexts address patterns of general property or site types.

4.1 Precontact Background

Archaeologists and historians gain their knowledge and understanding of Native Americans in the region from multiple sources including ethnographic reports, historic documents, Native American artifact collections, and previous archaeological investigations. Based on data from these sources, a prehistoric cultural chronology has been devised for the southern New England area. Prehistoric periods are traditionally divided into the Paleo-Indian, Archaic, Transitional, and Woodland stages,

the Archaic and Woodland usually being subdivided into Early, Middle, and Late substages. Artifacts, settlement, subsistence, and cultural systems changed through time with each of these stages.

Prehistorians currently believe that pre-European cultural groups inhabiting the region practiced a settlement and subsistence pattern of seasonal rounds exploiting a diverse array of resources. Fresh water and coastal resources would have been abundant and easily accessed in the Housatonic River drainage area, as would have upland resources. The types of sites found in the surrounding region, as reported by archaeologists, ethnographers, and amateur collectors, reflect the seasonal use of a diverse resource base and include villages, burials, smaller campsites, and temporary hunting stations.

Archaeological data strongly indicates that Native Americans arrived in the Northeast following the last glacial period, although conflicting data suggests arrival may in fact pre-date glaciation. The exact date of entry remains uncertain, although the post-glacial theory is more widely accepted. During the Wisconsin episode of the Pleistocene in the Northeast, ice reached its maximum advance between 18,000 and 16,000 years ago. After this period glaciers slowly retreated north, with glacial gravel deposited along the melting margin forming moraines. By 13,500 years ago, ice had receded north exposing the surface of the Housatonic River Valley for repopulation by flora and fauna. As ice melted, glacial lakes formed, eventually filling with sediments and forming swamps.

Paleo-Indian Period (12,500-10,000 BP): Approximately 16,500 years before present (BP) the Wisconsin Glacier began retreating from Southern New England, with portions of southeastern Connecticut and parts of what is now Long Island Sound deglaciated by this time (Gordon 1983; Lavin 2013). By 13,500 BP all of Connecticut was deglaciated, with the tundra environment slowly becoming more hospitable to human habitation. The earliest date of Paleo-Indian habitation in the Northeast thus varies, but it is generally accepted that sites of this period date roughly to 12,500 BP to 10,000 BP. Many also bear evidence of the exploitation of large fauna such as the mammoth, moose-elk, and bison – although none do in Connecticut. There are six excavated Paleo-Indian sites in Connecticut, one of the close to Middletown being at Lovers Leap in New Milford (Lavin 2013). In addition, there are more than 50 isolated artifact finds across the state, suggesting more widespread habitation and, unfortunately, site degradation. The earliest archaeological evidence for human occupation in Connecticut for this period is Litchfield County's Templeton Site, 6-LF-21, which dates to 10,000 BP (Moeller 1980). Paleo-Indian artifactual material has also been found along the Aspetuck and Mill Rivers in Fairfield and Easton, both in Fairfield County (Cruson 1991), and on the Mashantucket Pequot Reservation in Ledyard (Jones 1997).

In general, settlement patterns suggest small mobile nomadic groups which utilized a wide range of seasonally available resources. Expected artifacts include fluted points and flaked stone assemblages. The Paleo-Indian Period is theorized to have ended because of "overspecialized subsistence strategies emphasizing big-game hunting" (Snow 1980).

Early Archaic Period (10,000-8,000 BP): The Archaic Period contrasts with the preceding period by a shift in subsistence strategies to a wider variety of plant and animal resources, although this strategy likely originated toward the end of the earlier Paleo-Indian period. This observed subsistence strategy change is most likely a response to the gradual warming of the climate and its

effect upon regional faunal and floral resources (McBride 1984). Sea levels continued to rise, and there was an increase in white pine, yellow and gray birch, and oak trees that indicate continued warming and drying. By 9,000 BP Long Island Sound had been flooded, separating Long Island from Connecticut.

A deciduous-coniferous forest emerged because of the milder climate in New England. In Connecticut, the Early Archaic Period is characterized archaeologically by a quartz cobble lithic industry and bifurcate-based projectile points (Snow 1980). Extensive excavations revealing settlement and tool use were completed at the Dill Farm Site, Site 41-50, in East Haddam with a radiocarbon date of 8,560 BP (Lavin 2013). The Sandy Hill Site in the Mashantucket Pequot reservation dates to between 10,000 to 9,500 BP and bears evidence of subterranean residential lodges in a south-facing sandy hillside (Ibid.). The site also produced plant-food remains representing a wide variety of sources including wetland plants and tubers, nuts, and small game (Ibid.).

Early Archaic sites are more widely distributed than earlier Paleo-Indian sites have been found to be (McBride 1984). The Pages Millpond Site (99-010) and the Pages Farm Site (99-009) in North Branford, southwest of the project site, both bore evidence of Early Archaic occupations (PAL 2004). Diagnostic artifacts of this period typically include Kirk, Kanawa, and Hardaway stemmed points, Kirk and Palmer corner-notched points, and Plano lanceolate points (Snow 1980).

Middle Archaic Period (8,000-6,000 BP): The trend toward a drier and warmer climate and greater diversity of faunal and floral resources continued through this period. This trend "brought about the establishment of a deciduous forest which had achieved an essentially modern character by 2,000 BC" (Salwen 1975). Trees associated with this climate included black oak, red oak, mockernut and pignut hickories, hard maple, beech, black and yellow birches, white ash, butternut, basswood, black cherry, and dogwood. The typical shrubs found in this forest type included azalea, blueberry, huckleberry and mountain laurel (Braun 1950). The first appearance of drought-resistant hickory and warmth-growing American holly demonstrates a climate warmer than today (Lavin 2013).

The increasingly rich and diverse resource base available in the region led to a population increase and a greater record of known Middle Archaic sites. The first known Native American occupation of the Connecticut coastal region occurred during the Middle Archaic Period. Netsinkers and plummets found at sites indicate the growing importance of marine resources (Snow 1980). There has been a constant presence in this region through several climatic changes and faunal adaptations since that time. Some researchers argue that Middle Archaic occupations in Connecticut demonstrate an orientation toward upland interior microenvironments, while others have argued that sites appear evenly distributed between riverine and upland areas of Connecticut (McBride 1984).

The Middle Archaic Neville culture complex is identified by three point types: Neville, Stark and Merrimac points. Neville and Stark points have been reported from over 100 sites in Connecticut, but Merrimac points are rare by comparison (Lavin 2013). In the lower Connecticut River Valley, Neville and Stark points have been found in conjunction with bifaces, hammerstones, and ground stone tools suggestive of heavy woodworking activities.

Late Archaic / Terminal Archaic Period (6,000-2,700 BP): There is little agreement on the date of the end of the Archaic Period and the beginning of the Woodland Period, but it is generally accepted that the Late Archaic Period dates to ca. 6,000 to 3,800 BP, while the subsequent Terminal Archaic period dates between 3,800 and 2,700 BP. The existence of numerous perspectives on the demarcation of time periods is indicative of both the large amount of data available and the need for further research.

Numerous sites of this period are known throughout the Northeast. Study has suggested that a seasonally based subsistence pattern was in place with a greatly expanded population base. It is often considered a period of cultural fluorescence, due to the presence of ceremonial burials and long-distance exchange networks (Snow 1980). Steatite bowls first made their appearance during this period.

There are two major cultural traditions of the Late Archaic Period: the Laurentian tradition, and the Narrow-Stemmed tradition (McBride 1984). The Laurentian tradition's known diagnostic artifacts include Vosberg, Brewerton, and Otter Creek projectile point styles. Stone tools include pitted stones, net sinkers, spokeshave scrapers, drills and knives, chipped and ground stone ulus, and ground stone pestles, gouges, axes, plummets, adzes, and atlatl weights (aka bannerstones) (Lavin 2013). This tradition is generally marked by a settlement system in which larger populations would gather around a plentiful seasonal resource but then break up into smaller groups during other, less productive seasons. Nearby sites that have been reported but not intensively studied include the Grannis Island site near the mouth of the Quinnipiac River near where it empties into New Haven Harbor; the Burwell-Karako site on the east side of New Haven Harbor, and the Binette Rock Shelter in the nearby Naugatuck uplands (Ibid.).

The diagnostic artifacts of the Narrow-Stemmed or Narrow Point tradition include Lamoka, Bare Island, Squibnocket Stemmed, and Poplar Island triangular projectile points. Settlement pattern analysis has suggested a uniform site distribution with "respect to major ecological zones such as floodplains, terraces, and uplands" (McBride 1984). The Burwell-Karako Site in Fair Haven, mentioned above, produced more than 1,400 small stemmed projectile points indicating repeated occupations over hundreds of years (Lavin 2013). In Middletown the Hubbard Brook site was identified in the Connecticut River Valley, and to the west in Newtown, Sites 270A-4-1, 97-71, and 97-72 have been identified in the western uplands. Cover River in West Haven was also identified to the south.

During the Terminal Archaic period (3,800-2,700 B.P.), steatite or soapstone vessels are first observed. During this period, three cultural traditions persisted in the Northeast. These include the Laurentian tradition represented by the Vergennes phase and the Vosberg complex; the small stemmed tradition represented by the Sylvan Lake complex; and the Susquehanna tradition represented by the Snook Kill and Orient phases (Funk 1976:250). Although some archaeologists define these three separate traditions as persisting in the region, Snow reassesses the distribution of Terminal Archaic points and suggests that the Susquehanna tradition dominated the first half of the period and was comprised of Snook Kill, Perkiomen and Susquehanna Broad points, while the latter half of the period was dominated by the Orient complex characterized by the Orient Fishtail point (Snow 1980:237). These three cultural traditions, based on unique projectile point types, may represent distinct settlement patterns centered on the use of specific resource niches.

A hallmark of the Terminal Archaic is the introduction of steatite, or soapstone, bowls. These bowls suggest that people were staying long enough in one place to make the use of large, relatively heavy cooking vessels worthwhile. A more sedentary lifestyle and changes in subsistence strategies must also have provided foodstuffs that required heat and longer processing. The Ives Site in Cheshire (CT Site # 25-002) along the Quinnipiac River, west of Middletown, bore a single quarry pick that was possibly used for soapstone mining operations.

Early Woodland Period (2,700-1,650 BP): The first part of the Woodland Period was essentially a continuation of the stylistic traditions of the Late Archaic. It marked a transitional period in which the production and use of ceramics began in earnest, and smoking pipes first appeared in artifact assemblages. Settlement pattern information suggests that the broad based strategies of the Late Archaic continued with a possibly more extensive use of coastal and riverine resources, particularly estuaries and marshes with dense concentrations of food sources. This last point must be qualified since the larger shell middens of the Woodland Period in coastal areas could merely be a reflection of their greater preservation. The global warming trend already mentioned resulted in the rising of sea levels, which may have been responsible for the destruction of many earlier coastal sites.

The Early Woodland Period is characterized by Lagoon, Rosville, and Meadowood projectile points, as well as thick interior and exterior cord-marked ceramics. Sites from this period in Connecticut often contain evidence of a quartz cobble lithic industry and a continuation of the Narrow-stemmed point tradition. Sites of this type with Meadowood components have been identified both in Milford and Branford, both to the southwest (Lavin 2013).

Middle Woodland Period (1,650-975 BP): Research of sites from this period has provided evidence of a significant change in settlement patterns to a more sedentary lifestyle, likely due to the stabilization of environmental fluctuations experienced toward the end of the previous Early Woodland Period. The discovery of large storage pits, larger sites, evidence of oblong pole-framed structures and wigwams further bolsters this supposition (Lavin 2013). In Connecticut, the introduction of maize is evident toward the end of this period, and other horticultural practices may have been utilized at this point as well, though clearly not to the extreme that it was in the subsequent Late Woodland Period. Reliable, predictable sources of food from resource rich environments would have fostered year-round habitation.

Numerous diagnostic artifacts dating to the Woodland Period have been recovered from New Haven County. These types include Levanna, Orient and Fox Creek projectile points, and various prehistoric ceramics. Fox Creek points, found in coastal New York, began showing up on Connecticut sites. Later Jack's Reef points appear at sites dating to this period toward the end of the Fox Creek time range, with most points made from exotic cherts, mainly jasper from Pennsylvania (Lavin 2013). Evidence indicates that points were brought to the area as blanks and blades and were traded as finished tools and late-stage bifaces. Ceramic types found in the area included Rocker Stamped, Dentate Stamped, Windsor Fabric-marked, Windsor Brushed, and Windsor Cord-marked pottery.

Late Woodland Period (975 BP to 450 BP): During the Late Woodland Period food items such as maize, beans, and squash (the Three Sisters) were raised through a specialized agricultural

system with the earliest recovered bean seed dating to 550 BP from a site in South Windsor, and maize first dating to 950 BP (Lavin 2013). Early New England settlers described the Native American horticultural practices, with women planting and tending agricultural plots. This radically different subsistence strategy was accompanied by commensurate changes in settlement patterns. Analysis of material culture has suggested significant changes in social organization, long distance trade networks, and an overall increase in population density.

Known sites of this period are much larger than earlier sites. The occurrence of sites found in defensible locations has suggested some degree of regional social conflict possibly due to population pressure. Triangular points are a common diagnostic artifact of this period as well as stamped, cordmarked, brushed, and fabric-marked ceramic designs. The trend toward increasingly focal agricultural economies which became common across much of the Northeast during this period was not supported along coastal zones. There is growing evidence from excavations along the Connecticut and Long Island coasts (Bernstein 2006; Salwen 1975) that a tendency to "expand and diversify the subsistence base" (Bernstein 2006) evolved through the Archaic Period into the Woodland.

Contact Period ca. 450 BP: When Europeans began populating the Middletown area in earnest, local Native American groups were organized into small households that banded together along ethnic and territorial lines into larger villages during the spring and summer, and dispersing during the fall and winter (Snow 1980). Native Americans generally lived in round wigwams, longer rectangular houses, and oval houses that could accommodate single or extended families. Dispersed and decentralized towns extended across stretches of riverbank along secondary streams in wide, sheltered valleys and coves. The number of smaller task-specific sites from this period corroborates early written descriptions by European settlers who report people living in hunting, fishing, and foraging camps in the hinterlands, largely during winter months (Grumet 1995).

Middletown was occupied by a group known by early European settlers as the Wangunks, who were led by the sachem Sowheag. The Connecticut Colony purchased a large part of what is now known as Middletown, then Mattabeseck, from the Wangunks in the 1640s. In 1672/73 the Wangunks sold additional land to the Town of Middletown, thereby increasing its size significantly (Crofut 1937). The Wangunks maintained two reservations in the Middletown area through the 18th century; one on the east side of the Connecticut River, in what is now Portland, and another on the west side of the river stretching from today's Newfield area to Indian Hill. Indian Hill, west of Wesleyan University, was reportedly the site of a fortification attributed to the Wangunks. To the north of the Connecticut Valley Hospital campus, oral tradition indicates that a field behind Merritt Hall was the site of another Native American fortification, now locally known as Fort Hill (Reed 1997).

Artifacts from this period indicate that Native groups were adopting newly available materials to old technology. Gun parts and flints, kaolin smoking pipes, glass beads and other goods of European origin have been found at Contact Period sites together with Native American pottery and stone tools, as well as projectile points fashioned from copper and brass. At the Orchard Swamp site in Branford, both traditional stone triangular points and clay pottery were found together with sheet-metal points and other modified metal objects obtained from European traders (Lavin 2013).

4.2 Precontact Sites in the Vicinity

A site file search was completed at the CT SHPO's office on September 19, 2014. At that time it was noted that there are no known precontact sites within a one or two mile radius of the Cemetery Expansion APE. Several miles from the APE, a number of precontact sites have been identified in Middletown. Several of these are clustered along Long Hill Brook, well to the west of VA site, including Sites 83-1, 83-2, and 83-3. Site 83-1 is the Mapleshade North Site, a 30x30m rockshelter site that yielded ground stone chisels, axes, gouges, a Levanna point, Windsor ceramics, a Lamoka point, and evidence of fire pits. The site has been extensively looted. Also to the west is Site 83-2 that has yielded quartz small-stemmed points, a Levanna point, grit-tempered-dentated-stamped bowl sherds, grooved axes, and celts. The site, also a rockshelter, is vastly larger, and has been looted. Several miles southeast of the current APE on Aircraft Road, Site 83-3 was identified. Another rockshelter site, this yielded two elbow pipes, one steatite sherd, and lithic artifacts dating to the Archaic and Woodland Periods. Site 83-4 represents a single quartz point, possibly a Snook Kill, found in a farm field off of Millbrook Road about 2.5 miles south of the project site.

While many sites in Middletown have been found on small watercourses or where there are rockshelters, cultural resource surveys in the town have also identified numerous small scale camp sites. During the 2008 and 2013 testing for new CL&P power lines (Heritage Consultants, LLC 2009, Raber Associates, 2013), numerous sites were encountered several miles south of the Cemetery Expansion APE. These include the following:

- Site 83-31, a special purpose, very short-term precontact site that produced scrapers, chopper, and debitage;
- Sites 83-32, 83-33, 83-34 and 83-35 – all very similar to site 83-31;
- Site 83-36, which yielded quartz and quartzite lithics from 135 STs, including 7 projectile points, an awl, 438 pieces of debitage, and 62 blades/knives/scrapers. The site was found to date from the Late Archiac through the Middle Woodland Periods, and is located between Saybrook Road and Route 9;
- Site 83-37, which yielded quartz, quartzite, chert, and basalt lithics from 63 STs and 7 larger EUs. The site had two relatively small loci near a wetland, and had a C-14 date of 1550± 10 AD. Also found were hammerstones, a utilized flake, and four scrapers. The site was identified west of Bartholomew Road and northeast of Chestnut Mountain; and,
- Site 83-38, which produced 3 scrapers and 40 pieces of debitage from 25 STs. The site was determined to be a small special purpose site, and was found east of Bartholomew Road.

Most identified sites have been in proximity to fresh water and on well drained undisturbed landforms. The lack of fresh water near the current APE suggests a low sensitivity for precontact resources, although the presence of Fort Hill to the north suggests moderate sensitivity. Prior site disturbance, as observed during the walkover survey and the soils study, suggest that the potential for intact deposits has been diminished.

4.3 Historical Background

History of Middletown: In 1639 the General Court in Hartford recommended action against Native Americans in the area. At that time there were settlements above and below Mattabesett, but the hostile attitude of the Native Americans on both sides of the river discouraged settlement. After Sowheag sold to Governor Haynes of Connecticut a large portion of the area, the General Court appointed a committee to consider the planting of Mattabesett (The Public Records of the Colony of Connecticut, 1646; Vol. 1:146). By 1650, settlement of the area by non-native peoples had started in earnest and in 1651 the area was designated as an official town (The Public Records of the Colony of Connecticut, 1650; Vol. 1:206), and in 1653 it was designated as Middletown, named for its location midway between Saybrook and Windsor.

Acres were cleared, farms were established, and houses were built. As the town grew, the ever growing shipping industry became more critical to the economy. By the time of the American Revolution, one-third of Middletown's population was engaged in some way with the shipping business. The critical location of the Connecticut River midway between New York and Boston spurned growth in the port at Middletown. Merchants and shipmasters prospered, making Middletown the largest and most prosperous city in the state through the 18th century.

Middletown's ore beds have been actively mined for several hundred years, producing lead, pegmatite, and feldspar. During the American Revolution, lead was mined for ammunition, and farms provided food for the Continental Army (Van Dusen 1950). Among the men that served in the war effort – either in the Continental Army or the militia - were many of Middletown's slaves. Since its early years, many of the families of Middletown owned slaves that worked in their homes and fields. It was not until 1848 that Connecticut officially abolished slavery.

After the American Revolution, Middletown was incorporated as a city in 1784. The 1807 Embargo Act, followed by the War of 1812 and more shipping embargos, brought an end to Middletown's days as an important shipping port. But as the shipping industry declined, others expanded. During the 19th century, Middletown became a hub for the production of industrial parts, pumps, swords, pistols and a host of other goods, with a focus on firearms. Industries thrived with the multiple waves of Irish immigrants moving into the cities in the 1850s onward. In the latter half of the 19th century, manufacturing was the mainstay of the city's economy, especially finely made metal parts, such as marine hardware and typewriters. Immigrant families provided both inexpensive labor and a demand for more consumer goods.

Railroads were slow to arrive in Middletown, with coastal routes between major cities being favored. In 1868 the Saybrook-to-Hartford line was finally completed, with a depot established in Middletown (Wallace 1950). In 1872 the Air Line Railroad from New York to Boston opened, with an immense new 1250-foot bridge passing over Middletown. Unfortunately this passenger line only lasted for about 30 years, and was officially discontinued in 1902.

Middletown's growth throughout the 20th century was spawned, in part, by the presence of Wesleyan University, the Connecticut General Hospital for the Insane (established in 1868 and now the Connecticut Valley Hospital), Middlesex Hospital, and multiple manufacturing companies. Route 9 was constructed in the 1950s in response to the growing use of automobiles, but unfortunately it essentially cut off the city from the Connecticut River waterfront.

History of the Project Site: The project site appears to have remained undeveloped throughout the historical period. Early maps of Connecticut from the 17th and 18th centuries fail to depict any development beyond the center of Middletown or south of Sumners Creek, about a mile west of the APE. The first cartographic source to show individual structures for the Bow Lane section of Middletown is the Johnson 1826 map, which depicts the project site vacant. While the 1851 Clark Map of Middletown does not cover the Bow Lane area, the 1859 Walling map does depict the APE and it is again vacant (Clark 1851, Walling 1859). Immediately to the north on the opposite side of Bow Lane is a house belonging to Alfred Roberts. Fort Hill is labeled northwest of the site near the Connecticut River, and the APE is in the South Farms district of town (Figure 3). The site appears the same on the 1867 Beers atlas, which also shows a large tract of land to the north occupied by the Hospital for the Insane (Figure 4). A lane that formerly ran north-south terminating at Bow Lane opposite the project site had been closed with the opening of the hospital (Beers 1885). A. Roberts is still the owner of the house on the north side of Bow Lane, opposite the APE. In 1863, Alfred Roberts, married to Mehitabel Hubbard, was serving as one of the selectmen in Middletown (Middlesex County Historical Society 2013). He may have owned the land opposite his house in the APE. The Hubbards were a prominent family in the town.

The APE is again depicted as vacant in 1893 (USGS 1893; Figure 5), 1906 (U.S.G.S. 1906) and on a 1934 aerial photograph (Fairchild 1934; Figure 6). During this period of time, the Hospital for the Insane complex had grown considerably with the addition of numerous structures. However, the lot immediately to the north of Bow Lane, opposite the APE, appears to have remained unchanged, with what was the Robert's house depicted fronting onto the north side of Bow Lane slightly east of the APE (Figure 6). Also at that time, the APE appeared vacant with a dirt road entering into it from Bow Lane, presumably a farming road to access the fields. There is no evidence of outbuildings or any structures in the APE. The site appears unchanged on both the 1945 and 1952 USGS maps, and a 1970 aerial photograph (Figures 7 and 8).

4.4 Historical Sites in the Vicinity

On the north side of Bow Lane, opposite the APE, stand several 20th century structures associated with the National Register of Historic Places (NRHP) -listed Connecticut Valley Hospital, a complex of 80 structures spread across 650 acres. When it was nominated to the NRHP in 1995, the complex – then known as the Connecticut General Hospital for the Insane – consisted of 52 principal and secondary buildings, of which 27 were considered contributing. Dutcher Hall, a non-contributing property, is opposite the APE on the north side of Bow Lane. None of the contributing properties are adjacent to the APE.

A site file search at CT SHPO's office found that there were no other previously inventoried historic sites in proximity to the APE. However, historic sites 83-24 and 83-25 are both located about 1.3 miles to the west of the APE. These are the Pameacha Upper and Lower Dams, respectively, both recorded in 1984. Site 83-23, Spencer's Saw Mill established in 1859, is located about two miles southwest of the project site. Also about two miles south of the APE, Sites 83-29 and 83-30, both historic quarries, were recorded.

5.0 CONCLUSIONS AND RECOMMENDATIONS

The project site is in an area of known precontact use, although most previously inventoried sites in the general area have been identified near fresh water sources, which is not the case for the APE. If undisturbed, the project site would be considered to have a moderate degree of precontact potential due to its proximity to Fort Hill, a known Native American habitation site. However, it is considered to have only low to moderate sensitivity due to prior subsurface disturbances that became evident during the walkover survey and the site soil study. The field inspection identified catch basins, utilities, and contouring that have impacted the project site.

The project site has experienced subsurface impacts from measures taken to improve drainage, as evidenced by the elevated residential house lots abutting the site to the north and west and the presence of drainage culverts in the APE. It has also been disturbed to some degree by the installation of buried electrical lines and the creation of an elevated berm immediately to the south. Finally, the soil study reports that the site contains fill soils and hardpan within the 24 inches of strata along the northern portion of the site. If fill was added above the natural strata, this may have served to preserve potentially sensitive soils. Conversely, the process of adding fill may have actually disturbed the natural stratigraphy.
The documentary study found that the there was no documented historical use of the project site beyond farming. No outbuildings or structures were mapped on the site, nor do they appear in 20th century aerial photographs. Furthermore, the walkover survey did not find any indication of historic structures or use.

In conclusion, limited Phase IB subsurface testing is recommended to determine the actual presence/absence of intact natural strata that might be sensitive for precontact archaeological resources and the need for standard, 15-meter interval shovel testing.

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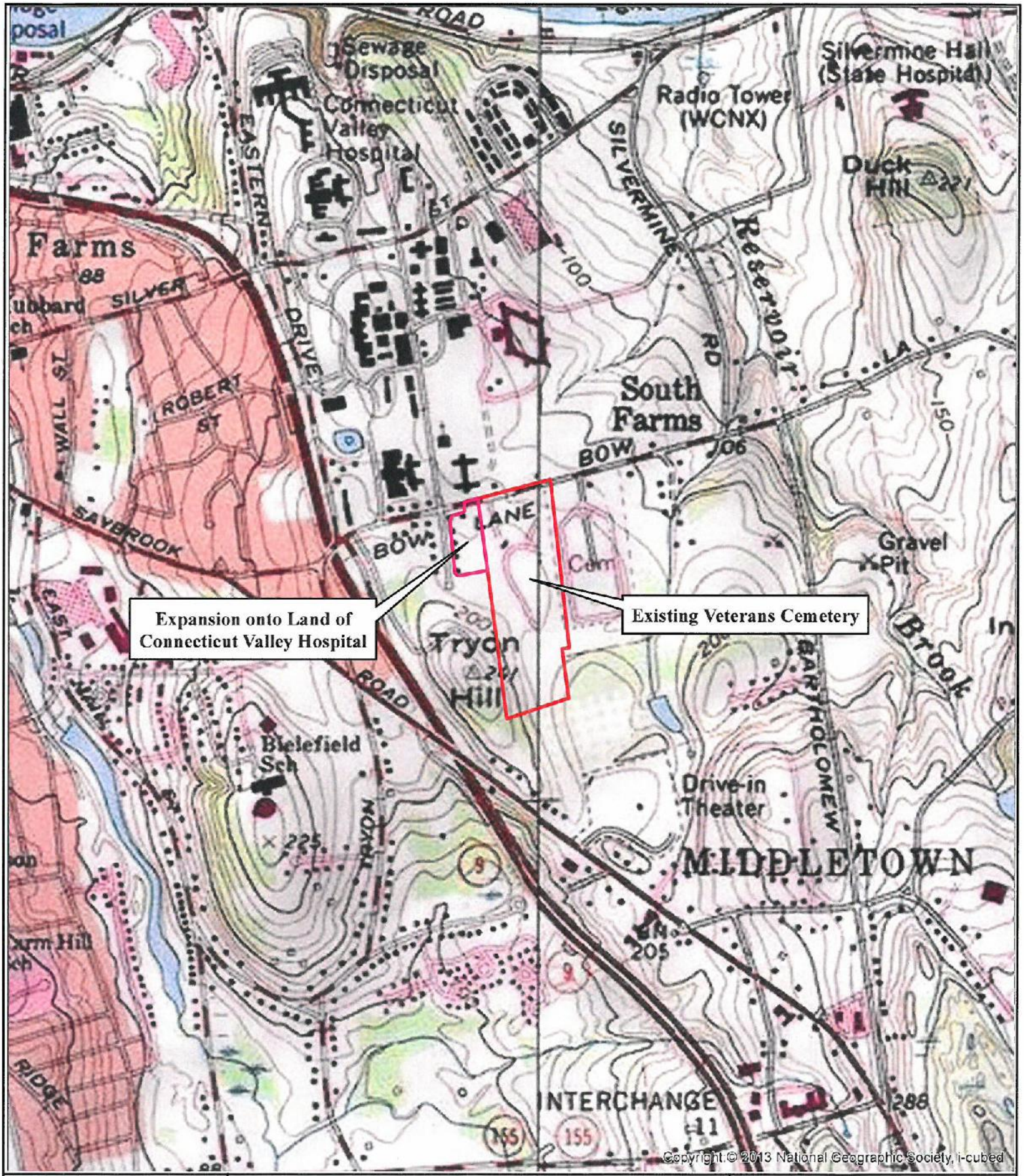

SOURCE(S):
USGS Topographic Map from ESRI
Parcel Mapping from CT DEEP
Expansion Area based on BL sketch 8/3/12

Figure 1: USGS Topographic Map

LOCATION:
Middletown, CT

N

Middletown Cemetery Expansion
Project Number: BI-C-283

MXD: W:\Design\1266-37-DE\GIS\Maps\Figure1.mxd

Map By: scottb
MMI#: 1266-37
Original: 6/3/2013
Revision: 6/3/2013
Scale: 1 inch = 1,000 feet

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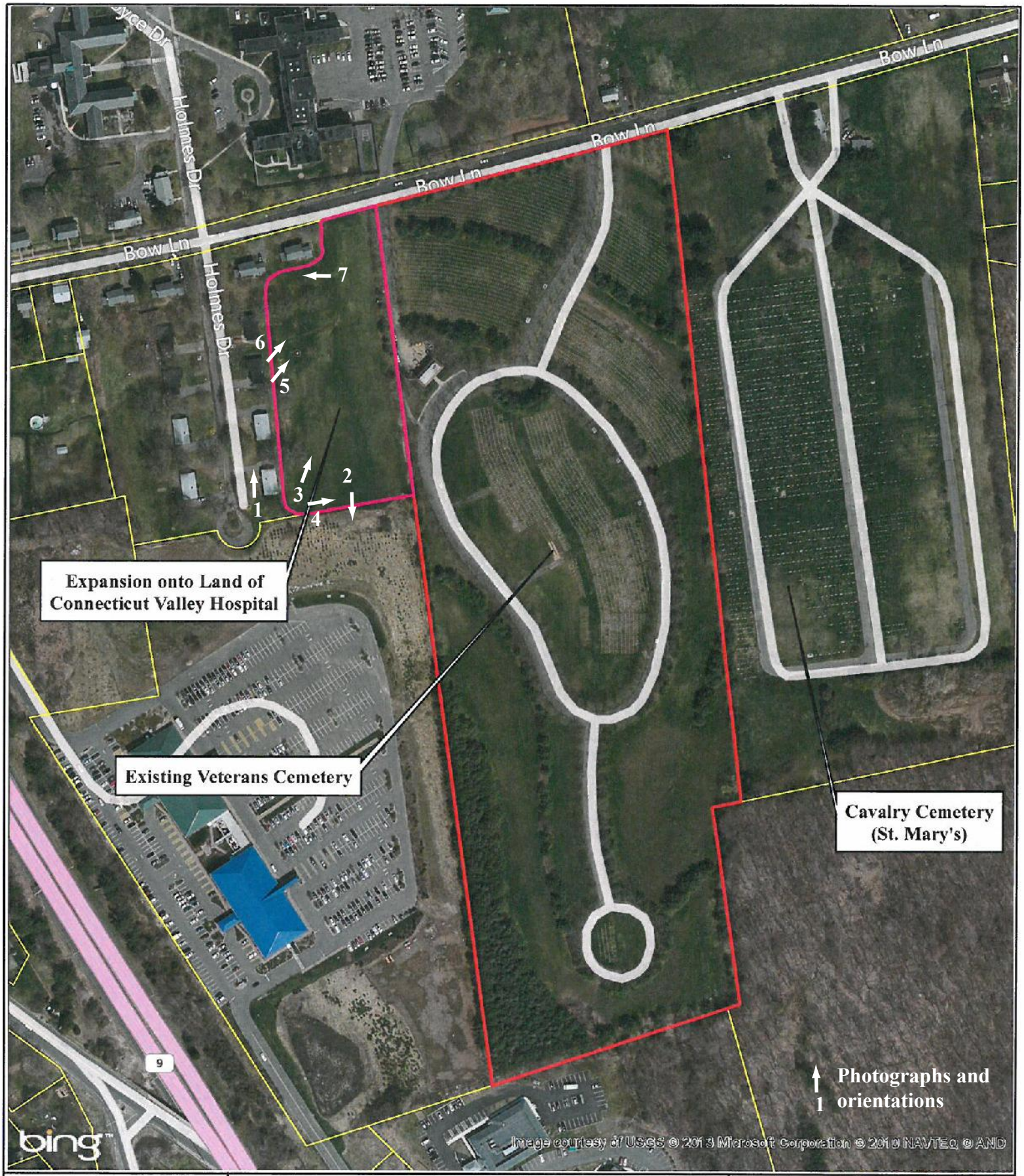

SOURCE(S):
2010 Aerial Photograph from Bing
Parcel Mapping from CT DEEP
Expansion Area based on BL sketch 8/3/12

Figure 2: Proposed Action - Plan View

LOCATION:
Middletown, CT

N

Middletown Cemetery Expansion
Project Number: BI-C-283

MXD: W:\Design\1266-37-DE\GIS\Maps\Figure2.mxd

Map By: scottb
MM1#: 1266-37
Original: 6/3/2013
Revision: 6/3/2013
Scale: 1 inch = 250 feet

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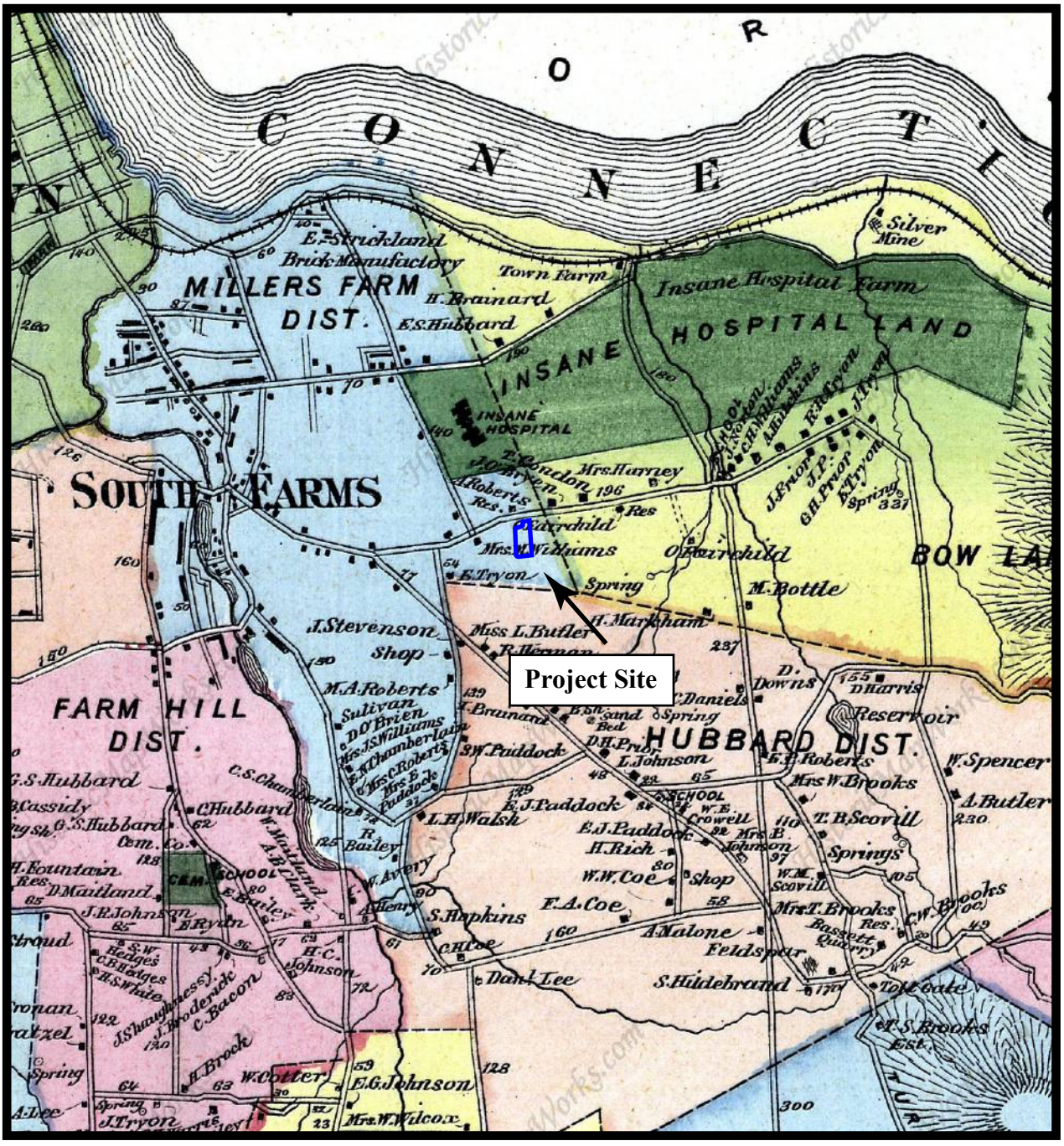
Middletown, Middlesex County, Connecticut

Figure 3: Project site on *Map of Middlesex County, Connecticut* (Walling 1859).

0 1000 2000 3000 4000 5000 FEET



Phase IA Archaeological Assessment
Veterans Cemetery Expansion, 317 Bow Lane
Middletown, Middlesex County, Connecticut

Figure 4: Project site on *County Atlas of Middlesex County, Connecticut* (Beers 1874).

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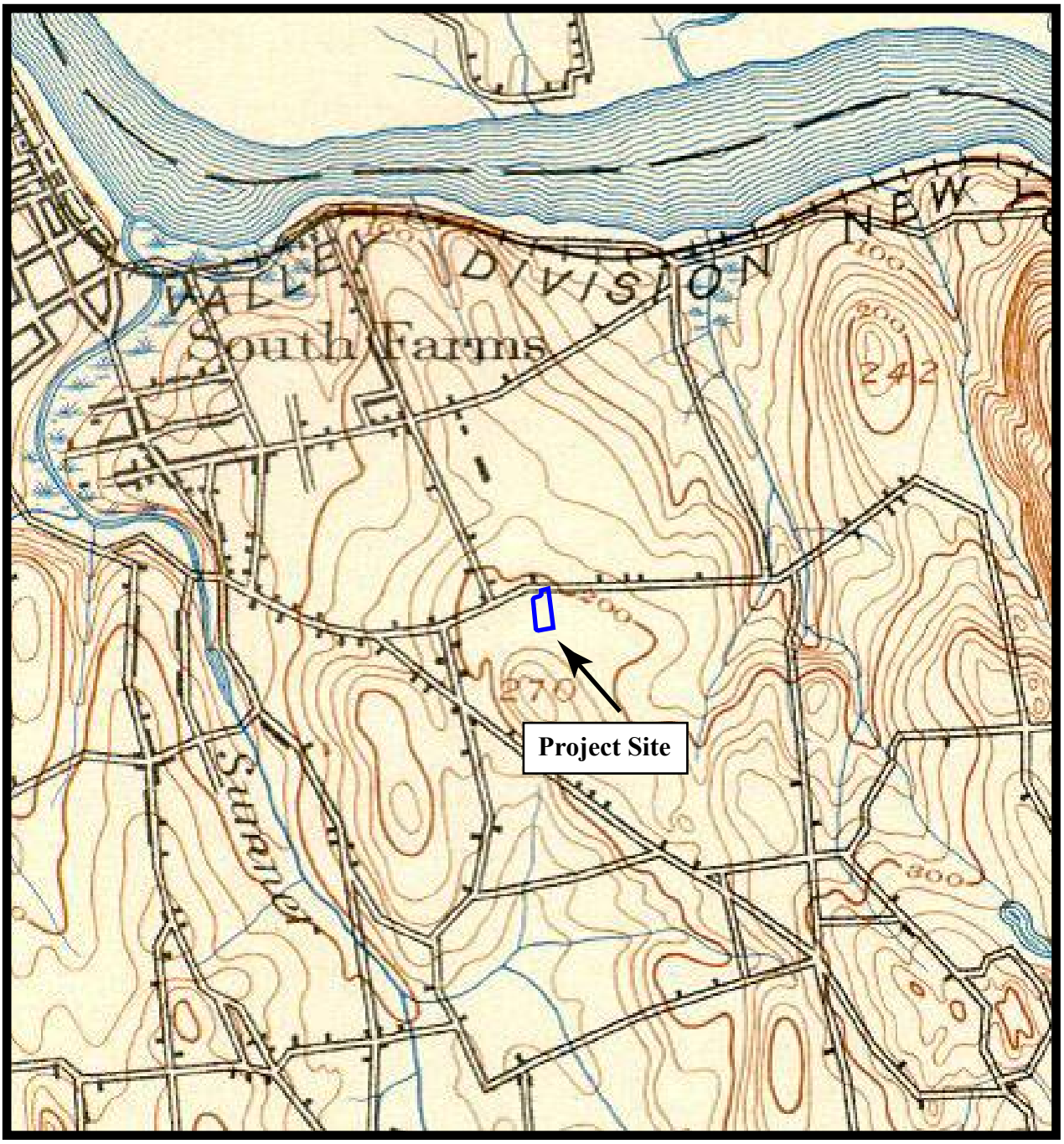

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Middletown, Middlesex County, Connecticut

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Figure 5: Project site on *Middletown, CT* 15 Minute Topographic Quadrangle (U.S.G.S. 1893).

0 1000 2000 3000 4000 5000 FEET

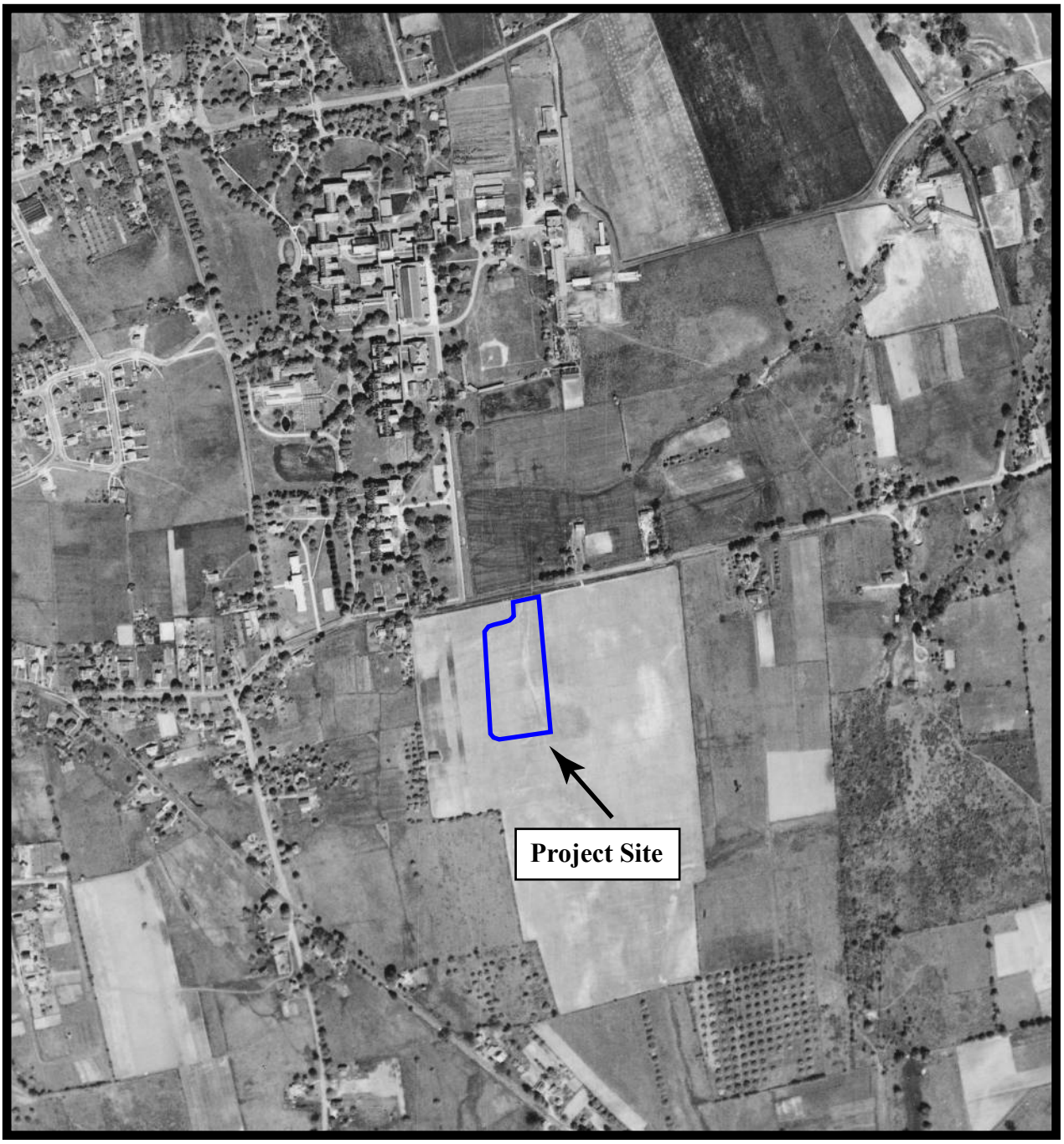

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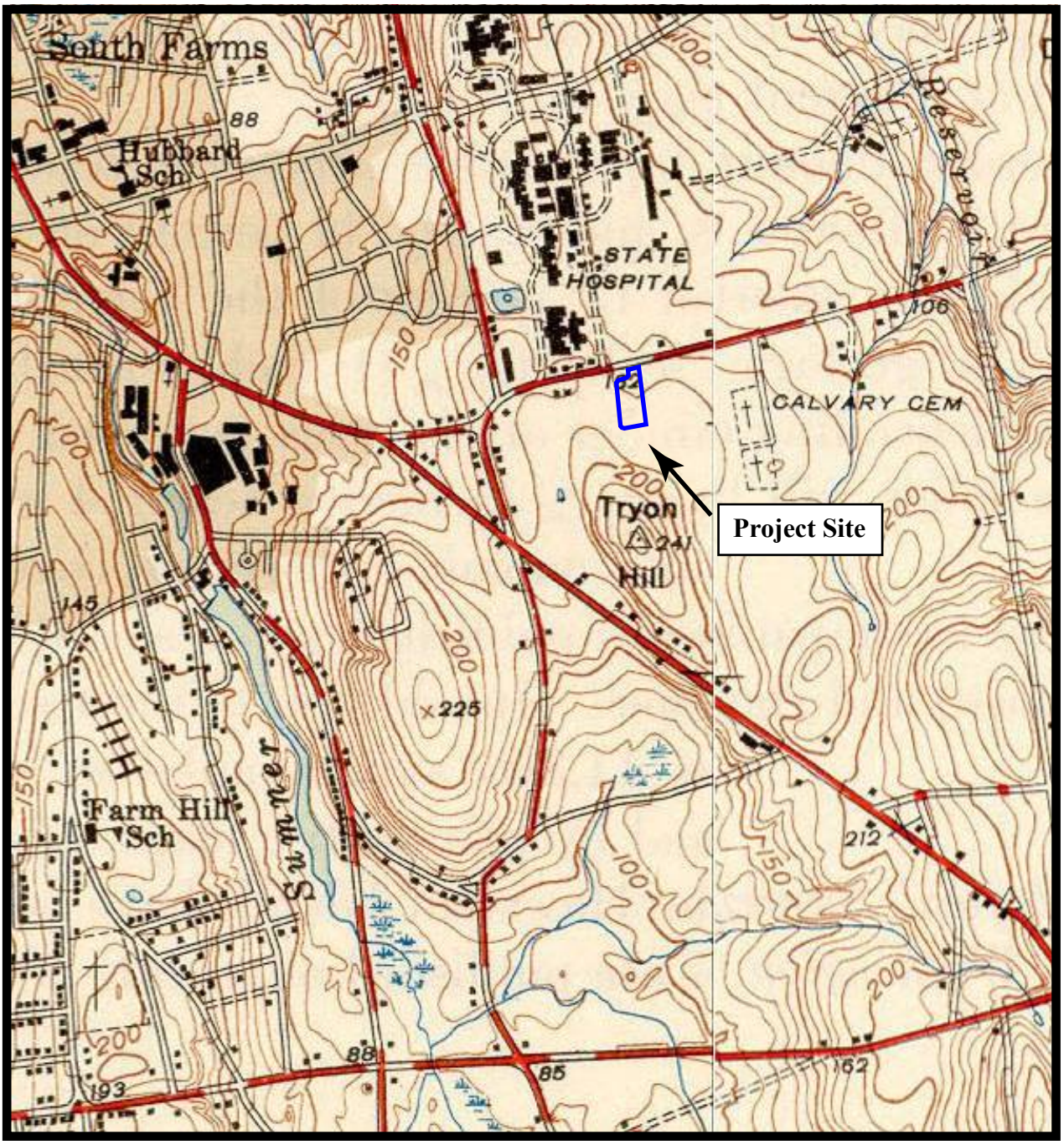
Figure 6: Project site on 1934 aerial photograph.

0 200 400 600 800 1000 FEET



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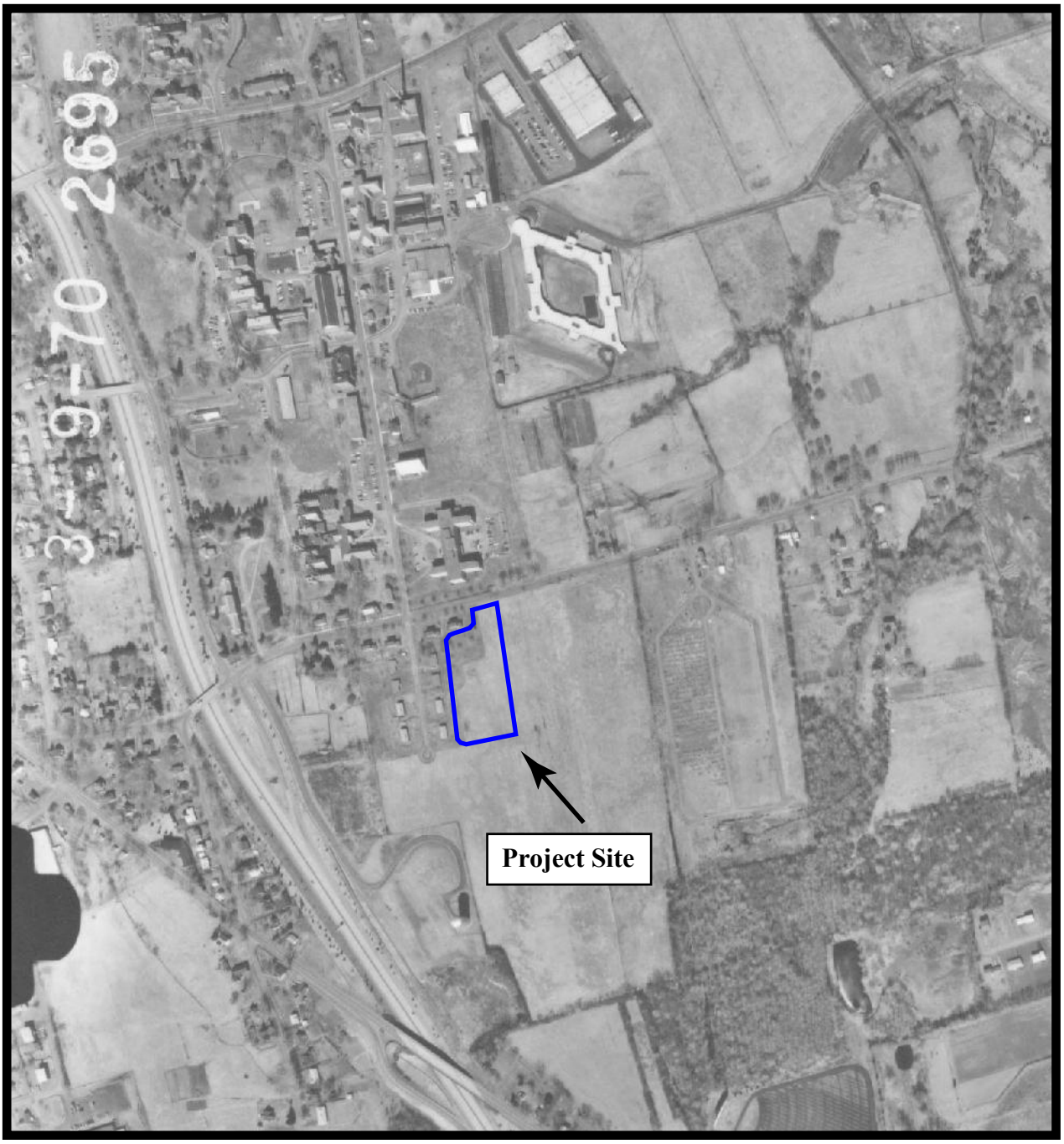
Middletown, Middlesex County, Connecticut

Figure 7: Project site on *Middletown and Middle Haddam, CT* 7.5 Minute Topographic Quadrangles (U.S.G.S. 1945).

0 500 1000 1500 2000 2500 FEET



Phase IA Archaeological Assessment
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Figure 8: Project site on 1970 aerial photograph.

0 250 500 750 1000 1250 FEET

Photograph 1: Facing north from the Holmes Drive cul-de-sac to ranch houses bordering the west side of the Veterans Cemetery Expansion Area of Potential Effect (APE).

Photograph 2: Facing south from the south end of the Area of Potential Effect (APE) toward an embankment of evergreens that serve as a planted buffer between the residential area on Holmes Drive and a medical center on Saybrook Road to the south.

Photograph 3: Cemetery Expansion Area of Potential Effect (APE) facing northeast from the southwestern corner of the parcel.

Photograph 4: Cemetery Expansion Area of Potential Effect (APE) facing east from the southwestern corner of the parcel.

Photograph 5: Facing northeast to an above-ground electrical box in the Cemetery Expansion Area of Potential Effect (APE) that connects to underground electrical lines from Holmes Drive to the west.

Photograph 6: Facing northeast to an artificial east-west drainage swale at the center of the Cemetery Expansion Area of Potential Effect (APE).

Photograph 7: Facing west from the south end of the Cemetery Expansion Area of Potential Effect (APE) towards a drainage culvert at the center of photograph. Note that the houses at upper right on Bow Lane and at upper left on Holmes Drive are on terrain elevated above the APE.

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for State of Connecticut

September 8, 2014

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (http://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: State of Connecticut
Survey Area Data: Version 11, Nov 19, 2013

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 28, 2011—May 12, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

State of Connecticut (CT600)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
3	Ridgebury, Leicester, and Whitman soils, extremely stony	3.2	1.2%
5	Wilbraham silt loam	2.9	1.1%
6	Wilbraham and Menlo soils, extremely stony	9.5	3.6%
12	Raypol silt loam	0.2	0.1%
20A	Ellington silt loam, 0 to 5 percent slopes	2.9	1.1%
33A	Hartford sandy loam, 0 to 3 percent slopes	5.8	2.2%
37E	Manchester gravelly sandy loam, 15 to 45 percent slopes	3.9	1.5%
40A	Ludlow silt loam, 0 to 3 percent slopes	8.4	3.2%
40B	Ludlow silt loam, 3 to 8 percent slopes	51.0	19.4%
69B	Yalesville fine sandy loam, 3 to 8 percent slopes	2.4	0.9%
87B	Wethersfield loam, 3 to 8 percent slopes	100.7	38.2%
87C	Wethersfield loam, 8 to 15 percent slopes	28.7	10.9%
87D	Wethersfield loam, 15 to 25 percent slopes	9.3	3.5%
306	Udorthents-Urban land complex	21.5	8.2%
307	Urban land	8.4	3.2%
308	Udorthents, smoothed	3.5	1.3%
W	Water	1.0	0.4%
Totals for Area of Interest		**263.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape,

however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and

relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

State of Connecticut

3—Ridgebury, Leicester, and Whitman soils, extremely stony

Map Unit Setting

National map unit symbol: 9lm8
Elevation: 0 to 1,200 feet
Mean annual precipitation: 37 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Ridgebury and similar soils: 40 percent
Leicester and similar soils: 35 percent
Whitman and similar soils: 15 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ridgebury

Setting

Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from granite and/or schist and/or gneiss

Typical profile

A - 0 to 5 inches: fine sandy loam
Bg1 - 5 to 14 inches: fine sandy loam
Bg2 - 14 to 21 inches: fine sandy loam
Cd - 21 to 60 inches: sandy loam

Properties and qualities

Slope: 0 to 5 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 30 inches to densic material
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Description of Leicester

Setting

Landform: Drainageways, depressions

Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Coarse-loamy melt-out till derived from granite and/or schist and/or gneiss

Typical profile

Oe - 0 to 1 inches: moderately decomposed plant material
A - 1 to 7 inches: fine sandy loam
Bg1 - 7 to 10 inches: fine sandy loam
Bg2 - 10 to 18 inches: fine sandy loam
BC - 18 to 24 inches: fine sandy loam
C1 - 24 to 43 inches: gravelly fine sandy loam
C2 - 43 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 5 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Description of Whitman

Setting

Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from granite and/or schist and/or gneiss

Typical profile

Oi - 0 to 1 inches: slightly decomposed plant material
A - 1 to 9 inches: fine sandy loam
Bg - 9 to 16 inches: fine sandy loam
Cdg1 - 16 to 22 inches: fine sandy loam
Cdg2 - 22 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 2 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 12 to 20 inches to densic material
Natural drainage class: Very poorly drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches

Frequency of flooding: None
Frequency of ponding: Occasional
Available water storage in profile: Very low (about 1.9 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Minor Components

Unnamed, frequently flooded
Percent of map unit: 2 percent
Landform: Drainageways

Woodbridge
Percent of map unit: 2 percent
Landform: Hills, drumlins
Down-slope shape: Concave
Across-slope shape: Linear

Unnamed, steep slopes
Percent of map unit: 2 percent

Sutton
Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Linear

Unnamed, silt loam surface
Percent of map unit: 1 percent

Unnamed, nonstony
Percent of map unit: 1 percent

5—Wilbraham silt loam

Map Unit Setting
National map unit symbol: 9lp1
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Wilbraham and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wilbraham

Setting

Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile

A - 0 to 4 inches: silt loam
Bw1 - 4 to 8 inches: silt loam
Bw2 - 8 to 20 inches: silt loam
Cd - 20 to 65 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 36 inches to densic material
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D

Minor Components

Menlo

Percent of map unit: 4 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Cheshire

Percent of map unit: 3 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Linear

Watchaug

Percent of map unit: 3 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Concave

Ludlow

Percent of map unit: 3 percent
Landform: Hills, drumlins
Down-slope shape: Concave
Across-slope shape: Linear

Wethersfield
Percent of map unit: 2 percent
Landform: Hills, drumlins
Down-slope shape: Linear
Across-slope shape: Convex

Unnamed, nondense substratum
Percent of map unit: 2 percent

Unnamed, steep slopes
Percent of map unit: 1 percent

Unnamed, loam or fine sandy loam surface
Percent of map unit: 1 percent

Unnamed, stony surface
Percent of map unit: 1 percent

6—Wilbraham and Menlo soils, extremely stony

Map Unit Setting
National map unit symbol: 9lpm
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Wilbraham and similar soils: 60 percent
Menlo and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wilbraham

Setting
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile
A - 0 to 4 inches: silt loam
Bw1 - 4 to 8 inches: silt loam
Bw2 - 8 to 20 inches: silt loam
Cd - 20 to 65 inches: gravelly loam

Properties and qualities
Slope: 0 to 3 percent
Percent of area covered with surface fragments: 9.0 percent

Depth to restrictive feature: 20 to 36 inches to densic material
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 18 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Description of Menlo

Setting

Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile

Oa - 0 to 5 inches: highly decomposed plant material
A - 5 to 16 inches: mucky silt loam
Bg1 - 16 to 22 inches: flaggy very fine sandy loam
Bg2 - 22 to 27 inches: flaggy fine sandy loam
Cd1 - 27 to 40 inches: fine sandy loam
Cd2 - 40 to 60 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 36 inches to densic material
Natural drainage class: Very poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D

Minor Components

Cheshire

Percent of map unit: 3 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Linear

Watchaug
Percent of map unit: 3 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Concave

Unnamed, steep slopes
Percent of map unit: 2 percent

Unnamed, dense substratum
Percent of map unit: 2 percent

Ludlow
Percent of map unit: 2 percent
Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear

Wethersfield
Percent of map unit: 2 percent
Landform: Drumlins, hills
Down-slope shape: Linear
Across-slope shape: Convex

Unnamed, loam or fine sandy loam surface
Percent of map unit: 1 percent

12—Raypol silt loam

Map Unit Setting
National map unit symbol: 9ljx
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Raypol and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Raypol

Setting
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from granite and/or schist and/or gneiss

Typical profile

Ap - 0 to 8 inches: silt loam
Bg1 - 8 to 12 inches: very fine sandy loam
Bg2 - 12 to 20 inches: silt loam
Bw1 - 20 to 26 inches: silt loam
Bw2 - 26 to 29 inches: very fine sandy loam
2C1 - 29 to 52 inches: stratified very gravelly coarse sand to loamy fine sand
2C2 - 52 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: About 0 to 12 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D

Minor Components

Haven

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Linear

Enfield

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Convex
Across-slope shape: Linear

Ninigret

Percent of map unit: 3 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Concave

Tisbury

Percent of map unit: 2 percent
Landform: Terraces, outwash plains
Down-slope shape: Concave
Across-slope shape: Linear

Scarboro

Percent of map unit: 2 percent
Landform: Drainageways, terraces, depressions
Down-slope shape: Concave
Across-slope shape: Concave

Walpole

Percent of map unit: 2 percent
Landform: Depressions on terraces, drainageways on terraces
Down-slope shape: Concave
Across-slope shape: Concave

Unnamed, loamy substratum

Percent of map unit: 1 percent

20A—Ellington silt loam, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 9lk5
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Ellington and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ellington

Setting

Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Coarse-loamy eolian deposits over sandy and gravelly glaciofluvial deposits derived from sandstone and shale and/or basalt

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 18 inches: silt loam
Bw2 - 18 to 26 inches: very fine sandy loam
2C - 26 to 65 inches: stratified loamy fine sand to very gravelly coarse sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B

Minor Components

Raypol

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave

Raynham

Percent of map unit: 5 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Unnamed, fine sandy loam surface

Percent of map unit: 5 percent

Branford

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

33A—Hartford sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: 9lmv
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hartford and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hartford

Setting

Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Sandy glaciofluvial deposits derived from sandstone and/or basalt

Typical profile

Ap - 0 to 8 inches: sandy loam
Bw1 - 8 to 20 inches: sandy loam
Bw2 - 20 to 26 inches: loamy sand
2C - 26 to 65 inches: stratified very gravelly coarse sand to loamy fine sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Somewhat excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B

Minor Components

Manchester

Percent of map unit: 5 percent
Landform: Eskers, terraces, kames, outwash plains
Down-slope shape: Convex
Across-slope shape: Convex

Penwood

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Linear

Branford

Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear

Ellington

Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Linear
Across-slope shape: Linear

37E—Manchester gravelly sandy loam, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: 9ln7
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Manchester and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Manchester

Setting

Landform: Eskers, terraces, kames, outwash plains
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy and gravelly glaciofluvial deposits derived from sandstone and shale and/or basalt

Typical profile

Ap - 0 to 9 inches: gravelly sandy loam
Bw - 9 to 18 inches: gravelly loamy sand
C - 18 to 65 inches: stratified extremely gravelly coarse sand to very gravelly loamy sand

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Excessively drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 2.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: A

Minor Components

Penwood
Percent of map unit: 5 percent
Landform: Outwash plains, terraces
Down-slope shape: Convex
Across-slope shape: Linear

Hartford
Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear

Branford
Percent of map unit: 5 percent
Landform: Terraces, outwash plains
Down-slope shape: Linear
Across-slope shape: Linear

Walpole
Percent of map unit: 3 percent
Landform: Drainageways on terraces, depressions on terraces
Down-slope shape: Concave
Across-slope shape: Concave

Scitico
Percent of map unit: 2 percent
Landform: Drainageways, terraces, depressions
Down-slope shape: Concave
Across-slope shape: Concave

40A—Ludlow silt loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 9lnh
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Ludlow and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ludlow

Setting
Landform: Drumlins, hills

Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile

Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 20 inches: silt loam
Bw2 - 20 to 26 inches: silt loam
Cd - 26 to 65 inches: gravelly loam

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C

Minor Components

Wethersfield

Percent of map unit: 5 percent
Landform: Drumlins, hills
Down-slope shape: Linear
Across-slope shape: Convex

Wilbraham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave

Cheshire

Percent of map unit: 3 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Linear

Watchaug

Percent of map unit: 3 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Concave

Menlo

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave

Across-slope shape: Concave

Unnamed, stony surface
Percent of map unit: 1 percent

Yalesville
Percent of map unit: 1 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

40B—Ludlow silt loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9lnj
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Ludlow and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ludlow

Setting
Landform: Hills, drumlins
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile
Ap - 0 to 8 inches: silt loam
Bw1 - 8 to 20 inches: silt loam
Bw2 - 20 to 26 inches: silt loam
Cd - 26 to 65 inches: gravelly loam

Properties and qualities
Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None

Available water storage in profile: Low (about 4.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Wethersfield

Percent of map unit: 5 percent
Landform: Drumlins, hills
Down-slope shape: Linear
Across-slope shape: Convex

Wilbraham

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave

Cheshire

Percent of map unit: 3 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Linear

Watchaug

Percent of map unit: 3 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Concave

Menlo

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Unnamed, stony surface

Percent of map unit: 1 percent

Yalesville

Percent of map unit: 1 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

69B—Yalesville fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 9lq9
Elevation: 0 to 1,200 feet

Mean annual precipitation: 40 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Yalesville and similar soils: 75 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Yalesville

Setting

Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Coarse-loamy melt-out till derived from basalt and/or sandstone and shale

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 14 inches: fine sandy loam
Bw2 - 14 to 25 inches: loam
C - 25 to 36 inches: gravelly sandy loam
2R - 36 to 80 inches: unweathered bedrock

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Low to high (0.01 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Wethersfield

Percent of map unit: 5 percent
Landform: Hills, drumlins
Down-slope shape: Linear
Across-slope shape: Convex

Holyoke

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Convex

Cheshire
Percent of map unit: 5 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Linear

Ludlow
Percent of map unit: 3 percent
Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear

Wilbraham
Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Unnamed, silt loam surface
Percent of map unit: 2 percent

Watchaug
Percent of map unit: 2 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Concave

Unnamed, less sloping
Percent of map unit: 1 percent

87B—Wethersfield loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 9lrh
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Wethersfield and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wethersfield

Setting
Landform: Hills, drumlins
Down-slope shape: Linear
Across-slope shape: Convex

Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile

Ap - 0 to 3 inches: loam
Bw1 - 3 to 13 inches: loam
Bw2 - 13 to 27 inches: gravelly loam
Cd - 27 to 65 inches: gravelly loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C

Minor Components

Yalesville

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Ludlow

Percent of map unit: 5 percent
Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear

Cheshire

Percent of map unit: 5 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Linear

Wilbraham

Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Menlo

Percent of map unit: 2 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

87C—Wethersfield loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 9lrj
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Wethersfield and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wethersfield

Setting

Landform: Drumlins, hills
Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile

Ap - 0 to 3 inches: loam
Bw1 - 3 to 13 inches: loam
Bw2 - 13 to 27 inches: gravelly loam
Cd - 27 to 65 inches: gravelly loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C

Minor Components

Cheshire
Percent of map unit: 5 percent
Landform: Hills, till plains
Down-slope shape: Linear
Across-slope shape: Linear

Ludlow
Percent of map unit: 5 percent
Landform: Drumlins, hills
Down-slope shape: Concave
Across-slope shape: Linear

Yalesville
Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Wilbraham
Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Menlo
Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Concave
Across-slope shape: Concave

87D—Wethersfield loam, 15 to 25 percent slopes

Map Unit Setting
National map unit symbol: 9lrk
Elevation: 0 to 1,200 feet
Mean annual precipitation: 43 to 54 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 140 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition
Wethersfield and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Wethersfield

Setting
Landform: Hills, drumlins

Down-slope shape: Linear
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from basalt and/or sandstone and shale

Typical profile

Ap - 0 to 3 inches: loam
Bw1 - 3 to 13 inches: loam
Bw2 - 13 to 27 inches: gravelly loam
Cd - 27 to 65 inches: gravelly loam

Properties and qualities

Slope: 15 to 25 percent
Depth to restrictive feature: 20 to 40 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Minor Components

Cheshire

Percent of map unit: 5 percent
Landform: Till plains, hills
Down-slope shape: Linear
Across-slope shape: Linear

Yalesville

Percent of map unit: 5 percent
Landform: Hills, ridges
Down-slope shape: Convex
Across-slope shape: Linear

Ludlow

Percent of map unit: 5 percent
Landform: Hills, drumlins
Down-slope shape: Concave
Across-slope shape: Linear

Wilbraham

Percent of map unit: 3 percent
Landform: Depressions, drainageways
Down-slope shape: Concave
Across-slope shape: Concave

Menlo

Percent of map unit: 2 percent
Landform: Drainageways, depressions
Down-slope shape: Concave

Across-slope shape: Concave

306—Udorthents-Urban land complex

Map Unit Setting

National map unit symbol: 9lmg
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 50 percent
Urban land: 35 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Drift

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 25 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 54 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 8 percent

Udorthents, wet substratum

Percent of map unit: 5 percent
Down-slope shape: Convex
Across-slope shape: Linear

Rock outcrop

Percent of map unit: 2 percent

307—Urban land

Map Unit Setting

National map unit symbol: 9lmh
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Urban land: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Typical profile

H - 0 to 6 inches: material

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 10 percent

Udorthents, wet substratum

Percent of map unit: 10 percent
Down-slope shape: Convex
Across-slope shape: Linear

308—Udorthents, smoothed

Map Unit Setting

National map unit symbol: 9lmj
Elevation: 0 to 2,000 feet
Mean annual precipitation: 43 to 56 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 120 to 185 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Setting

Down-slope shape: Convex
Across-slope shape: Linear

Typical profile

A - 0 to 5 inches: loam
C1 - 5 to 21 inches: gravelly loam
C2 - 21 to 80 inches: very gravelly sandy loam

Properties and qualities

Slope: 0 to 35 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to high (0.00 to 1.98 in/hr)
Depth to water table: About 24 to 54 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: B

Minor Components

Unnamed, undisturbed soils

Percent of map unit: 7 percent

Udorthents, wet substratum

Percent of map unit: 7 percent

Urban land
Percent of map unit: 5 percent

Rock outcrop
Percent of map unit: 1 percent

W—Water

Map Unit Composition
Water: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

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HISTORICAL PERSPECTIVES INC.

PHASE IB ARCHAEOLOGICAL FIELD RECONNAISSANCE
ADDENDUM TO PHASE IA
VETERANS CEMETERY EXPANSION
317 BOW LANE, MIDDLETOWN,
MIDDLESEX COUNTY, CONNECTICUT

October 15, 2014

Introduction

The State Veterans Cemetery at 317 Bow Lane in Middletown is the largest State operated cemetery in Connecticut (Figure 1). The site is set on 24 acres of land, approximately 12 of which are developed. The site currently accommodates approximately 7,400 occupied burial sites, an administration building within which is a nondenominational chapel, and an internal vehicular travelway to access the burial sites. The cemetery, established in 1985, is under the administrative control of the Connecticut Department of Veterans Affairs (CTDVA). The cemetery has limited capacity for additional grave sites, and is expanding into an adjacent parcel, the Cemetery Expansion Site, where CTDVA intends to construct a 3,000-niche columbarium, 3,200 feet of access driveway, limited parking, and improvements to the existing administration building. These improvements would extend the life of the cemetery by approximately ten years, thus providing the necessary time for CTDVA to locate and develop a new state cemetery.

In response to Section 106 requirements, Historical Perspectives, Inc. (HPI) completed the standard initial archaeological assessment of the Cemetery Expansion Site, as outlined in Connecticut's *Environmental Review Primer* (Primer). The Phase IA Archaeological Assessment was completed in October, 2014 (HPI 2014). To address the concerns of the review agencies, HPI conducted the survey on the Area of Potential Effect (APE), defined as any location within the limited project site that will experience new subsurface disturbance. Such IA Assessments, as outlined in the *Primer*, address the potential for significant archaeological features from both the historical era and the prehistoric era.

Documentary research concluded that the project site is in an area of known precontact use, although most previously inventoried sites in the general area have been identified near fresh water sources, which is not the case for the APE. If undisturbed, the project site would be considered to have a moderate degree of precontact potential due to its proximity to Fort Hill, a known Native American habitation site. However, it is considered to have only low to moderate sensitivity due to prior subsurface disturbances that became evident during the walkover survey and the site soil study. The field inspection identified catch basins, utilities, and contouring that have impacted the project site (HPI 2014).

The project site has experienced subsurface impacts from measures taken to improve drainage, as evidenced by the elevated residential house lots abutting the site to the north and west and the presence of drainage culverts in the APE. It has also been disturbed to some degree by the installation of buried electrical lines and the creation of an elevated berm immediately to the south.

Finally, a soil study completed for the site reported fill soils and hardpan within the uppermost 24 inches of strata along the northern portion of the site. If fill was added above the natural strata, this may have served to preserve potentially sensitive soils. Conversely, the process of adding fill may have actually disturbed the natural stratigraphy.

The documentary study also found no documented historical use of the project site beyond farming. No outbuildings or structures were mapped on the site, nor do they appear in 20th century aerial photographs. Furthermore, the walkover survey did not find any indication of historic structures or use. Limited Phase IB testing was recommended to establish the actual presence/absence of intact natural strata that might be sensitive for precontact archaeological resources and the need for standard, 15-meter interval shovel testing.

Subsurface Testing

HPI conducted an archaeological investigation of the APE to establish subsurface conditions and to field verify the presence/absence of potential archaeological deposits. Phase IB testing was completed on October 13, 2014 by a team of four archaeologists and field technicians, with Faline Schneiderman MA, RPA, directing excavations.

Because the prior soil study of the site reported levels of fill and hardpan (Milone and MacBroom 2013), and the walkover survey recorded locations or prior disturbance where utility lines and culverts had been installed (HPI 2014), establishing subsurface conditions was deemed necessary. This was accomplished by completing a series of hand-excavated shovel tests (STs) across the entire APE on a 20 to 30 meter grid (Figure 2). If intact soils were encountered, then the standard Phase IB 15 meter grid would be employed to further assess archaeological potential. A 0/0 datum point was established at the southeastern corner of the APE, and each 40 x 40 cm ST was named by its relation on the grid to the datum point. All STs were excavated by natural soil levels with back dirt screened through one-quarter inch wire mesh. STs terminated after at least 20cm of extremely compact sterile hardpan subsoil was excavated. This subsoil was encountered beneath levels of fill, typically at about 27 to 30cm below surface (cmbs), but sometimes as deep as 63cmbs (Appendix A of this Addendum; Photographs A and B).

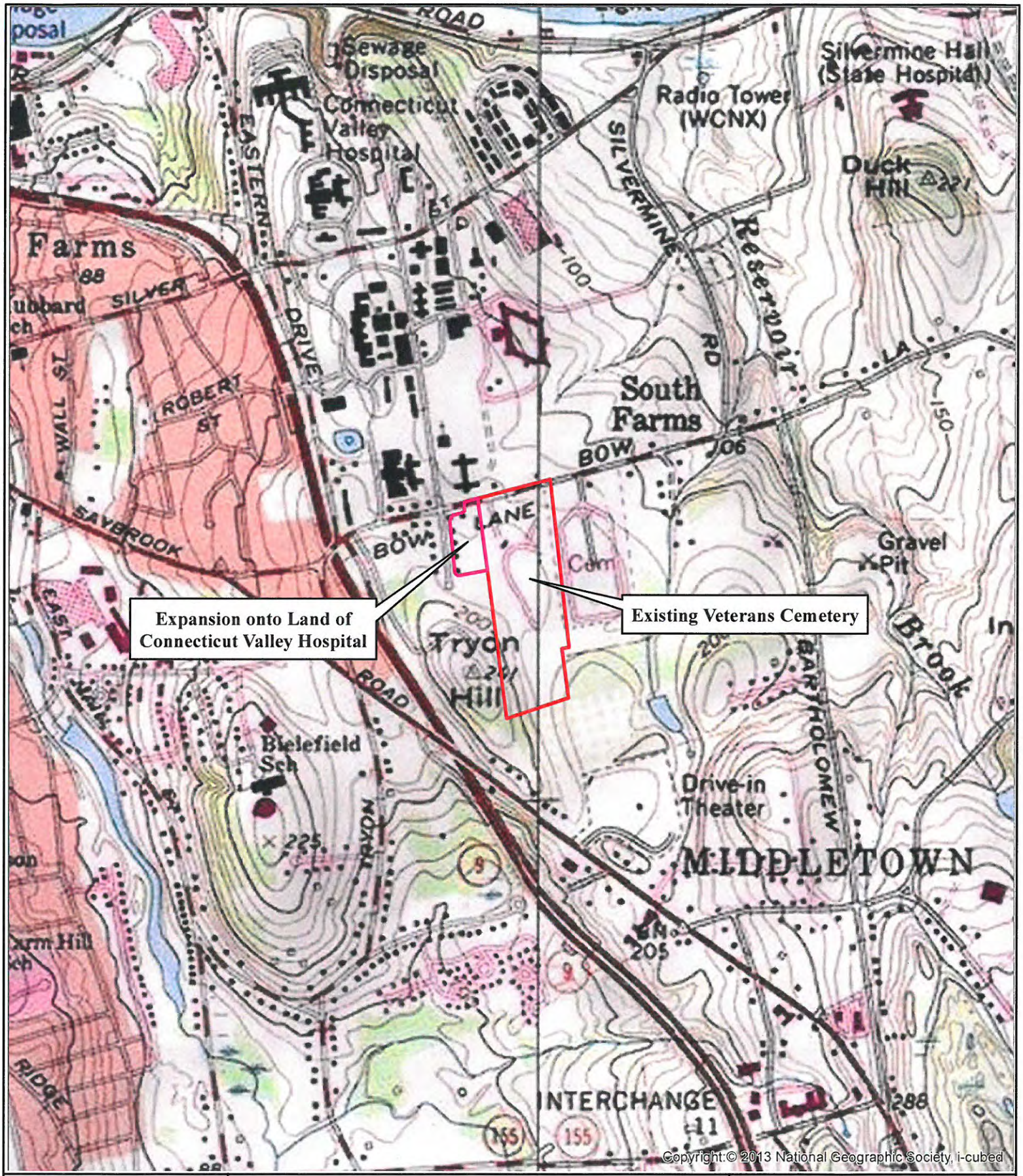
Subsurface testing confirmed the presence of disturbed fill levels above extremely mottled hard pan subsoil. Few artifacts were found in the fill and were predominantly limited to 20th century material. This included window glass, several fragments of whiteware, one piece of yellowware, black and clear plastic, two coal fragments, a metal bolt and a brick fragment (Appendix A of this Addendum). This uppermost level of soil was typically a Munsell color of 10YR 3/6 or 3/3 sandy silty loam that appeared to be a plow zone in some ST locations, although buried beneath additional layers of fill in other ST locations. This horizon was likely disturbed by plowing, and redistributed across the site when the Connecticut Valley Hospital, former owners of the property, developed Holmes Lane with a series of ranch houses immediately to the west of the APE. Along the northern section of the APE, two STs had multiple fill levels extending down to between 50 and 60cmbs, suggesting extensive modification of the landscape (STs N120E0 and N150E0). There were no definitively historical artifacts or precontact material in any of the STs.

Beneath the upper disturbed level(s) was buried hardpan subsoil that was extremely compact. Hardpan does not permit water permeability, and ponding is often associated with these soils. This

likely necessitated the creation of the drainage system observed in the north central section of the APE where a swale was created and culverts were installed (Figure 2). This land manipulation would have helped to ensure that the adjacent houses on Holmes Lane and Bow Street were not flooded by ponding water during periods of heavy rain. To further address the poor site drainage, the building envelopes around each adjacent structure were elevated slightly above the APE. Fill was likely introduced or redistributed across the APE to allow for the planting of trees, such as those observed in a line between the APE and the houses, and grasses to further aid in the capture of water runoff. The hardpan subsoil was entirely devoid of cultural material.

Conclusions and Recommendations

The completion of 15 STs placed across the entire APE on a 20 to 30 meter grid found no intact undisturbed strata, and no cultural deposits (Figure 2 and Appendix A). Because of the disturbed nature of the site, the presence of extremely poorly drained subsoil, and the virtual lack of archaeological potential, no additional testing or investigations are recommended.



SOURCE(S):
USGS Topographic Map from ESRI
Parcel Mapping from CT DEEP
Expansion Area based on BL sketch 8/3/12

Figure 1: USGS Topographic Map

LOCATION:
Middletown, CT

N

Middletown Cemetery Expansion
Project Number: BI-C-283

MXD: W:\Design\1266-37-DE\GIS\Maps\Figure1.mxd

Map By: scottb
MMI#: 1266-37
Original: 6/3/2013
Revision: 6/3/2013
Scale: 1 inch = 1,000 feet

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99 Realty Drive Cheshire, CT 06410
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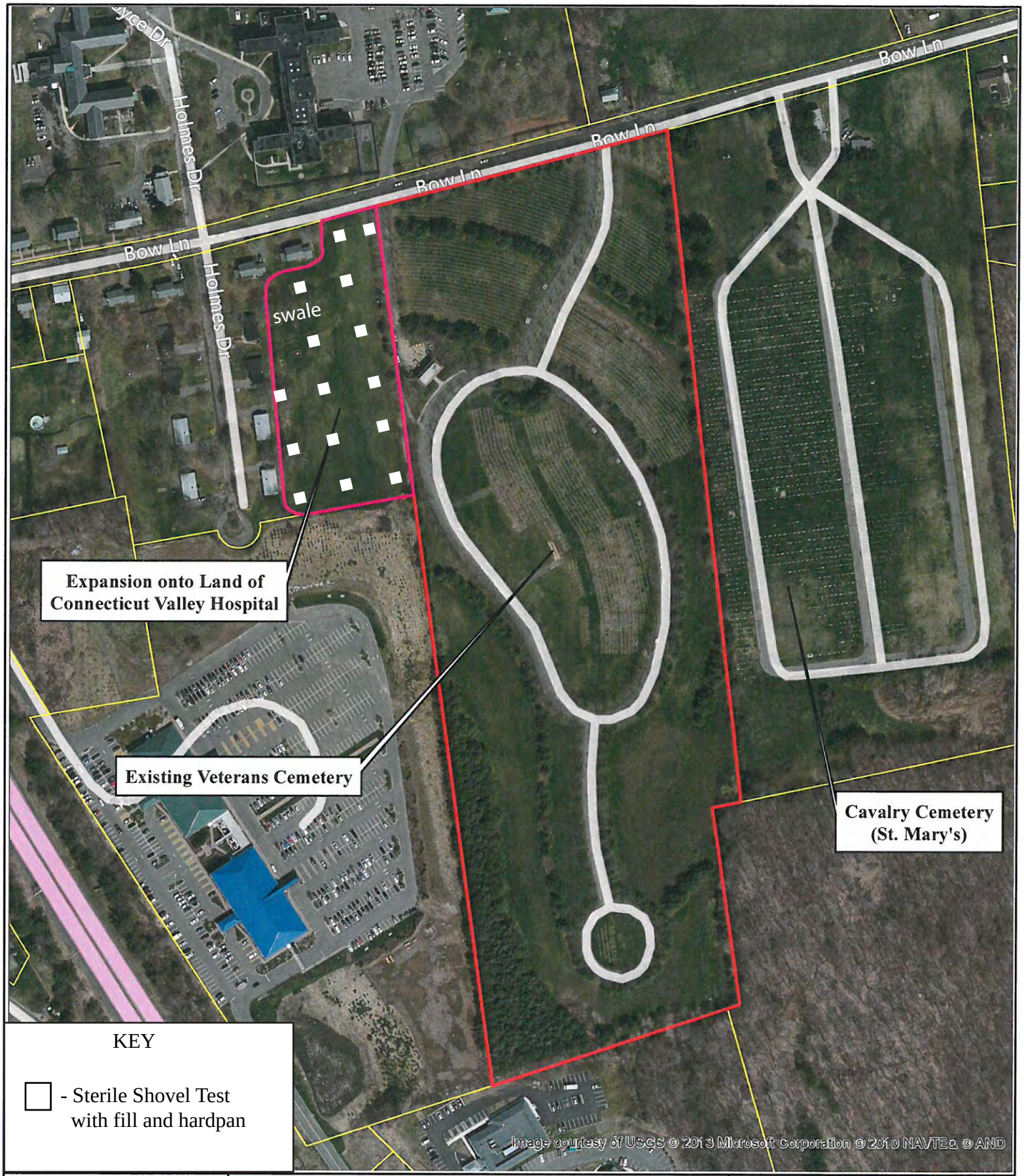

KEY

☐ - Sterile Shovel Test with fill and hardpan

SOURCE(S):
2010 Aerial Photograph from Bing
Parcel Mapping from CT DEEP
Expansion Area based on BL sketch 8/3/12

Figure 2: Shovel Test locations on project site.
(STs not to scale)

LOCATION:
Middletown, CT

N

Middletown Cemetery Expansion
Project Number: BI-C-283

MXD: W:\Design\1266-37-DE\GIS\Maps\Figure2.mxd

Map By: scottb
MMI#: 1266-37
Original: 6/3/2013
Revision: 6/3/2013
Scale: 1 inch = 250 feet

MILONE & MACBROOM
99 Realty Drive Cheshire, CT 06410
(203) 271-1773 Fax: (203) 272-9733
www.miloneandmacbroom.com

Grid Coord.	Level	Horizon	Depth in cm	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termi	
N0E0	1	Fill 1	0-41	7.5YR 3/4	SiSaLo w/gravel	NCM		
	2	Fill 2	41-72	10YR 3/3	SiLo	coal (NS)	Compact	
	3	B	72-76	10YR 6/2	FiSilt	NCM	hard-pan, sterile	
N10W30	1	Fill 1	0-70	10YR 3/3	FiSiLo	brick frag., 2 glass (NS)		
	2	B	70-83	7.5YR 4/4	FiSaSilt	NCM	hard-pan sterile	
N10W50	1	Fill 1	0-37	10YR 3/3	SaSiLo	NCM	Damp	
	2	B1	37-60	10YR 4/3 & 7.5YR 4/4	SiSaLo & Sand, gravel, cobbles	NCM	compact	
	3	B2	60-72	7.5YR 4/4	SiSaLo & Sand, gravel, cobbles	NCM	Compact, sterile hard-pan	
N30E0	1	Fill 1	0-27	10YR 3/6	SiLo	NCM		
	2	B	27-42	10YR 6/3 & 7.5YR 5/8	mottled FiSilt w/gravel	NCM	Compact, hard-pan, sterile	
N30W30	1	Fill 1	0-35	10YR 3/4	SaSilt	window and modern bottle glass, whiteware (NS)		
	2	B	35-57	10YR 6/3 & 7.5YR 5/8	SaSiLo	NCM	Compact, sterile hard-pan	
N30W50	1	Fill 1	0-30	10YR 3/3	SaSiLo	NCM		
	2	B	30-63	10YR 5/3 & 7.5YR 5/6	SaLo	NCM	Compact, hard-pan, sterile	
N60E0	1	Fill 1	0-30	10YR 3/6	SiLo	NCM		
	2	B	30-50	10YR 6/3 & 7.5YR 5/8	FiSilt, pebbles, rocks	NCM	Hard-pan, sterile	
N60W30	1	Fill 1	0-38	10YR 3/2	SaSiLo	2 whiteware (NS)	Large rocks at transition	
	2	B	38-70	10YR 5/3 & 5YR 4/6	mottled SaLo	NCM	Compact, sterile hard-pan	
N60W50	1	Fill 1	0-33	10YR 3/6	SaSiLo	NCM		
	2	B	33-59	7.5YR 5/8 & 7.5YR 6/4	mottled SaSiLo	NCM	Compact, sterile hard-pan	
N90E0	1	Fill 1	0-37	10YR 3/4 & 7.5YR 4/4	mottled SiSaLo	NCM	Large rock	
	2	B	37-51	10YR 4/6	SiLo	NCM	Compact hard-pan, rock obstruc	
N90W30	1	Fill 1	0-28	10YR 3/4	SaSilt w/rock	1 window glass, 3 plastic, 2 whiteware (NS)		
	2	B	28-49	10YR 6/3 & 7.5YR 5/6	mottled FiSaSilt	NCM	Compact, sterile hard-pan	

Grid Coord.	Level	Horizon	Depth in cm	Soil Color	Soil Description	Cultural Material	Comments/ Reason for Termi	
N120E0	1	Fill 1	0-20	10YR 3/6	SiLo	NCM		
	2	Fill 2	20-34	5YR 3/4	FiSaSiLo w/gravel	1 window glass (NS)		
	3	Fill 3	34-48	10YR 3/4	FiSiSaLo	NCM	Damp, compact	
	4	B	48-58	10YR 5/8	SaSilt w/FiSand	NCM	Compact, sterile	
N120W30	1	Fill 1	0-34	10YR 3/4	SaSilt	NCM		
	2	B	34-54	10YR 6/3 & 7.5YR 5/6	mottled FiSaSilt	NCM	Compact, sterile hard-pan	
N150E0	1	Fill 1	0-35	10YR 3/3	SiLo	NCM		
	2	B	35-63	10YR 5/3 & 10YR 6/2	mottled SaSilt & SaLo	NCM	Compact	
	3	C	63-73	7.5YR 4/4	SiSand	NCM	Compact, sterile	
N150E20	1	Fill 1	0-27	10YR 3/3	SaSiLo	NCM		
	2	Fill 2	27-41	10YR 4/3 & 7.5YR 4/4	mottled SiSa & Sand w/gravel	coal (NS)	Hard-pan	
	3	C	41-46	10YR 4/3	SiSaLo	NCM	Compact, sterile	
						Sa = Sandy	NS = Not saved	
						Si = Silty	NCM = no cultural material	
						Fi = Fine	Lo = Loam	

APPENDIX D
Comments Received During Draft EA and Public Scoping

Connecticut Council on Environmental Quality

Monitor Archives

April 22, 2014

Scoping Notices

1. Revised Greater Waterbury Bus Storage and Maintenance Facility, Watertown
2. Springborn Dam Removal, Enfield
3. Marlborough Center Water Main, Marlborough
4. **NEW!** Department of Veterans' Affairs Cemetery Expansion, Middletown

Post-Scoping Notices: Environmental Impact Evaluation (EIE) Not Required

1. East Haven Industrial / Business Park, East Haven
2. Meriden Transit Oriented Development, Meriden
3. **NEW!** Property Acquisitions, Meriden

Environmental Impact Evaluations

1. **NEW!** STEM Residence Hall University Of Connecticut, Mansfield
2. **NEW!** New Engineering and Science Building, Mansfield

State Land Transfers

1. Final Recommendations of Commissioner of DEEP Regarding Proposed Land Transfer at Former Cedarcrest Hospital, Newington

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The next edition of the Environmental Monitor will be published on May 6, 2014.

Subscribe to e-alerts to receive an e-mail when the Environmental Monitor is published.

Scoping Notices

"Scoping" is for projects in the earliest stages of planning. At the scoping stage, detailed information on a project's design, alternatives, and environmental impacts does not yet exist. Sponsoring agencies are asking for comments from other agencies and from the public as to the scope of alternatives and

Name: Mr. Eric McPhee
Agency: Department of Public Health
Drinking Water Section
Address: 410 Capitol Avenue, MS #51WAT
PO Box 340308
Hartford, CT 06134-0308
Fax: 860-509-7359
E-Mail: DPH.SourceProtection@ct.gov

If you have questions about the public meeting, or other questions about the scoping for this project, contact:

Name: Ms. Patricia Bisacky
Agency: Department of Public Health
Drinking Water Section
Address: 410 Capitol Avenue, MS #51WAT
PO Box 340308
Hartford, CT 06134-0308
Phone: 860-509-7333
Fax: 860-509-7359
E-Mail: Patricia.Bisacky@ct.gov

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4. Notice of Scoping for the CT Department of Veterans' Affairs Cemetery Expansion

Municipality where proposed project might be located: Middletown

Address of Possible Project Location: 317 Bow Lane

Project Description:

Located at 317 Bow Lane in Middletown, Connecticut, the State Veterans' Cemetery is the largest State-operated cemetery in Connecticut. The site is set on 24 acres of land, approximately 12 of which are developed. The site currently accommodates approximately 7,400 occupied burial sites, an administration building within which is a nondenominational chapel, and an internal vehicular travelway to access the burial sites. The cemetery was established in 1985.

Current issues of concern at the Veterans' Cemetery include limited capacity for additional grave sites, an inadequate internal access road system, loss of sections of the cemetery due to high water table, code compliance within the administration building, and inadequate parking.

As of 2012, a total of 7,123 gravesites were utilized. Projected gravesite utilization for 2013 was 479, bringing total utilization to 7,602 by December 2013. Based on the rate of filling, the cemetery is anticipated to be depleted of space in approximately 4.6 years.

CTDVA intends to construct a 3,000-niche columbarium, 3,200 feet of access driveway, limited parking, and improvements to the existing administration building. These improvements are needed in order to bring the building up to code, including handicapped access, and to extend the life of the cemetery by approximately ten years, thus providing the necessary time for CTDVA to locate and develop a new state cemetery. Details of the project are described in greater detail in the Draft Environmental Assessment (link below).

Project Map(s): Click here to view a map of the project area.

Written comments from the public are welcomed and will be accepted until the close of business on: May 22, 2014

Any person can ask the sponsoring agency to hold a Public Scoping Meeting by sending such a request to the address below. If a meeting is requested by 25 or more individuals, or by an association that represents 25 or more members, the sponsoring agency shall schedule a Public Scoping Meeting. Such requests must be made by May 2, 2014.

Additional information about the project can be viewed in person at CT DAS-DCS, 165 Capitol Avenue, Room 482, Hartford, CT 06106 or online at: Draft Environmental Assessment (DCS website).

Written comments and/or requests for a Public Scoping Meeting should be sent to:

Name: Jeff Bolton, Supervising Environmental Analyst

Agency: DAS - Division of Construction Services

Address: 165 Capitol Avenue, Room 482, Hartford, CT 06106

Fax: 860-713-7250

E-Mail: Jeffrey.bolton@ct.gov

If you have questions about the public meeting, or other questions about the scoping for this project, contact:

Name: Jeff Bolton

Agency: DAS - Division of Construction Services

Address: 165 Capitol Avenue, Room 482, Hartford, CT 06106

Phone: 860-713-5706

Fax: 860-713-7250

E-Mail: Jeffrey.bolton@ct.gov

The agency expects to release a Final Environmental Assessment and Finding of No Significant Impact (FONSI) in accordance with NEPA for this project, for public review and comment, in June 2014

Other information: http://www.ct.gov/ctva/lib/ctva/Cemetery_Brochure_rev_4.pdf

Post-Scoping Notices: Environmental Impact Evaluation Not Required

This category is required by the October 2010 revision of the Generic Environmental Classification Document for State Agencies. A notice is published here if the sponsoring agency, after publication of a scoping notice and consideration of comments received, has determined that an Environmental Impact Evaluation (EIE) does not need to be prepared for the proposed project.

CONNECTICUT DEPARTMENT OF

ENERGY & ENVIRONMENTAL PROTECTION

OFFICE OF ENVIRONMENTAL REVIEW

79 ELM STREET, HARTFORD, CT 06106-5127

To: Jeffrey Bolton - Supervising Environmental Analyst
DAS - Division of Construction Services, 165 Capitol Avenue, Hartford

From: David J. Fox - Senior Environmental Analyst **Telephone:** 860-424-4111

E-Mail: david.fox@ct.gov

Date: May 22, 2014

Subject: Veterans, Cemetery, Middletown

The Department of Energy & Environmental Protection has received the Notice of Scoping for the proposed expansion of the Veterans' Cemetery on Bow Lane in Middletown. The following comments are submitted for your consideration.

The notice indicates that the agency expects to release a Finding of No Significant Impact in accordance with NEPA next month. Apparently, an Environmental Impact Evaluation will not be prepared. Given the nature of the proposed project and the existing resources of the site, as outlined in the Draft Environmental Assessment, the Department has no objection to this course of action.

Stormwater discharges from construction sites where one or more acres are to be disturbed, regardless of project phasing**,** require an NPDES permit from the Permitting & Enforcement Division. The *General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities* (DEEP-WPED-GP-015) will cover these discharges. The construction stormwater general permit dictates separate compliance procedures for Locally Approvable projects and Locally Exempt projects (as defined in the permit). Locally Exempt construction projects disturbing over 1 acre must submit a registration form and Stormwater Pollution Control Plan (SWPCP) to the Department. Locally Approvable construction projects with a total disturbed area of one to five acres are not required to register with the Department provided the development plan has been approved by a municipal land use agency and adheres to local erosion and sediment control land use regulations and the *CT Guidelines for Soil Erosion and Sediment Control*. Locally Approvable construction projects with a total disturbed area of five or more acres must submit a registration form to the Department prior to the initiation of construction. This registration shall include a certification by a Qualified Professional who designed the project and a certification by a Qualified Professional or regional Conservation District who reviewed the SWPCP and deemed it consistent with the requirements of the general permit. The SWPCP for Locally Approvable projects is not required to be submitted to the Department unless requested. The SWPCP must include measures such as erosion and sediment controls and post construction stormwater management. A goal of 80 percent removal of total suspended solids from the stormwater discharge shall be used in designing and installing post-construction stormwater management measures. The general permit also requires that post-construction control measures incorporate runoff reduction practices, such as LID techniques, to meet performance standards specified in the permit. For further information, contact the division

at 860-424-3018. A copy of the general permit as well as registration forms may be downloaded at: Construction Stormwater GP.

Thank you for the opportunity to review this project. If there are any questions concerning these comments, please contact me.

cc: Robert Hannon, DEEP/OPPD

STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC HEALTH

Jewel Mullen, M.D., M.P.H., M.P.A.
Commissioner

Dannel P. Malloy
Governor
Nancy Wyman
Lt. Governor

May 22, 2014

Mr. Jeff Bolton
Department of Administrative Services
Division of Construction Services
165 Capitol Avenue, Room 482
Hartford, CT 06106

Re: Notice of Scoping for the CT Department of Veterans' Affairs Cemetery Expansion

Dear Mr. Bolton:

The Drinking Water Section of the Department of Public Health has reviewed the above-mentioned project for potential impacts to any sources of public drinking water supply. This project does not appear to be in a public water supply source water area; therefore, the Drinking Water Section has no comments at this time.

Sincerely,

Eric McPhee
Supervising Environmental Analyst
Drinking Water Section

Connecticut Department of Public Health

Phone: (860) 509-7333 • Fax: (860) 509-7359 • VP: (860) 899-1611
410 Capitol Avenue, MS#51WAT, P.O. Box 340308
Hartford, Connecticut 06134-0308
www.ct.gov/dph

Jessica Pica

From: Bolton, Jeffrey <Jeffrey.Bolton@ct.gov>
Sent: Monday, September 08, 2014 5:11 PM
To: Jeanine Gouin
Subject: FW: Scoping Notice: Proposed Columbarium on CVH Land adjacent to Veterns' Cemetery
Attachments: 19a-310.doc

2nd DPH comments

Jeff Bolton, Supervising Environmental Analyst
jeffrey.bolton@ct.gov || www.ct.gov/dcs
860-713-5706 (office) || 860-655-0477 (cell)

From: Scully, Robert
Sent: Thursday, May 15, 2014 12:25 PM
To: Bolton, Jeffrey
Subject: Scoping Notice: Proposed Columbarium on CVH Land adjacent to Veterns' Cemetery

Jeff:
The construction of public mausoleums and columbariums requires the approval of this Department pursuant to CGS Sec. 19a-310 (attached), however the statute includes a provision that exempts columbariums on the property of a religious society or corporation from having to obtain the approvals cited in the statute. The subject scoping notice includes a list of required permits needed for this project, however the approval from this Department in accordance w/ the attached statute is not cited. This could be because the columbarium is to be constructed on state owned property. The purpose of this email is to alert you to the provisions in CGS Sec. 19a-310, and to solicit feedback whether securing approval from this Department is envisioned. The review fee cited in the statute would not be required for this project as it is on a state property. I also would like to ask whether the CVH land will be formally combined with the Veterans' Cemetery property? Please let me know. Thank you,
Bob Scully

Robert Scully, PE
Supervising Sanitary Engineer
Environmental Engineering Program
CT Department of Public Health
Phone: 860 509-7296
robert.scully@ct.gov

APPENDIX E
Response to Comments

Responses to Comments

DCS Project No. BI-C-283

State of Connecticut Department of Energy & Environmental Protection (DEEP)
May 22, 2014

General Comments:
DEEP indicated that stormwater discharges from construction sites where one or more acres are to be disturbed require an NPDES permit from the Permitting & Enforcement Division and provided additional information about the general permitting process. The agency indicated that it has no objection to the proposed action.

Response:
The project does require a general permit under the NPDES program. The project has been designed in accordance with the general permit requirements and an application is pending at the DEEP.

Regarding whether the proposed action requires an environmental impact evaluation, the sponsoring and participating agencies appreciate DEEP's concurrence that such evaluation is not warranted. DCS has prepared a Record of Environmental Consideration (REC) and will post the REC along with the Federal Finding of No Significant Impact and Final Environmental Assessment on the next available Environmental Monitor.

State of Connecticut Department of Public Health (DPH-1)
May 15, 2014 and May 22, 2014

General Comments:
In email correspondence dated May 15, 2014, DPH noted that per Connecticut General Statute Section 19a-310, construction of public mausoleums and columbariums requires approval from the Connecticut Department of Public Health.

DPH also inquired as to the intention to formally combine the CVH land with the Veterans' Cemetery property.

In written correspondence dated May 22, 2014, the Drinking Water Section of the Department of Public Health indicated that the site of the proposed action does not appear to be located in a public water supply source water area and therefore, the Drinking Water Section had no comments.

Response:
Appendix B of the Environmental Assessment is hereby modified as follows (new text is underlined and italicized):

> State Permits – A Flood Management Certificate may be required for storm drainage improvements at the site. Since wetlands will not be impacted, a 401 Water Quality Certificate is not believed to be required. *A General Permit for the Discharge of*

Stormwater and Dewatering Wastewaters Associated with Construction Activities (DEEP-WPED-GP-015 will be required if one or more acres of land will be disturbed. Approval of the columbarium may be required from the Connecticut Department of Public Health. No other state environmental permits have been identified at this time.

Since the completion of the EA, the CVH land has been transferred to the Connecticut Department of Veterans' Affairs.