

# **EXHIBIT I**

*Proposed Wireless  
Telecommunications Facility*

*East Lyme*

49 Brainerd Road  
Niantic (East Lyme), CT

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Prepared for



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November 2009

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## Visual Resource Evaluation

SBA Towers II LLC seeks approval from the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need to construct a wireless telecommunications facility (“Facility”) to be located on property at 49 Brainerd Road (“Host Property”) in the town of East Lyme, Connecticut. This Visual Resource Evaluation was conducted to approximate the visibility of the proposed Facility within a two-mile radius of the Site (“Study Area”). Attachment A contains a map that depicts the location of the proposed Facility and the limits of the Study Area.

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### Project Introduction

The proposed Facility includes the construction of a 170-foot tall monopole designed to support up to four antenna platforms with associated ground equipment to be located within a fenced enclosure at the base of the tower. Based on information provided by the project engineer, Clough Harbor Associates, LLP, the proposed Facility is located at approximately 21 feet above mean sea level (AMSL). Access to the proposed Facility would follow an existing dirt path currently located on the Host Property (to be improved to accommodate service vehicles) that extends to the project area in a southeasterly direction from an existing residential driveway.

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### Site Description and Setting

Identified in the Town of East Lyme land records as Map ID 7.4-21, the Host Property includes approximately 51 acres of mostly undeveloped, wooded land and is currently occupied by a single family residential dwelling and an associated outbuilding. The proposed Facility would be located on the northern portion of the Host Property, roughly 370 feet to the northeast of the existing residence. Land use within the general vicinity of the proposed Facility and Host Property is mainly comprised of undeveloped, forested land, an existing Amtrak railroad corridor and its associated overhead electrical infrastructure and low-density residential development. Segments of Interstate 95, Route 156 and Route 161 traverse portions of the Study Area. In total, the Study Area contains roughly 83 linear miles of roadways and rail line.

The topography in the Study Area is generally characterized by gently rolling hills and flat areas with ground elevations ranging from sea level to approximately 190 feet AMSL. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species. The tree canopy occupies approximately 2,921 acres of the 8,042-acre study area (36%). During the in-field activities associated with this analysis, an infra-red laser range finder was used to accurately determine the average tree canopy height throughout the Study Area. Numerous trees were selected for measurement and the average tree canopy established, in this case 50 feet. Lastly, the Study Area features approximately 3,321 acres of surface water that includes portions of Long Island Sound, Bride Lake, Havens Pond and the Four Mile River.



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## METHODOLOGY

In order to better represent the visibility associated with the Facility, VHB has developed a two-fold approach utilizing both a predictive computer model and in-field analysis. The predictive model is employed to assess potential visibility throughout the entire Study Area, including private property and/or otherwise inaccessible areas for field verification. A balloon float and Study Area drive-through reconnaissance are also conducted to provide a height and locational representation, back checking of the computer model and photographic documentation from publicly accessible areas. Results of the balloon float are analyzed and incorporated into the final viewshed map. A description of the methodologies used in the analysis is provided below.

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### Visibility Analysis

Using ESRI's ArcView® Spatial Analyst, a computer modeling tool, the areas from where the top of the Facility is expected to be visible are calculated. This is based on information entered into the computer model, including Facility height, its ground elevation, the surrounding topography and existing vegetation. Data incorporated into the predictive model includes a digital elevation model (DEM) and a digital forest layer for the Study Area. The DEM was derived from the Connecticut LiDAR-based digital elevation data. The LiDAR data was produced by the University Of Connecticut Center for Land Use Education and Research (CLEAR) in 2007 and has a horizontal resolution of 10 feet. In order to create the forest layer, digital aerial photographs of the Study Area are incorporated into the computer model. The mature trees and woodland areas depicted on the aerial photos are manually traced in ArcView® GIS and then converted into a geographic data layer. The aerial photographs were produced in 2006 and have a pixel resolution of one foot.

Once the data are entered, a series of constraints are applied to the computer model to achieve an estimate of where the Facility will be visible. Initially, only topography is used as a visual constraint; the tree canopy is omitted to evaluate all areas of potential visibility without any vegetative screening. Although this is an overly conservative prediction, the initial omission of this layer provides a reference for comparison once the tree canopy is established and also assists in the evaluation of potential seasonal visibility of the proposed Facility. An estimated tree canopy height of 50 feet is initially utilized to prepare a preliminary viewshed map for use during the Study Area reconnaissance. The average height of the tree canopy, in this case 50 feet, is determined in the field using a hand-held infra-red laser range finder. The forested areas within the Study Area were then overlaid on the DEM with a height of 50 feet added and the visibility calculated. The forested areas are then extracted from the areas of visibility, with the assumption that a person standing among the trees will not be able to view the Facility beyond a distance of approximately 500 feet.

Depending on the density of the vegetation in these areas, it is assumed that some locations within this range will provide visibility of at least portions of the Facility based on where one is standing.

Also included on the map is a data layer, obtained from the Connecticut State Department of Environmental Protection (CTDEP), which depicts various land and water resources such as state parks and forests, recreational facilities, dedicated open space and CTDEP boat launches and other categories. This layer is useful in identifying potential visual impacts to any sensitive receptors that may be located within the Study Area. Lastly, based on a review of available data published by the Connecticut Department of Transportation and discussions with municipal staff in East Lyme, it was determined that there are currently no state- or locally-designated scenic roadways within the Study Area.

The preliminary viewshed map (using topography and an initial tree canopy height of 50 feet) is used during the in-field activity to assist in determining if significant land use changes have occurred since the aerial photographs used in this analysis were produced and to compare the results of the computer model with observations of the balloon float. Information obtained during the reconnaissance is then incorporated into the final visibility map.

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## Balloon Float and Study Area Reconnaissance

On October 22, 2009 Vanasse Hangen Brustlin Inc., (VHB) conducted a balloon float at the proposed Facility location to further evaluate the potential viewshed within the Study Area. The balloon float consisted of raising and maintaining an approximate four-foot diameter, helium-filled weather balloon at the proposed site location at a height of 170 feet. Once the balloon was secured, VHB staff conducted a drive-by reconnaissance along the roads located within the Study Area with an emphasis on nearby residential areas and other potential sensitive receptors in order to evaluate the results of the preliminary viewshed map and to document where the balloon was, and was not, visible above and/or through the tree canopy. As part of the in-field activities, VHB staff also hiked portions an adjacent East Lyme Land Conservancy property located to the southwest of the Host Property. During the balloon float, the temperature was approximately 65 degrees Fahrenheit with calm wind conditions and mostly sunny skies.

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## Photographic Documentation

During the balloon float, VHB personnel drove the public road system to inventory those areas where the balloon was and was not visible. The balloon was photographed from several vantage points to document the actual view towards the proposed Facility. Several locations where the balloon was not visible are also included in order to provide documentation from select areas. The locations of the photos are described below:

1. View from Old Black Point Road adjacent to house #188.
2. View from Old Black Point Road adjacent to house #158.
3. View from Old Black Point Road adjacent to house #140.
4. View from Old Black Point Road adjacent to house #108.
5. View from Old Black Point Road adjacent to house #74
6. View from Old Black Point Road adjacent to house #44
7. View from intersection of Barone Road and Indian Rock Road,
8. View from Sunnyside Drive adjacent to house #18.
9. View from Fairhaven Road at Gada Street.
10. View from East Lyme Land Conservancy hiking trail.
11. View from Brainerd Road adjacent to house #23.
12. View from Old Black Point Road.
13. View from Sunrise Avenue at Indianola Road.
14. View from Crescent Avenue at Prospect Street Avenue.
15. View from Fairhaven Road at Black Point Road.
16. View from Old Black Point Road at Pleasant Drive.
17. View from Fairhaven Road over Pattagansett River.
18. View from Giants Neck Road.
19. View from Route 156 west of Park Place.

Photographs of the balloon from the view points listed above were taken with a Nikon D-80 digital camera body and Nikon 18 to 135 mm zoom lens. For the purposes of this report, the lens was set to 50mm. "The lens that most closely approximates the view of the unaided human eye is known as the normal focal-length lens. For the 35 mm camera format, which gives a 24x36 mm image, the normal focal length is about 50 mm."<sup>1</sup>

The locations of the photographic points are recorded in the field using a hand-held GPS receiver and are subsequently plotted on the maps contained in the attachments to this document.

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## Photographic Simulation

Photographic Simulations were generated for the ten locations identified above where the balloon was visible (Views 1-10). The Photographic Simulations represent a scaled depiction of the proposed monopole from these locations. The height of the Facility is determined based on the location of the balloon in the photographs and a proportional monopole image is simulated into the photographs. Both the photographic simulations and non-visible shots (Views 11-19) included in this evaluation are contained in Attachment A.

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<sup>1</sup> Warren, Bruce. *Photography*, West Publishing Company, Eagan, MN, c. 1993, (page 70).



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## CONCLUSIONS

Based on this analysis, areas from where the proposed 170-foot monopole would be visible above the tree canopy comprise approximately 2,282 acres within the 8,042-acre Study Area. As depicted on the attached viewshed map (included as Attachment B), the majority of year-round visibility associated with the proposed Facility occurs over open water on Long Island Sound and the Pattagansett River. Potential year-round visibility over open water accounts for approximately 2,219 acres, or 97%, of 2,282-acre total. The remaining year-round visibility, which occurs over land, comprises approximately 63 acres. Several of these areas extend to the immediate shoreline and include select portions of Old Black Point Road, Barone Road, Indian Rock Road, Fairhaven Road, Marshfield Road and Gada Street. The majority of these views also feature the existing overhead electrical infrastructure associated with the nearby Amtrak rail corridor. The analysis also indicates areas of potential visibility located along an isolated segment of Sunnyside Drive to the northeast of the proposed Facility and from select portions of an unmarked, but well-defined hiking trail located on an East Lyme Land Conservancy property to the southwest of the proposed Facility. VHB estimates that at least partial year-round views of the proposed Facility may be achieved from portions of approximately 53 residential properties located within the Study Area. This includes 31 residences located along Old Black Point Road which parallels the Pattagansett River; nine houses along Indian Rock Road; four residential properties along Fairhaven Road; two residences located along Barone Road; Marshfield Road where potential views may be achieved from east-facing portions of two residential properties; two residences located along Sunnyside Drive; and one residence located off Gada Street. The intervening topography and/or mature vegetation serve to significantly minimize the potential for year-round views of the proposed Facility from other locations within the Study Area.

Several additional areas where seasonal (i.e. during “leaf off” conditions) views are anticipated were also identified as part of this evaluation. These areas are depicted on the attached viewshed map and comprise approximately 45 additional acres. Overall, areas of anticipated seasonal visibility are limited to the general vicinity of the proposed Facility as well as select portions of Old Black Point Road, Barone Road, Sunnyside Drive, Gada Street, Marshfield Road and Birch Street. In total, VHB estimates that seasonal views of the proposed Facility may be achieved from portions of approximately 20 additional residential properties located with these areas.

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## Attachment A

# Photolog Documentation Map, Project Area Photograph, Balloon Float Photographs and Photographic Simulations



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PROPOSED PROJECT AREA

# PHOTOLOG MAP



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VIEW 1



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #188, LOOKING NORTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 1.09 MILES +/-

VIEW 1



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**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #188, LOOKING NORTHWEST**  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 1.09 MILES +/-

VIEW 2



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #158, LOOKING NORTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.82 MILE +/-

VIEW 2



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PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #158, LOOKING NORTHWEST  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.82 MILE +/-

VIEW 3



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PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #140, LOOKING NORTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.67 MILE +/-

VIEW 3



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**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #140, LOOKING NORTHWEST**  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.67 MILE +/-

VIEW 4



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**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #108, LOOKING NORTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.49 MILE +/-

VIEW 4



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PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #108, LOOKING NORTHWEST  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.49 MILE +/-

VIEW 5



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**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #74, LOOKING NORTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.32 MILE +/-

VIEW 5



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**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #74, LOOKING NORTHWEST**  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.32 MILE +/-

VIEW 6



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**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #44, LOOKING SOUTHWEST**

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.37 MILE +/-

**VIEW 6**



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**PHOTO TAKEN FROM OLD BLACK POINT ROAD ADJACENT TO HOUSE #44, LOOKING SOUTHWEST**  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.37 MILE +/-

VIEW 7



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PHOTO TAKEN FROM INTERSECTION OF BARONE ROAD AND INDIAN ROCK ROAD, LOOKING WEST  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.39 MILE +/-

VIEW 7



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PHOTO TAKEN FROM INTERSECTION OF BARONE ROAD AND INDIAN ROCK ROAD, LOOKING WEST  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.39 MILE +/-

VIEW 8



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

PHOTO TAKEN FROM SUNNIESIDE DRIVE ADJACENT TO HOUSE #18, LOOKING SOUTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.84 MILE +/-

VIEW 8



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**PHOTO TAKEN FROM SUNNIESIDE DRIVE ADJACENT TO HOUSE #18, LOOKING SOUTHWEST**  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.84 MILE +/-

VIEW 9



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

PHOTO TAKEN FROM FAIRHAVEN ROAD AT GADA STREET, LOOKING SOUTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.51 MILE +/-

**VIEW 9**



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

**PHOTO TAKEN FROM FAIRHAVEN ROAD AT GADA STREET, LOOKING SOUTHWEST**  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.51 MILE +/-

VIEW 10



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PHOTO TAKEN FROM EAST LYME LAND CONSERVANCY HIKING TRAIL, LOOKING NORTHEAST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.15 MILE +/-

VIEW 10



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

PHOTO TAKEN FROM EAST LYME LAND CONSERVANCY HIKING TRAIL, LOOKING NORTHEAST  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.15 MILE +/-

VIEW 11



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

**PHOTO TAKEN FROM BRAINERD ROAD ADJACENT TO HOUSE #23, LOOKING SOUTHEAST - BALLOON IS NOT VISIBLE FROM THIS LOCATION  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.25 MILE +/-**

VIEW 12



**PHOTO TAKEN FROM OLD BLACK POINT ROAD, LOOKING NORTHWEST - BALLOON IS NOT VISIBLE FROM THIS LOCATION**  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 1.18 MILES +/-

ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

VIEW 13



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**PHOTO TAKEN FROM SUNRISE AVENUE AT INDIANOLA ROAD, LOOKING NORTHWEST - BALLOON IS NOT VISIBLE FROM THIS LOCATION  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 1.04 MILES +/-**

VIEW 14



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**PHOTO TAKEN FROM CRESCENT AVENUE AT PROSPECT AVENUE, LOOKING SOUTHWEST - BALLOON IS NOT VISIBLE FROM THIS LOCATION  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 1.08 MILES +/-**

VIEW 15



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**PHOTO TAKEN FROM FAIRHAVEN ROAD AT BLACK POINT ROAD, LOOKING SOUTHWEST - BALLOON IS NOT VISIBLE FROM THIS LOCATION  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.98 MILE +/-**

VIEW 16



ct:\mddat\40999.30\graphics\FIGURES\40999.30\_Photosim

**PHOTO TAKEN FROM OLD BLACK POINT ROAD AT PLEASANT DRIVE, LOOKING SOUTHWEST - BALLOON IS NOT VISIBLE FROM THIS LOCATION  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.49 MILE +/-**

VIEW 17



c:\midat\40999.30\graphics\FIGURES\40999.30\_Photosim

**PHOTO TAKEN FROM FAIRHAVEN ROAD OVER PATTAGANSETT RIVER, LOOKING SOUTHWEST - BALLOON IS NOT VISIBLE FROM THIS LOCATION  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.48 MILE +/-**

VIEW 18



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PHOTO TAKEN FROM GIANTS NECK ROAD, LOOKING NORTHEAST - BALLOON IS NOT VISIBLE FROM THIS LOCATION

DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.75 MILE +/-

VIEW 19



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PHOTO TAKEN FROM ROUTE 156 WEST OF PARK PLACE, LOOKING SOUTHWEST - BALLOON IS NOT VISIBLE FROM THIS LOCATION  
DISTANCE FROM THE PHOTOGRAPH LOCATION TO SITE IS 0.84 MILE +/-

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# Attachment B

## Viewshed Map

*Viewshed Analysis*  
**Proposed SBA Towers, Inc.**  
**Telecommunications Facility**  
*East Lyme*  
**49 Brainerd Road**  
*East Lyme, Connecticut*

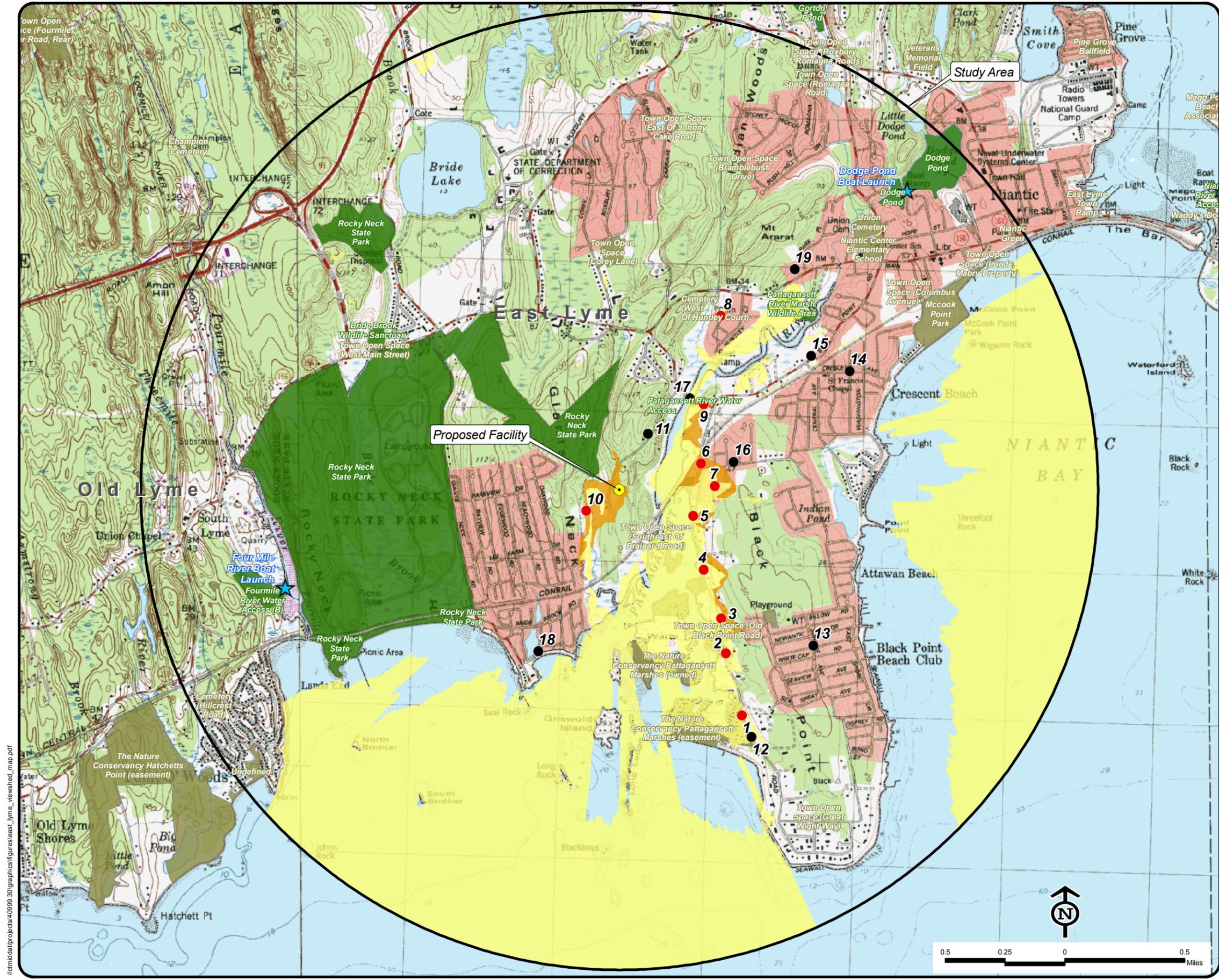
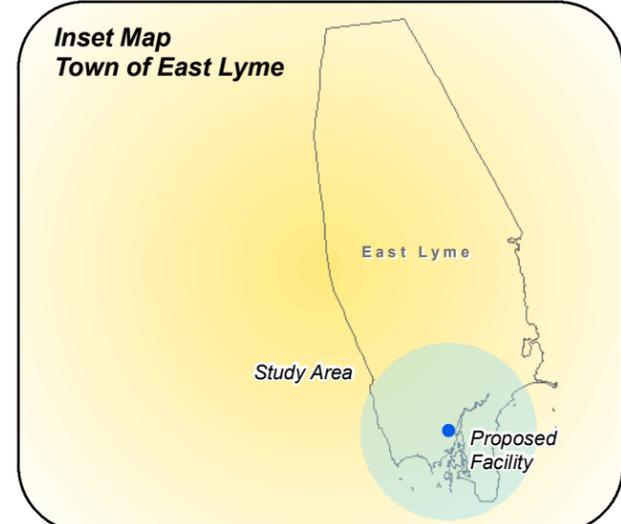
NOTE:  
 - Viewshed analysis conducted using ESRI's Spatial Analyst.  
 - Proposed Facility height is 170 feet.  
 - Existing tree canopy height estimated at 50 feet.  
 - Study Area is comprised of a two-mile radius surrounding the proposed facility and includes 8,042 acres of land.

DATA SOURCES:  
 - Digital elevation model (DEM) derived from Connecticut LiDAR-based Digital Elevation Data (collected in 2000) with a 10-foot spatial resolution produced by the University of Connecticut and the Center for Land Use Education and Research (CLEAR); 2007  
 - Forest areas derived from 2006 digital orthophotos with 1-foot pixel resolution; digitized by VHB, 2009  
 - Base map comprised of Niantic (1983) and Old Lyme (1970) USGS Quadrangle Maps  
 - Protected municipal and private open space properties and federal protected properties and data layers provided by CT DEP, 1997  
 - Protected CT DEP properties data layer provided by CTDEP, May 2007  
 - CT DEP boat launches data layer provided by CT DEP, 1994  
 - Scenic Roads layer derived from available State and Local listings.

Map Compiled November, 2009

**Legend**

-  Proposed Site Location
-  CT DEP Protected Properties (2007)
-  Photographs - October 22, 2009
-  Balloon is not visible
-  Balloon visible above trees
-  Year-Round Visibility (Approximately 2,282 acres)
-  Seasonal Visibility (Approximately 45 acres)
-  Protected Municipal and Private Open Space Properties (1997)
-  Federal Protected Properties (1997)
-  CT DEP Boat Launches (1994)
-  Scenic Road (State and Local)
-  Cemetery
-  Preservation
-  Conservation
-  Existing Preserved Open Space
-  Recreation
-  General Recreation
-  School
-  Uncategorized
-  Town Line
-  State Forest
-  State Park
-  DEP Owned Waterbody
-  State Park Scenic Reserve
-  Historic Preserve
-  Natural Area Preserve
-  Fish Hatchery
-  Flood Control
-  Other
-  State Park Trail
-  Water Access
-  Wildlife Area
-  Wildlife Sanctuary



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