Visual Resource Evaluation Report

Proposed Wireless Telecommunications Facility

The Simmons Family Farm
199 Town Farm Road
Farmington, Connecticut

Prepared for 

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Visual Resource Evaluation

Cellco Partnership (dba Verizon Wireless) seeks approval from the Connecticut Siting Council for a Certificate of Environmental Compatibility and Public Need for the construction of a wireless telecommunications facility ("Facility") to be located on municipally-owned property at 199 Town Farm Road in the Town of Farmington, Connecticut (identified herein as the "host property"). This Visual Resource Evaluation was conducted to evaluate the visibility of the proposed Facility within a two-mile radius ("Study Area"). Portions of the neighboring communities of Avon and West Hartford, Connecticut are also contained within the Study Area.

Project Introduction

The proposed Facility includes the installation of a 117-foot tall "monopine", designed to resemble an evergreen tree, with associated ground equipment located at its base. Both the proposed monopine and ground equipment would be situated within a fence-enclosed compound. The proposed project area is located at approximately 189 feet Above Mean Sea Level (AMSL). Access to the Facility would follow an existing site driveway which would be improved to accommodate service vehicles. Verizon proposes to install its wireless telecommunications antennas at a height of 110 feet, the effective top of the monopole structure. The additional seven feet of height is necessary to provide a more realistic appearance to the top portion of the simulated conifer.

Site Description and Setting

The host property consists of approximately 9.9 acres of land and is owned by the Town of Farmington. Attachment A contains a map that depicts the location of the proposed Facility and the limits of the Study Area. Land use within the general vicinity of the proposed Facility and host property consists of open, agricultural land to the north, south and east; undeveloped woodlands to the west; and medium-density residential development further to the west beyond the adjacent forested areas. Segments of Route 4, Route 10 and Route 167 traverse the Study Area. In total, the Study Area features approximately 67 linear miles of roadways.

The topography within the Study Area is characterized by rolling hills and an extended ridgeline that traverses the eastern third of the two-mile radius. Ground elevations within the Study Area range from approximately 140 feet AMSL to approximately 800 feet AMSL. The Study Area contains approximately 304 acres of surface water, dominated in large measure by the Farmington River. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species. The tree canopy occupies approximately 6,434 acres of the 8,042-acre study area (80%). During the in-field activities associated with this analysis, an infrared 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 was determined to be 65 feet.

METHODOLOGY

In order to better represent the visibility associated with the Facility, VHB uses a two-fold approach incorporating 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 obtain locational and height representations, back-check the initial computer model results and provide documentation from publicly accessible areas. Results of both activities are analyzed and incorporated into the final viewshed map. A description of the methodologies used in the analysis is provided below.

Visibility Analysis

Using ESRI's ArcView® Spatial Analyst, a computer modeling tool, the areas from which 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 United States Geological Survey (USGS) National Elevation Dataset (NED), a seamless, publicly available elevation dataset with an approximate 30-meter resolution. The forest layer was derived through on-screen digitizing in ArcView® GIS from 2006 digital orthophotos with a 1-foot pixel resolution.

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 was 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 these layers assists in the evaluation of potential seasonal visibility of the proposed Facility. A conservative tree canopy height of 50 feet is then used to prepare a preliminary viewshed map for use during the Study Area reconnaissance. The average height of the tree canopy is determined in the field using a hand-held infrared laser range finder. The average tree canopy height is incorporated into the final viewshed map; in this case, 65 feet was identified as the average tree canopy height. The forested areas within the Study Area were then overlaid on the DEM with a height of 65 feet added and the visibility calculated. As a final step, the forested areas are 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. This analysis was conducted in four increments in order to provide an estimate of how much of the Facility will be seen from visible areas. As such, the model calculated areas of potential tree line views and/or views of

the upper 25% of the proposed monopine; locations where approximately half of the proposed structure would be visible; areas where approximately 75% of the monopine would be visible; and locations where the entire Facility would be visible. The results where then consolidated into a single thematic layer.

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 parks and forests, recreational facilities, dedicated open space, CTDEP boat launches and other categories. This layer is useful in identifying potential visibility from any sensitive receptors that may be located within the Study Area. Lastly, based on both a review of published information and discussions with municipal officials in Avon and Farmington, it was determined that there are no state- or locally-designated scenic roadways located within the Study Area.

A preliminary viewshed map (using topography and a conservative tree canopy height of 50 feet) is generated for use during the in-field activity in order to confirm that no significant land use changes have occurred since the aerial photographs used in this analysis were produced and to verify the results of the model in comparison to the balloon float. Information obtained during the reconnaissance is then incorporated into the final visibility map.

Balloon Float and Study Area Reconnaissance

On June 1, 2007 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 117 feet. Once the balloon was secured at a height of 117 feet, 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 verify where the balloon was, and was not, visible above and/or through the tree canopy. During the balloon float, the temperature was approximately 75 degrees Fahrenheit with calm wind conditions and sunny skies.

Photographic Documentation

During the balloon float, VHB personnel drove the public road system within the Study Area to inventory those areas where the balloon was visible. The balloon was photographed from a number of different vantage points to document the actual view towards the proposed Facility. The locations of the photos are described below:

1. View from Town Farm Road adjacent to host property

2. View from Tillotson Road.
3. View from Tillotson Road.
4. View from Old Farms Road adjacent to the George M. Trautman Park.
5. View from Bishop Lane and Cider Brook Road.

Photographs of the balloon from the view points listed above were taken with a Panasonic Digital Camera DMC-FZ5, which has a lens focal length equivalent to a 35 mm camera with a 38 to 115 mm zoom. The zoom lens was set at approximately 50 mm. "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.[1]"

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.

Photographic Simulation

Photographic simulations were generated for the five representative locations where the balloon was visible during the in-field activities. The photographic simulations represent a scaled depiction of the proposed Facility (a monopine) from these locations. The height of the Facility is determined based on the location of the balloon in the photograph and a proportional monopine image is simulated into the photographs. The simulations are contained in Attachment A.

CONCLUSIONS

Based on this analysis, areas from where the proposed 117-foot tall Facility would be visible above the tree canopy comprise approximately 102 acres, or just over one percent of the 8,042-acre Study Area. As depicted on the viewshed map (provided in attachment B), much of the visibility associated with the proposed Facility occurs along the Town Farm Road/Tillotson Road right-of-way and the adjacent open areas located to the east and west of the roadway corridor. This area of visibility extends north of Old Farms Road. Intermittent views of the proposed monopine may also be achieved from select portions of Bishop Lane and Cider Brook Road (as photo documented). The map also indicates several small areas of potential year-round visibility located on private properties within the Study Area. As such, these areas could not be field-verified during the balloon float. Overall, the rolling topography and existing vegetative cover contained within the Study Area would act to minimize the extent of year-round visibility associated with the proposed Facility. VHB estimates that select portions of approximately four residential properties could have at least partial year-round views of the proposed Facility. This includes three residences located

[1] Warren, Bruce. *Photography*, West Publishing Company, Eagan, MN, c. 1993, (page 70).

along Cider Brook Road and a single residence located along Stonefield Road. Such views would be largely mitigated by the design of the proposed Facility as a monopine.

The viewshed map also depicts several additional areas where seasonal (i.e. during "leaf off" conditions) views are anticipated. These areas comprise approximately 9 acres and are mainly located within the immediate vicinity of the host property. VHB estimates that no residential properties would have seasonal views of the proposed Facility.

Attachment A

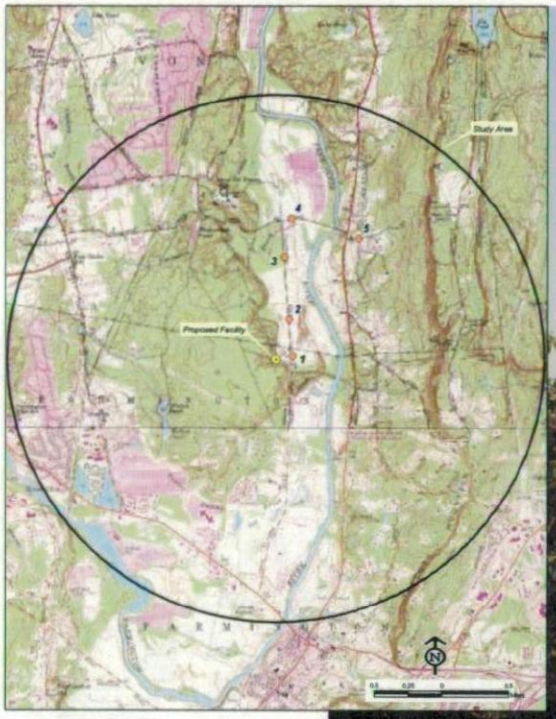
Photolog Documentation Map, Balloon Float Photographs, and Photographic Simulations

Photolog Documentation

Town of
Farmington
Connecticut

Photographic Documentation and Simulation *View 1*

Town of
Farmington
Connecticut



199 Town Farm Road
Farmington, CT

Monopine installation

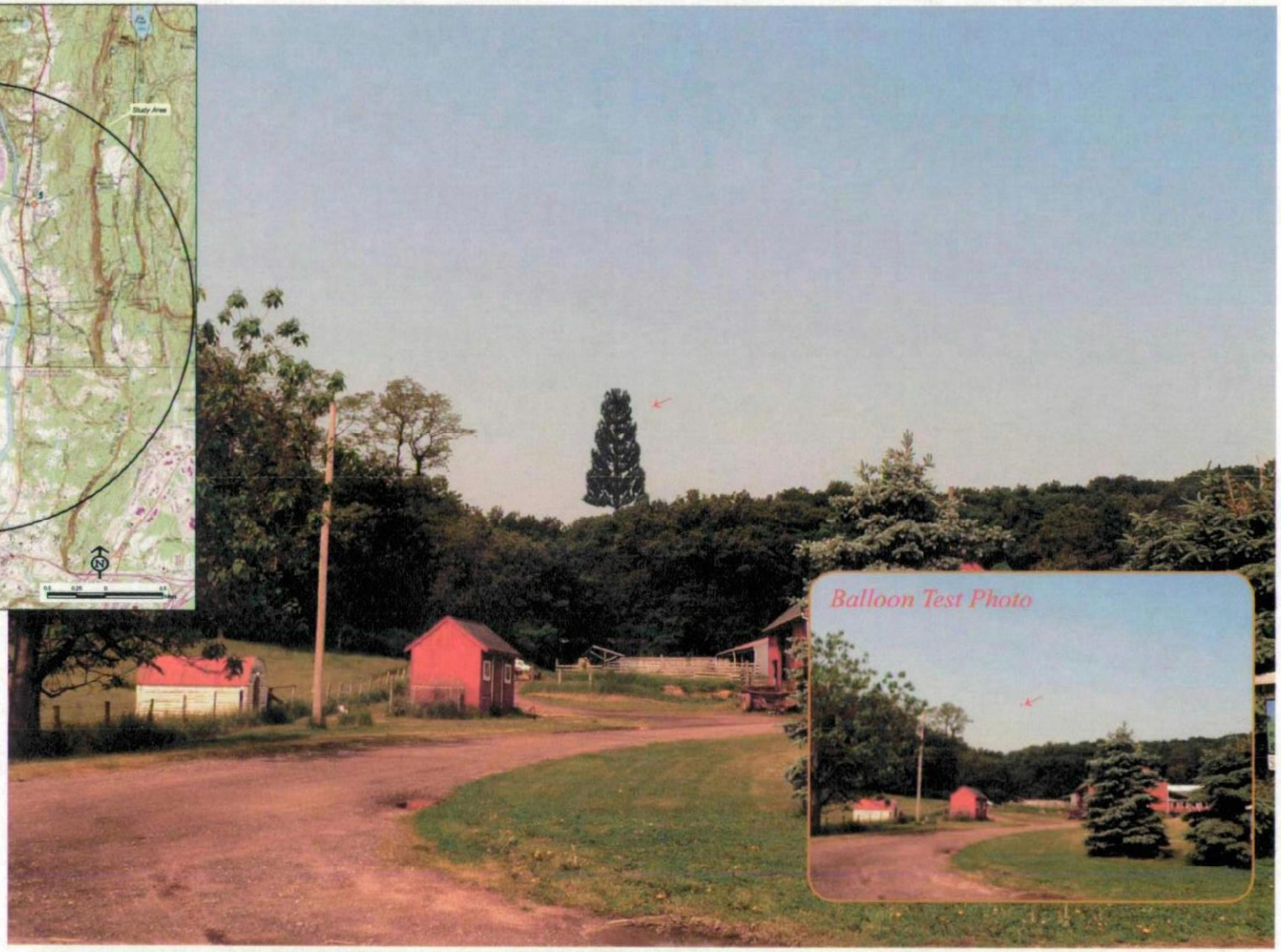


PHOTO TAKEN FROM TOWN FARM ROAD ADJACENT TO HOST PROPERTY, LOOKING SOUTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.13 MILE +/-

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Photographic Documentation and Simulation *View 2*

Town of
Farmington
Connecticut

199 Town Farm Road
Farmington, CT

Monopine installation

PHOTO TAKEN FROM TILLOTSON ROAD, LOOKING SOUTHWEST

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

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Photographic Documentation and Simulation *View 3*

Town of
Farmington
Connecticut

199 Town Farm Road
Farmington, CT

Monopine installation

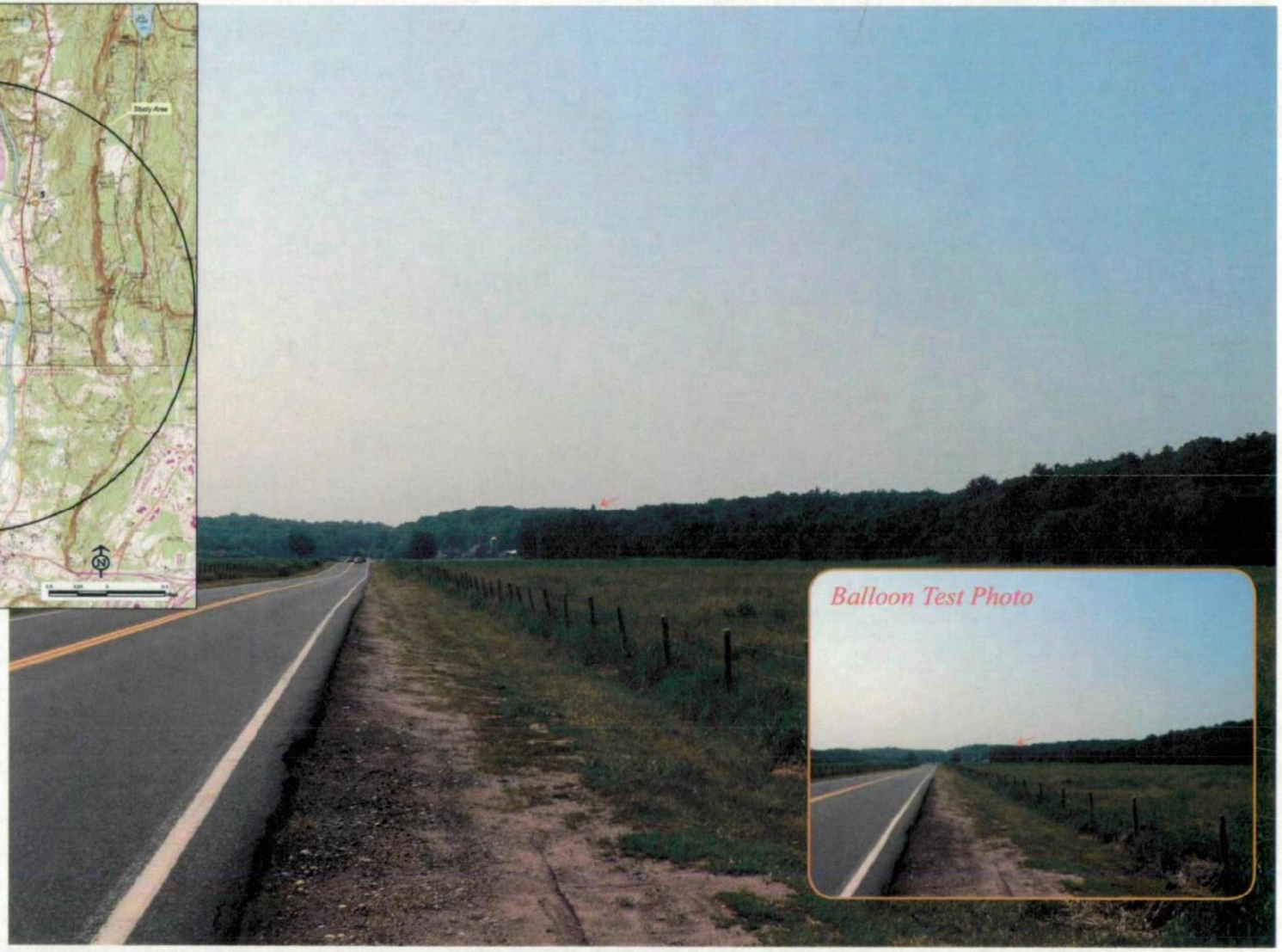

PHOTO TAKEN FROM TILLOTSON ROAD, LOOKING SOUTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.78 MILE +/-

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VHB Vanasse Hangen Brustlin, Inc.

Photographic Documentation and Simulation *View 4*

Town of
Farmington
Connecticut

199 Town Farm Road
Farmington, CT

Monopine installation

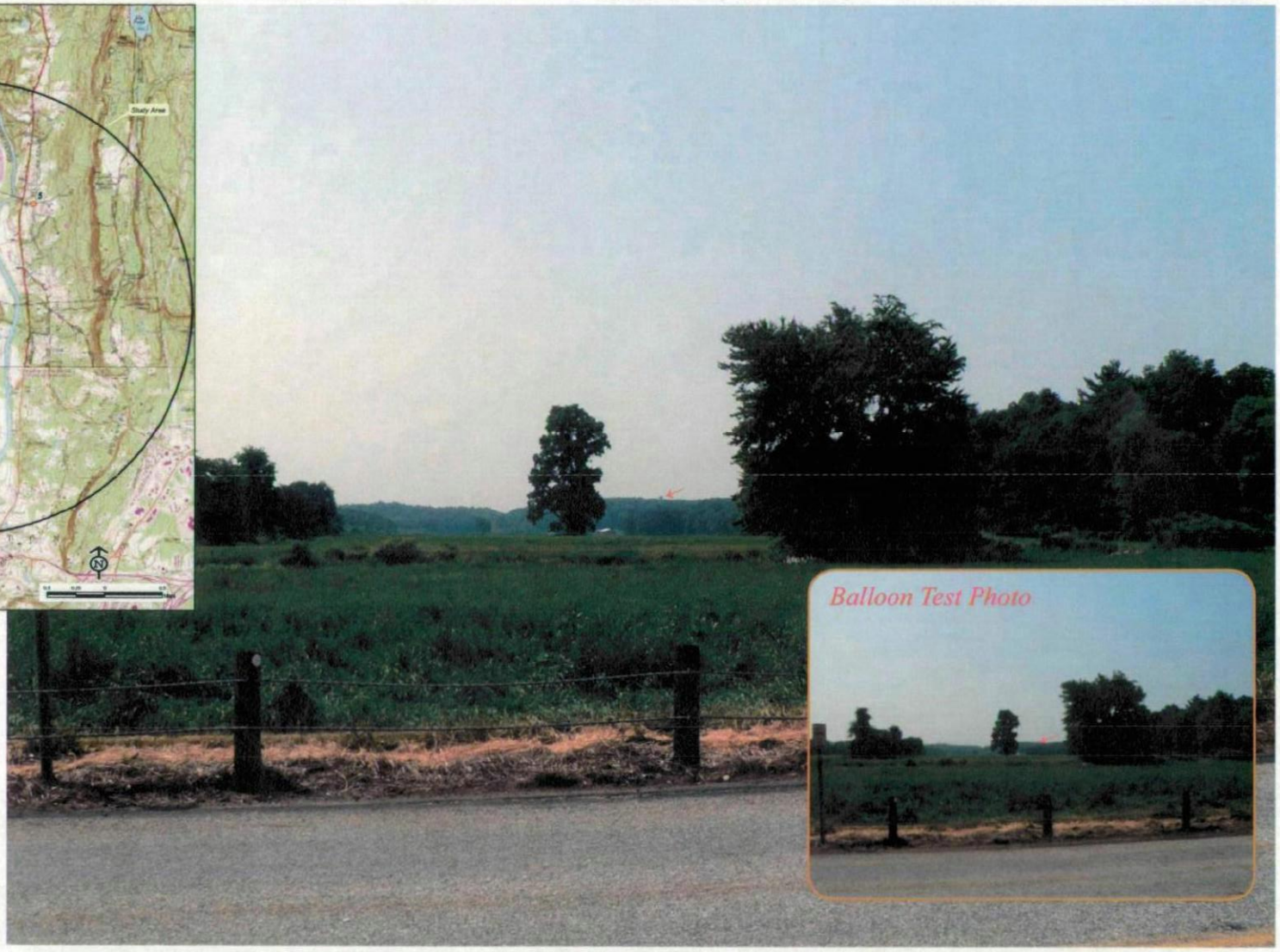


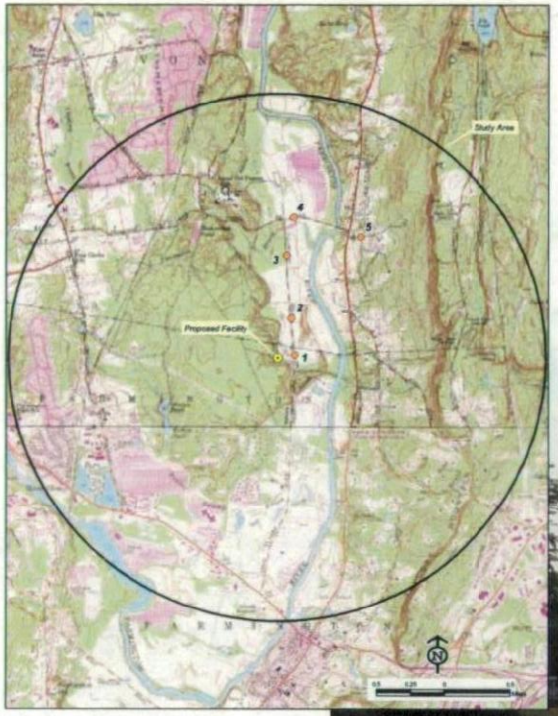
PHOTO TAKEN FROM OLD FARMS ROAD, ADJACENT TO THE GEORGE M. TRAUTMAN PARK, LOOKING SOUTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 1.07 MILES +/-

VHB Vanasse Hangen Brustlin, Inc.

Photographic Documentation and Simulation *View 5*

Town of
Farmington
Connecticut



199 Town Farm Road
Farmington, CT

Monopine installation

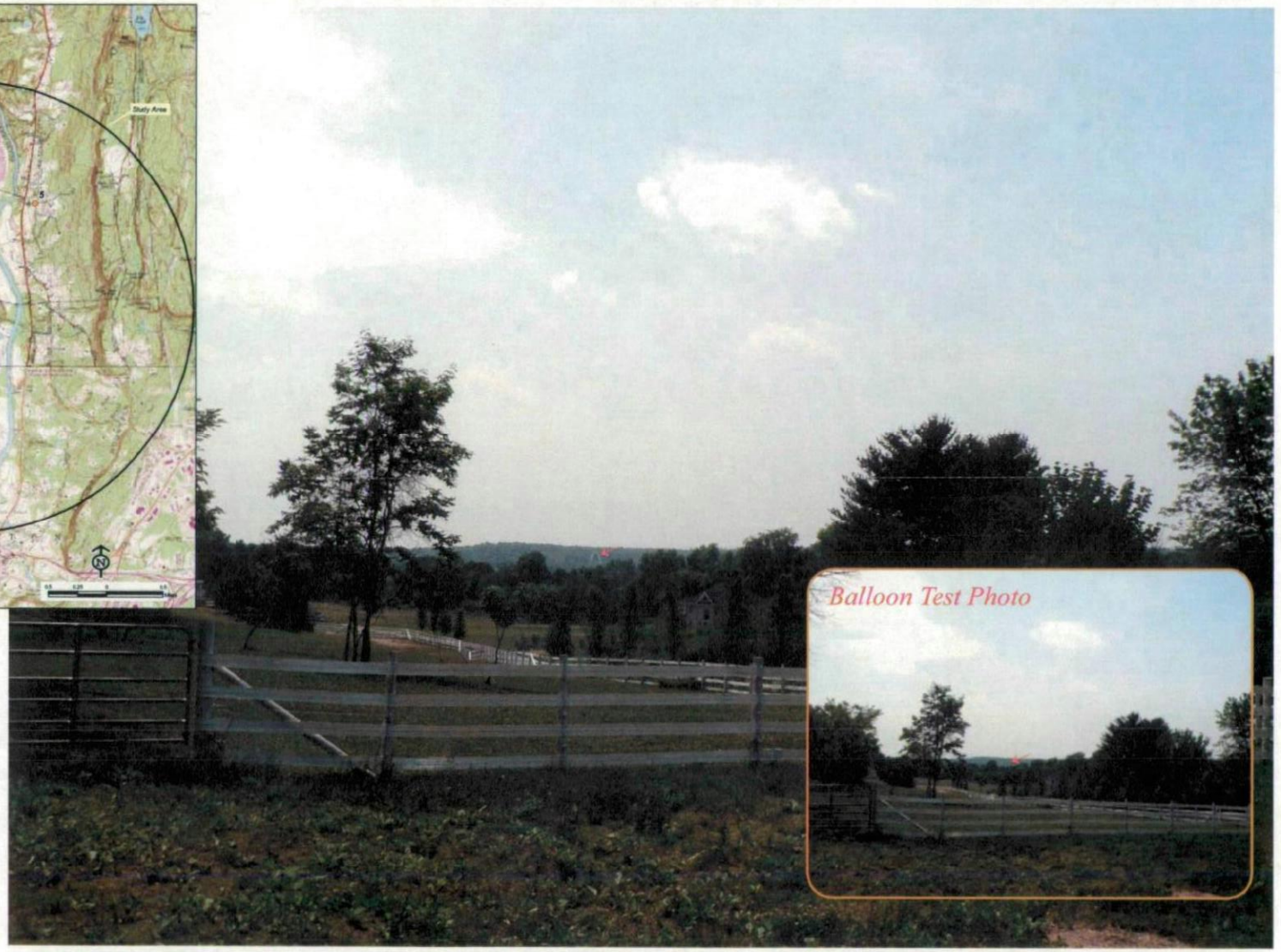


PHOTO TAKEN FROM THE INTERSECTION OF BISHOP LANE AND CIDER BROOK ROAD, LOOKING SOUTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 1.10 MILES +/-

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VHB Vanasse Hangen Brustlin, Inc.

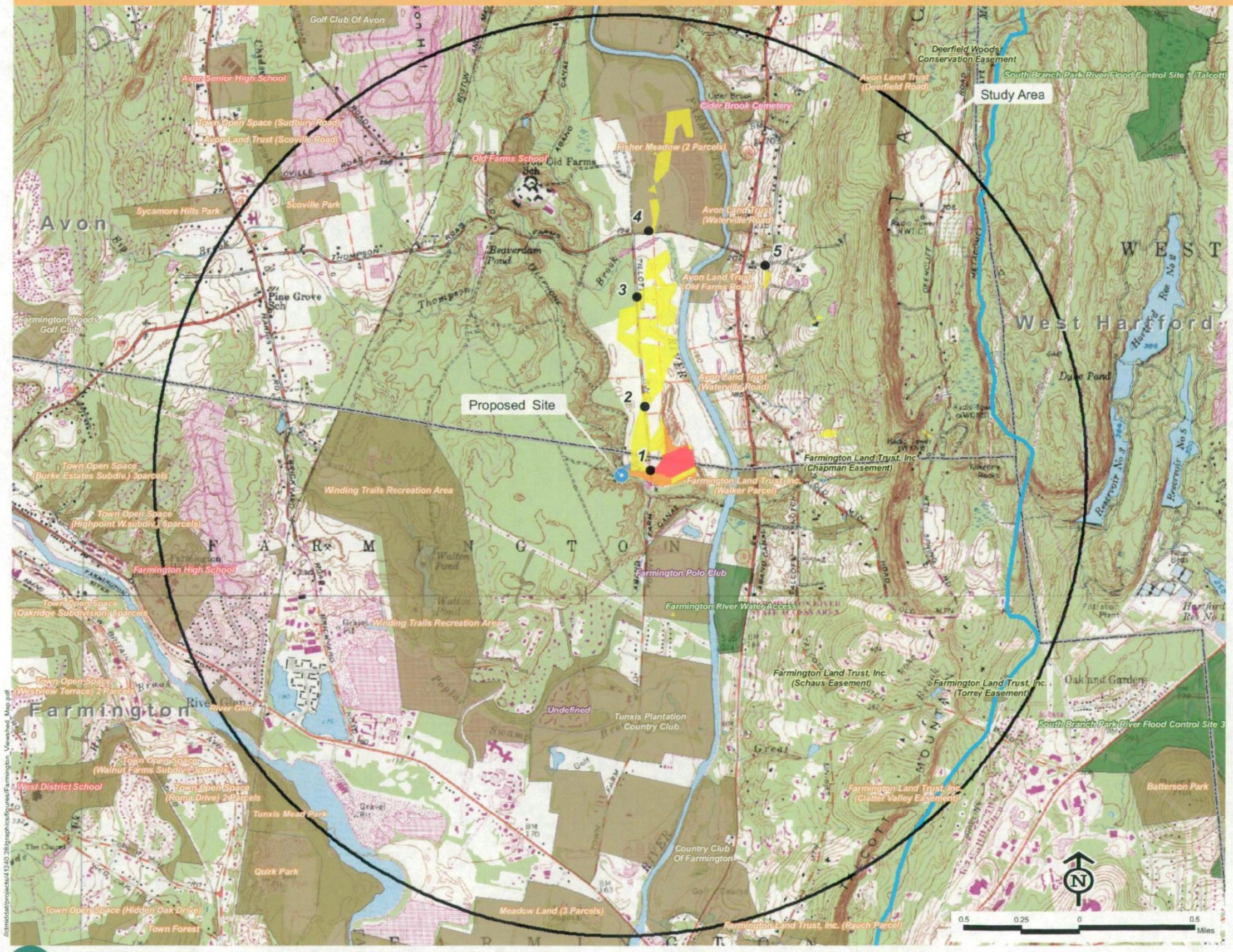
Attachment B

Viewshed Map

Viewshed Map

Topography and Forest Cover as Constraints

Town of Farmington Connecticut



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NOTE:
- Viewshed analysis conducted using ESRI's Spatial Analyst.
- Proposed Facility height is 117 feet.
- Existing tree canopy height estimated at 65 feet.
- Study Area consists of a two-mile radius surrounding the proposed Facility and includes 8,042 acres of land.

DATA SOURCES:
- Digital elevation model (DEM) derived from USGS National Elevation Dataset (NED) with a resolution of one arc-second (approximately 30 meters) produced by the USGS, 1925 - 1999
- Forest areas derived from 2006 digital orthophotos with 1-foot pixel resolution; digitized by VHB, 2007
- Base map comprised of Avon (1984), Bristol (1984), Collinsville (1984) and New Britain (1992) USGS Quadrangle Maps
- Protected properties data layer provided CTDEP; May, 2007
- Scenic Roads layer derived from available State and Local listings.

Map Compiled November, 2007

Legend

- Proposed Monopine Location (Includes select areas of visibility within approximately 500 feet around facility)

Photographs - June 1, 2007
- Balloon visible above trees

Anticipated Seasonal Visibility (Approximately 9 Acres)

Approx. % of Monopine Visible (Year-Round)
- Tree Line to Upper 25% - 91 Acres
- 50% - 10 Acres
- Entire Facility Visible - 1 Acre

Total Year-Round Visibility Approximately 102 Acres

- Protected Properties (Municipal)
- Cemetery
- Preservation
- Conservation
- Existing Preserved Open Space
- Recreation
- General Recreation
- School
- Uncategorized
- Protected Properties (CT DEP)
- 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
- DEP Boat Launches
- Scenic Road (State and Local)
- Metacomet Trail (CT Blue Blaze)
- Town Line
- Protected Properties (Federal)