Visual Resource Evaluation Report

Proposed Wireless Telecommunications Facility

1 Deerfield Lane
Ansonia, Connecticut

Prepared for **Optasite Towers LLC**
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May 2007

Visual Resource Evaluation

Optasite Towers 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 One Deerfield Lane ("host property") in the City of Ansonia, 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").

Project Introduction

The proposed Facility includes the construction of a 180-foot tall monopole and installation of associated ground equipment to be located within a fenced enclosure at the base of the tower. The monopole will be designed to accommodate up to four antenna arrays. Based on information provided by the Site engineers, Clough Harbour and Associates LLP, the proposed project area is located at ±481 feet above mean sea level (AMSL). Access to the Facility would follow a proposed 12-foot wide driveway originating from the western terminus of Osborne Lane.

Site Description and Setting

Identified by the City of Ansonia Tax Assessor's Department as parcel 100/0002/0000, the host property includes 16.0-acres of land and is currently occupied by a horse stable, several corral areas and associated out buildings. The proposed Facility would be situated within a horse corral approximately 880 feet southwest of Osborne Lane. The Photolog Documentation Map contained in Attachment A depicts the location of the proposed Facility. A photograph of the proposed project area is also included in Attachment A. Land use within the general vicinity of the proposed Facility is comprised of agricultural and recreational parcels and medium-density residential development. Segments of several state numbered routes traverse the Study Area. In total, the Study Area contains roughly 118 linear miles of roadways. A public hiking trail located within the Alice Newton Street Memorial Park nearly two miles northeast of the proposed Facility is also included in the Study Area.

The topography in the Study Area is generally characterized by rolling hills that range in ground elevation from approximately 10 feet AMSL to approximately 590 feet AMSL. Potions of the Study Area extend into the neighboring municipalities of Woodbridge and Seymour. The tree cover within the Study Area consists mainly of mixed deciduous hardwood species. The tree canopy occupies approximately 6,131 acres of the 8,042-acre study area (76%). 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 established, in this case 65 feet. Lastly, the Study Area features approximately 165 acres of surface water,

which includes the Peat Swamp Reservoir, Middle Reservoir, Quillinon Reservoir, Ansonia Reservoirs, Colony Pond, Spring Lake, Parkers Pond, and portions of the Wepawaug and Naugatuck Rivers.

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METHODOLOGY

To estimate the visibility associated with the proposed Facility, VHB incorporates 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 obtain locational and height representations, back-check the initial computer model results and provide photographic 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 where the proposed 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, existing vegetation and any significant structures/objects that may act to obstruct potential views. Data incorporated in the model includes 7.5 minute digital elevation models (DEMs) and a digital forest layer for the Study Area. The DEMs were produced by the United States Geological Survey (USGS) in 1982 at a 30 meter resolution. The forest layer was derived through on-screen digitizing in ArcView® GIS from 2000 and 2005 digital orthophotos with 1-meter and 2-meter pixel resolutions, respectively.

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 then used to prepare a preliminary viewshed map for use during the Study Area reconnaissance. The average height of the tree canopy, in this case 65 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 65 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 City staff in Ansonia, it was determined that there are no a state or locally-designated scenic roadways within the Study Area.

A preliminary viewshed map is generated for use during the in-field activity in order to confirm that no significant land use changes have occurred since 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 May 10, 2007 Vanasse Hangen Brustlin Inc., (VHB) conducted a balloon float at the proposed Facility in order to evaluate the potential viewshed within the Study Area. The balloon float consisted of tethering an approximate four-foot diameter, helium-filled weather balloon at the proposed Site location at a height of 180 feet. Once the balloon was aloft, VHB personnel drove the public road system in the Study Area to inventory those areas where the balloon was visible. During the balloon float, weather conditions were initially cloudy with patches of ground fog, and little or no wind. After the balloon was aloft for approximately one hour, the ground fog dissipated, and visibility improved steadily. Temperatures during the float ranged between 70 and 75 degrees Farhenheight.

Photographic Documentation

During the balloon float, 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 and refine 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. The balloon was photographed from a number of different vantage points to document the actual view towards the proposed Facility. The locations and orientations of the photos are depicted on photolog documentation map contained in Attachment A and are described below:

1. View from Osborne Lane adjacent to house #3.
2. View from northern boundary of Ansonia Nature and Recreation Center.
3. View from Ford Road adjacent to house #121.
4. View from Milan Street.
5. View from Kimberly Lane adjacent to house #12.

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 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 optical zoom lens for the Panasonic DMC-FZ5 was set at a range of 50 mm to 70 mm for the purposes of this Visual Resource Evaluation.

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 locations identified above. 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 platform-mounted monopole image is simulated into the photographs. The simulations are contained in Attachment A.

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CONCLUSIONS

Based on this analysis, areas from where the proposed 180-foot monopole could be visible above the tree canopy comprise approximately 14 acres, or less than one percent of the 8,042-acre Study Area. As depicted on the attached viewshed map (Attachment B), the year-round visibility associated with the proposed Facility is generally located on the host property within the immediate vicinity of the project area (approximately half of the total visibility). Areas of visibility beyond the host property extend approximately 0.03-mile to the northeast along select portions of Osborne Lane; approximately 0.36-mile to the east along a limited segment of Ford Road; and select portions of Milan Street and Kimberly Lane located ± 0.52-mile to the south and ± 0.51-mile to the southwest, respectively. Limited year-round views are also anticipated from within select portions of Schriber Park to the south/southwest. In total, VHB estimates that at least partial views of the proposed Facility may be achieved from select portions of approximately 7 residential properties within the areas described above.

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

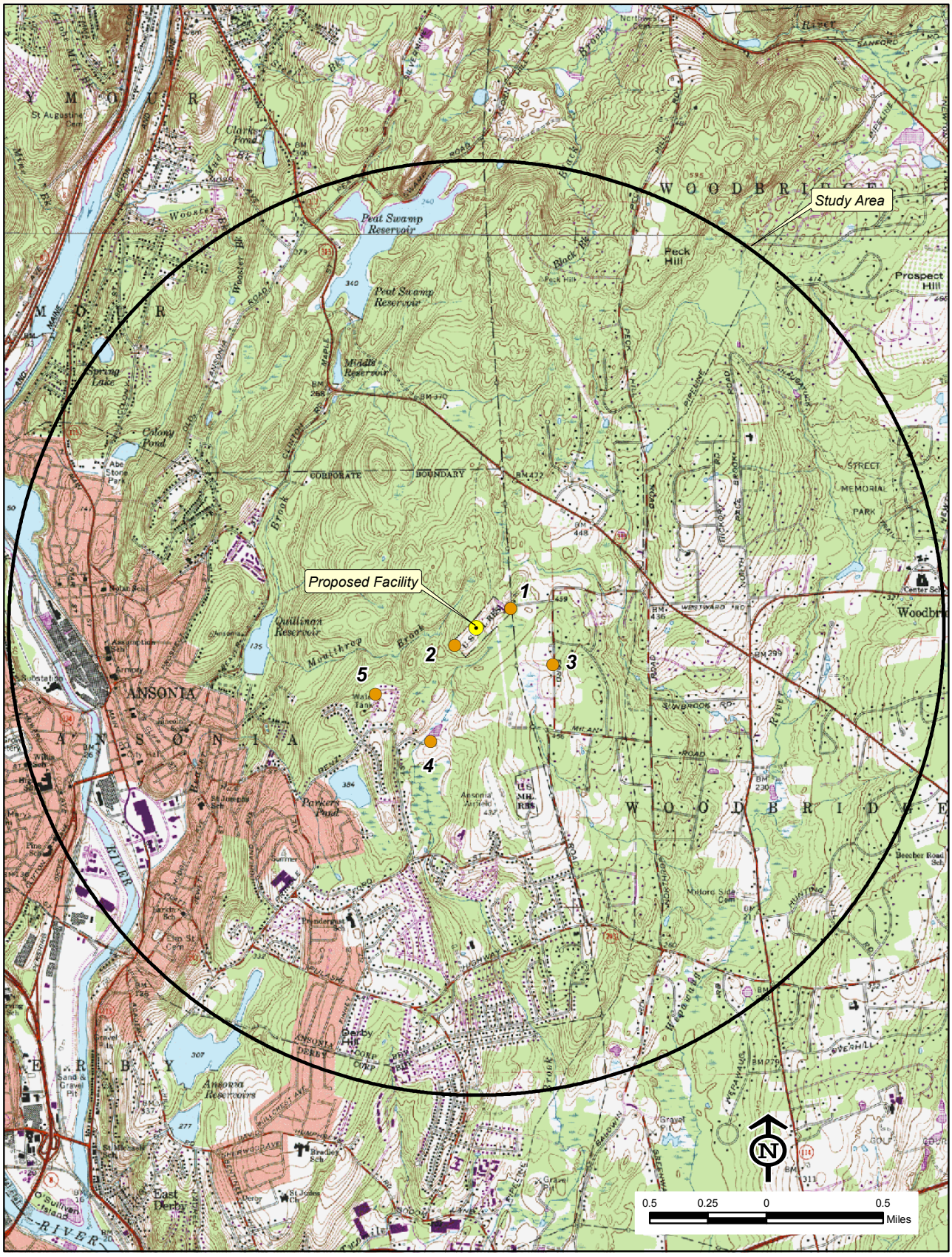
Typically, such views could be characterized as intermittent or passing and would generally be limited to upper portions of the proposed Facility. No views are anticipated from the Alice Newton Street Memorial Park or the public hiking trail contained therein. Overall, the year-round visibility associated with the proposed Facility would be largely minimized by the topography and existing tree canopy contained within the 8,042-acre Study Area. The viewshed map also depicts additional areas where seasonal (i.e. during "leaf off" conditions) views through the trees are anticipated. These areas comprise approximately 54 additional acres and are mostly limited to the immediate vicinity of the proposed Facility and host property, generally within approximately 0.25-mile. In total, VHB anticipates that approximately 8 additional residences could achieve seasonal views of the proposed Facility from select portions of their respective properties.

Attachment A

Photolog Documentation Map, Balloon Float Photographs and Photographic Simulations

Photolog Documentation

City of
Ansonia
Connecticut



Photographic Documentation

City of
Ansonia
Connecticut

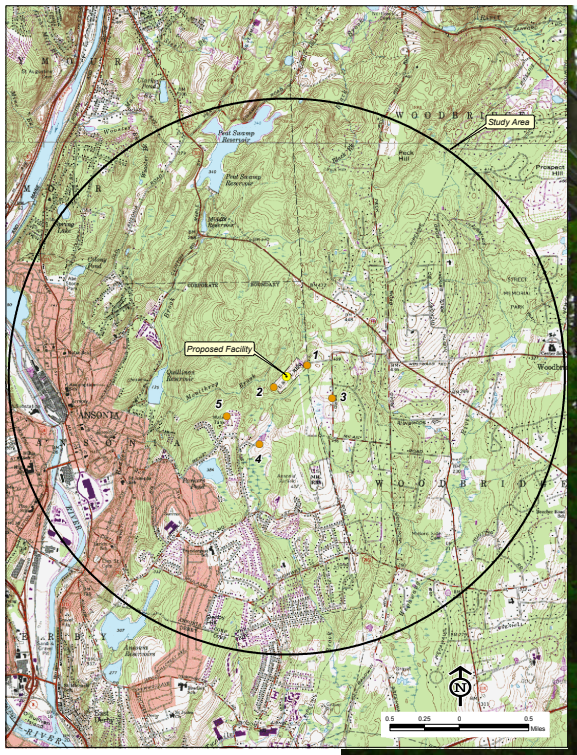
1 Deerfield Lane
Ansonia, CT
CT999-0099

PHOTO TAKEN OF PROPOSED PROJECT AREA

Optasite
VHB Vanasse Hangen Brustlin, Inc.

Photographic Documentation and Simulation *View 1*

City of
Ansonia
Connecticut



1 Deerfield Lane
Ansonia, CT
CT999-0099

Monopole installation
with 4 carriers

PHOTO TAKEN FROM OSBORNE LANE ADJACENT TO HOUSE #3, LOOKING SOUTHWEST

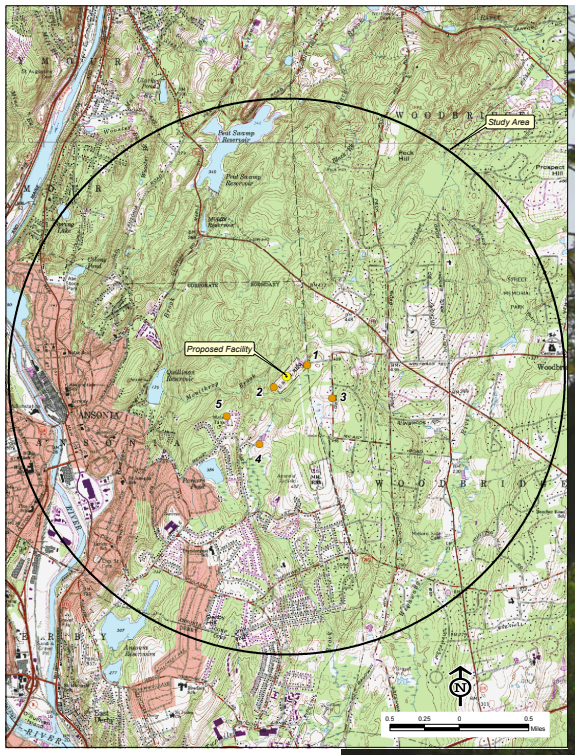
DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.18 MILE +/-

Optasite

VHB Vanasse Hangen Brustlin, Inc.

Photographic Documentation and Simulation *View 2*

City of
Ansonia
Connecticut



1 Deerfield Lane
Ansonia, CT
CT999-0099

Monopole installation
with 4 carriers

PHOTO TAKEN FROM NORTHERN BOUNDARY OF ANSONIA NATURE AND RECREATION CENTER, LOOKING NORTHEAST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.11 MILE +/-

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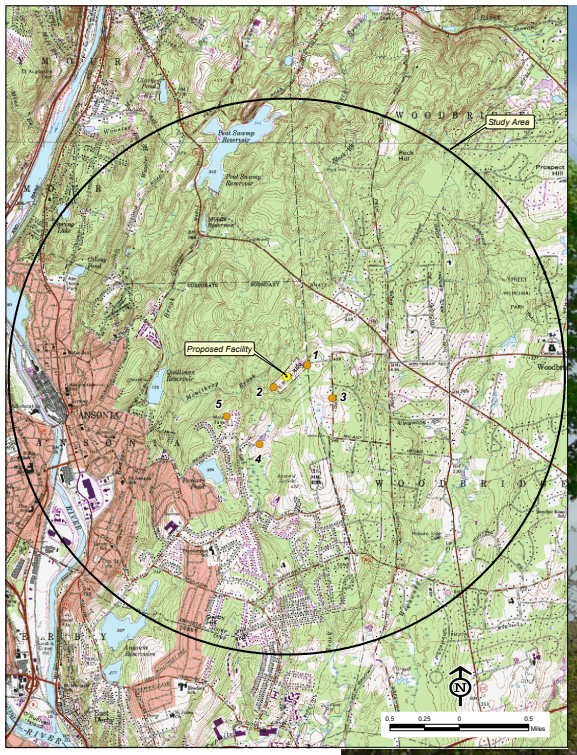
Photographic Documentation and Simulation *View 3*

City of
Ansonia
Connecticut



1 Deerfield Lane
Ansonia, CT
CT999-0099

Monopole installation
with 4 carriers

PHOTO TAKEN FROM FORD ROAD ADJACENT TO HOUSE #121, LOOKING NORTHWEST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.36 MILE +/-

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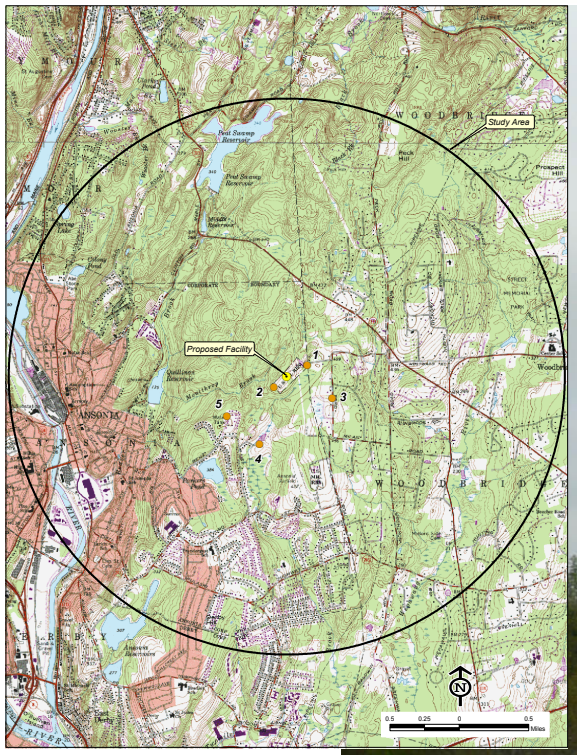
Photographic Documentation and Simulation *View 4*

City of
Ansonia
Connecticut



1 Deerfield Lane
Ansonia, CT
CT999-0099

Monopole installation
with 4 carriers

PHOTO TAKEN FROM MILAN STREET, LOOKING NORTHEAST

DISTANCE FROM THE PHOTOGRAPH LOCATION TO THE PROPOSED SITE IS 0.52 MILE +/-

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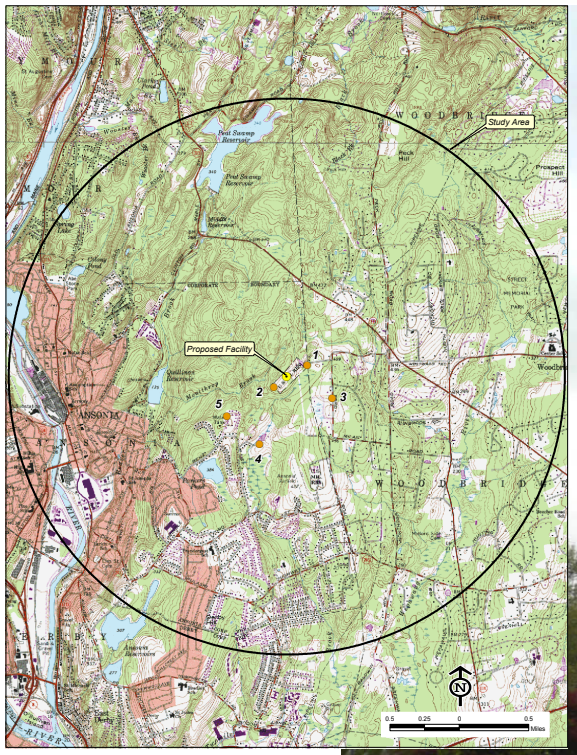
Photographic Documentation and Simulation *View 5*

City of
Ansonia
Connecticut



1 Deerfield Lane
Ansonia, CT
CT999-0099

Monopole installation
with 4 carriers

PHOTO TAKEN FROM KIMBERLY LANE ADJACENT TO HOUSE #12, LOOKING NORTHEAST

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

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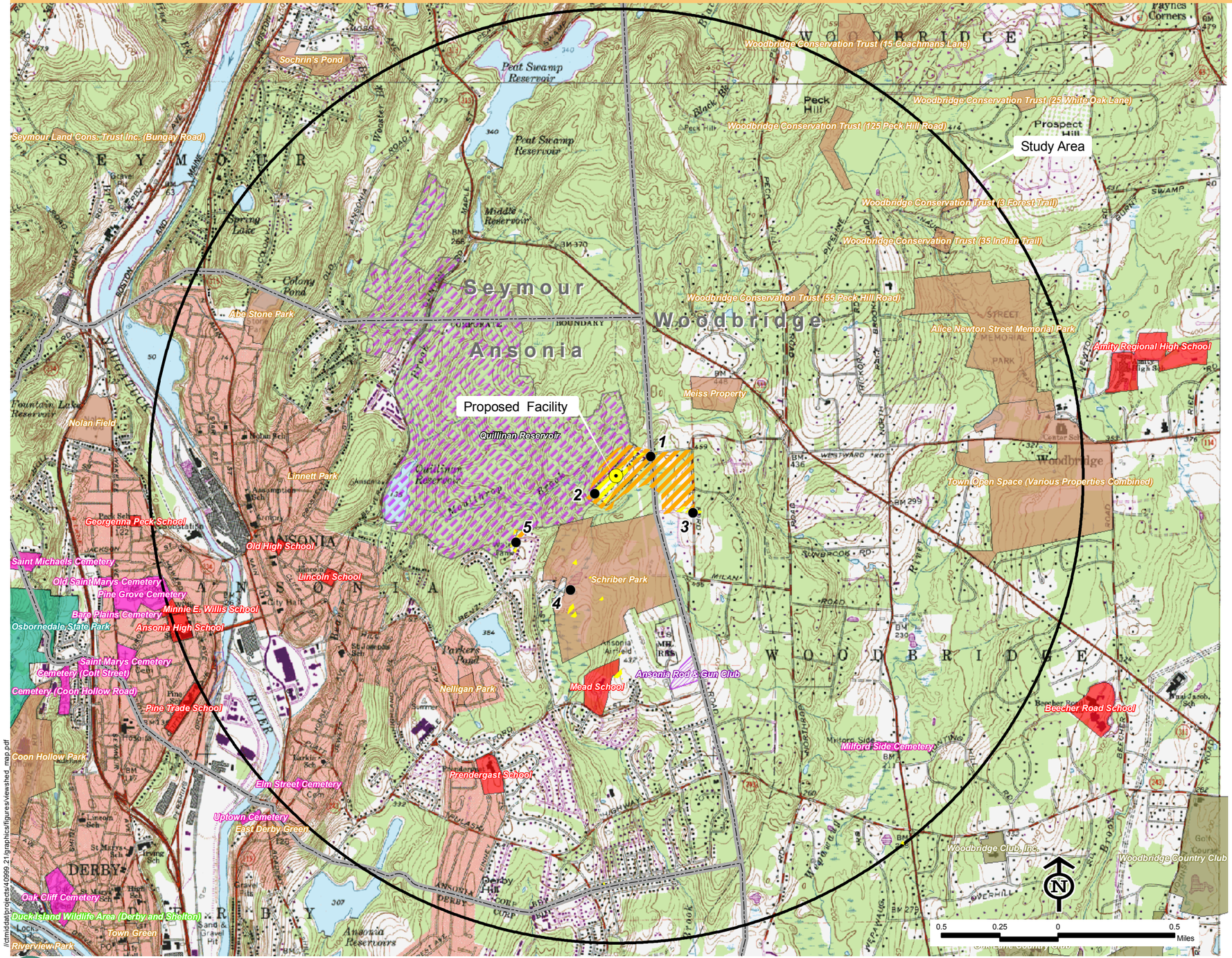
Attachment B

Viewshed Map

Viewshed Map

Topography and Forest Cover as Constraints

City of Ansonia Connecticut



//cmiddat/projects/40999.21/graphics/figures/viewshed_map.pdf

Proposed Optasite Facility
CT-999-0099
1 Deerfield Lane
Ansonia, Connecticut

NOTE:
- Viewshed analysis conducted using ESRI's Spatial Analyst.
- Proposed Facility height is 180 feet.
- Existing tree canopy height estimated at 65 feet.

DATA SOURCES:
- 7.5 minute digital elevation model (DEM) with 30 meter resolution produced by the USGS, 1982
- Forest areas derived from 2005 color digital orthophotos with 2-meter pixel resolution; digitized by VHB, 2007
- Base map comprised of Ansonia and Naugatuck USGS Quadrangle Maps
- Protected properties data layer provided CTDEP, 2003
- Scenic Roads layer derived from available State and Local listings.

Map Compiled May, 2007

Legend

- Proposed Monopole Location
- Photographs - May 10, 2007
  - Balloon visible above trees
- Year-Round Visibility (Approximately 14 Acres)
- Anticipated Seasonal Visibility (Approximately 54 Acres)

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

Protected Properties (Municipal)
- Cemetery
- Preservation
- Conservation
- Existing Preserved Open Space
- Recreation
- General Recreation
- School
- Uncategorized

- DEP Boat Launches
- Scenic Road (State and Local)
- Town Line
- Protected Properties (Federal)
- Open Water

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Transportation | Land Development | Environmental Services

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