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Also admitted in Massachusetts

September 7, 2016

Via Hand Delivery

Curt B. Leng, Mayor
City of Hamden
Hamden Government Center
2750 Dixwell Avenue
Hamden, CT 06518

Re: **Submission of Technical Information Concerning a Proposal to Construct a Wireless Telecommunications Facility at 208 Kirk Road, Hamden, Connecticut**

Dear Mr. Leng:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"), in its proposal to construct a new wireless telecommunications facility on an approximately 9.34-acre parcel at 208 Kirk Road in Hamden, Connecticut (the "Property"). For the purposes of this filing, the proposed telecommunications facility is known as Cellco's "Hamden 8 Facility". This Technical Report is submitted pursuant to Connecticut General Statutes ("Conn. Gen. Stat.") § 16-50*l*(g), which establishes local input requirements for the siting of a wireless telecommunications facility under the jurisdiction of the Connecticut Siting Council (the "Council").

Correspondence and/or communications regarding the information contained in this report should be addressed to:

Anthony Befera
Cellco Partnership d/b/a Verizon Wireless
99 East River Drive
East Hartford, CT 06108

A copy of all such correspondence or communications should also be sent to Cellco's attorneys:

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

Cellco intends to submit an application to the Council for a Certificate of Environmental Compatibility and Public Need ("Certificate") for the construction, maintenance and operation of a wireless telecommunications facility at the Property in central Hamden. The Hamden 8 Facility would interact with Cellco's existing cell sites in Hamden.

The Hamden 8 Facility would provide improved coverage and, more importantly, significant capacity relief to Cellco's network in Hamden, particularly along portions of Shepard Avenue, West Shepard Avenue, the Laurel View Country Club, and in the surrounding commercial and residential areas. Coverage plots for Cellco's existing cell sites in the area, alone and together with the proposed Hamden 8 Facility are included in Attachment 1. These plots show areas of coverage from Cellco's existing cell sites (purple shading), existing gaps in reliable wireless service, and the coverage footprint from the Hamden 8 Facility (lighter purple shading) in each of Cellco's four (4) licensed frequencies. The significant areas of overlapping service shown on these plots also helps illustrate the capacity benefits of the Hamden 8 Facility which will off-load voice and data traffic from Cellco's Hamden 2 (Alpha sector) and Hamden North (Gamma section) cell sites, which are currently operating beyond their respective capacity limits.

Cell Site Information

The proposed Hamden 8 Facility would be located in the westerly portion of an approximately 9.34-acre parcel at 208 Kirk Road in Hamden. The Property is owned by Joseph A. Vignola and Denise Courtemanche and is located in Hamden's R-3 (Residential) zone district. The Property is currently used for agricultural purposes.

The proposed wireless facility will consist of a 160-foot monopole tower and related equipment located within a 55' x 50' fenced compound and leased area. Cellco will install up to twelve (12) panel-type antennas at the top of the tower. Equipment cabinets associated with Cellco's antennas and a diesel-fueled back-up generator would be located on a 12' x 26' steel platform with canopy structure near the base of the tower. Access to the Hamden 8 Facility would extend from Country Club Drive over a new gravel driveway on the Property a distance of

approximately 435 feet. Project plans for the Hamden 8 Facility are included in Attachment 2.

Connecticut Siting Council Jurisdiction

Municipal jurisdiction over the siting of the proposed telecommunications facility described in this report is pre-empted by provisions of the Public Utilities Environmental Standards Act ("PUESA"), Conn. Gen. Stat. § 16-50g et seq. The PUESA gives exclusive jurisdiction over the location, type and modification of telecommunications towers, to the Council (Conn. Gen. Stat. § 16-50x(a); 16-50i(a)(6)). Accordingly, the telecommunications facility described in this report is exempt from the Town's land use regulations.

Upon receipt of an application, the Council will assign a docket number and, following a completeness review, set a hearing date. At that time, the Town may choose to become an intervenor or party in the proceeding. Other procedures followed by the Council include serving the applicant and other participants with interrogatories, holding a pre-hearing conference, and conducting a public hearing. The public hearing would be held at a location in the Town. Following the public hearing, the Council will issue findings of fact, an opinion and a decision and order. Prior to construction, the Council will also require the Applicant to submit a development and management plan ("D&M Plan") which is, in essence, a final site development plan showing the details of the facility incorporating any conditions imposed by the Council. These procedures are also outside the scope of the Town's jurisdiction and are governed by the Connecticut General Statutes, the Regulations of Connecticut State Agencies, and the Council's Rules of Practice. If the Council approves the cell site described in this report, Cellco will submit to the Building Official an application for approval of a local building permit. Under Section 16-50x of the General Statutes, which provides for the exclusive jurisdiction of the Council, the building official must honor the Council's decision.

Municipal Consultation Process

Pursuant to Section 16-50*l* of the General Statutes, Town officials are entitled to receive technical information regarding the proposed telecommunications facility at least ninety (90) days prior to the filing of an application with the Council. This Technical Report is provided to the Town in accordance with these provisions and includes information on the need for improved reliable wireless service in the area; the location of existing wireless facilities in and around Hamden; details of the proposed facility; the location of alternative sites considered and rejected; the location of schools and commercial day care facilities in the area and the aesthetic impacts of the facility on those schools and day care facilities, if any; a description of the site selection process; and a discussion of potential environmental effects associated with the proposed facility.

Not later than sixty (60) days after the initial consultation meeting, the municipality may, in cooperation with Cellco, hold a public information hearing on the facility proposal. If such a hearing is held, the applicant must notify all abutting landowners and publish notice of the hearing in a newspaper of general circulation in the municipality, at least fifteen (15) days prior to the hearing.

Not later than thirty (30) days after the initial consultation meeting, the municipality may present the prospective applicant with alternative sites, including municipal parcels, for its consideration. If not previously considered, these alternatives will be evaluated and discussed in its application to the Council.

Pursuant to Section 16-50*l*(e) of the General Statutes, Cellco must provide a summary of the Town's comments and recommendations, if any, to the Council within fifteen (15) days of the filing of an application.

Need for the Proposed Wireless Facility

The proposed Hamden 8 Facility described in this Technical Report is needed so that Cellco can provide enhanced wireless voice and data services in Hamden, Connecticut. More particularly, the Hamden 8 Facility will provide additional wireless "coverage" along portions of Shepard Avenue, West Shepard Avenue, the Laurel View Country Club, and the area immediately around the Property in its 700, 850, 1900, and 2100 MHz frequency ranges. More importantly, the Hamden 8 Facility will provide capacity relief to Cellco's existing Hamden 2 (Alpha sector) and Hamden North (Gamma sector) cell sites which are currently operating beyond their respective capacity limits. The Hamden 8 Facility, described in this report, would improve coverage in the area and off-load significantly network capacity in the area, improving, overall, Cellco's ability to provide high quality, reliable wireless services in the area.

Environmental Effects

In our experience, the primary impact of a wireless facility such as the proposed Hamden 8 Facility is visual. The visual impact of the proposed facility will vary from place to place around the site location, depending upon factors such as vegetation, topography, distance from the tower, and the location of buildings in the sight-line of the cell site.

To more fully assess the visual impact of the Hamden 8 Facility, Cellco's consultant, All-Points Technology Corporation ("APT") has prepared a Preliminary Visual Assessment. This assessment indicates that a majority of the year-round visibility of the proposed 160-foot tower at the Property would be limited to the area in the immediate vicinity of the proposed tower

location, generally within less than 0.25 miles of the Property. These year-round views encompass an area of approximately 42 acres. When the leaves are off the trees, views of the proposed tower through the trees (a/k/a seasonal views) may occur over a larger area (approximately 772 acres) around the tower site. (*See* Attachment 3). A more detailed visual assessment report is being prepared and will be included in Cellco's application to the Council.

Pursuant to the provisions of Conn. Gen. Stat. § 16-50p(a)(3)(G), new telecommunications facilities must be located at least 250 feet from schools (defined in C.G.S. §10-154a) and commercial day care facilities (defined in C.G.S. §19a-77(a)(1)) unless the location selected is acceptable to the Town's chief elected official or the Council finds that the facility will not have a substantial adverse effect on the aesthetics or scenic quality of the neighborhood where the school or commercial day care use is located. The proposed Hamden 8 Facility is not located within 250 feet of any building containing a school or commercial day care facility.

Based on field surveys, Cellco has determined that the construction of the Hamden 8 Facility will have no direct impact on inland wetlands or watercourses, within or near the tower compound. Cellco anticipates that all other physical environmental effects associated with the proposed facility would be minimal.

Radio Frequency Emissions

The Federal Communications Commission ("FCC") has adopted a standard (the "Standard") for exposure of radio frequency ("RF") emissions from telecommunications base stations like the Hamden 8 Facility. To ensure compliance with the Standard, Cellco has performed a worst-case RF emissions calculation for the proposed facility according to the methodology described in FCC Office of Science and Technology Bulletin No. 65 ("OST Bulletin 65"). This calculation is a conservative, worst-case approximation of RF emissions at the closest accessible point to the antenna (i.e., the base of the tower), and with all antennas transmitting simultaneously on all channels at full power. The worst-case calculated RF emissions level for Cellco's antennas at the 160-foot level on the proposed tower would be 18.28% of the FCC Standard. (*See* Attachment 4.) Actual RF emissions levels from this facility will be far less than this "worst-case" approximation.

Scenic Natural Historic or Recreational Impacts

To further assess the environmental impacts of the proposed facility, Cellco is working with its consultant team to prepare a National Environmental Policy Act ("NEPA") Environmental Screening Checklist (the "NEPA Checklist") and other related environmental

reviews to determine if the facility will have any significant adverse environmental effects. The NEPA Checklist will include information from the Environmental and Geographic Information Center of the Connecticut Department of Energy and Environmental Protection ("DEEP"), the U.S. Fish and Wildlife Service ("USFWS") and the State Historic Preservation Officer ("SHPO"). Copies of the DEEP, USFWS and the SHPO determinations will also be submitted as a part of the Council Application.

Site Search Process

Cellco conducted a search for suitable cell site locations in portions of Hamden and identified the Property as a site that would satisfy its wireless service objectives in the area. In addition to the proposed location, Cellco identified and investigated three (3) alternative facility locations in the area. With the exception of the Property, each of the alternative sites considered were rejected by Cellco's RF engineers due to the location of the property either being too far outside the site search ring or too low to allow Cellco to satisfy its wireless service objectives in the area. A complete list of other potential cell sites investigated is included in Attachment 5.

Tower Sharing

As stated above, Cellco intends to build a tower that is capable of supporting its antennas and those of additional wireless telecommunications providers, including City of Hamden emergency service providers, if a need exists. The provision to share the tower is consistent with the intent of the General Assembly when it adopted Conn. Gen. Stat. § 16-50aa and with Council policy. The availability of space on the proposed tower may reduce, if not eliminate, the need for additional towers in Hamden for the foreseeable future.

Conclusion

This Technical Report is submitted in accordance with Conn. Gen. Stat. § 16-50*l* which requires Cellco to supply the Town with information regarding its proposed Hamden 8 Facility. This report includes information regarding the site selection process, public need, and the potential environmental impacts of the facility. Cellco submits that its proposed Hamden 8 Facility would not have any significant adverse environmental effects. Moreover, Cellco submits that the public need for high quality wireless service, and a competitive framework for providing such service has been determined by the FCC to be in the public interest and that such public need far outweighs any perceived environmental effects of the proposed facility.

Please contact me if you have any additional questions regarding the proposed facility.

Sincerely,

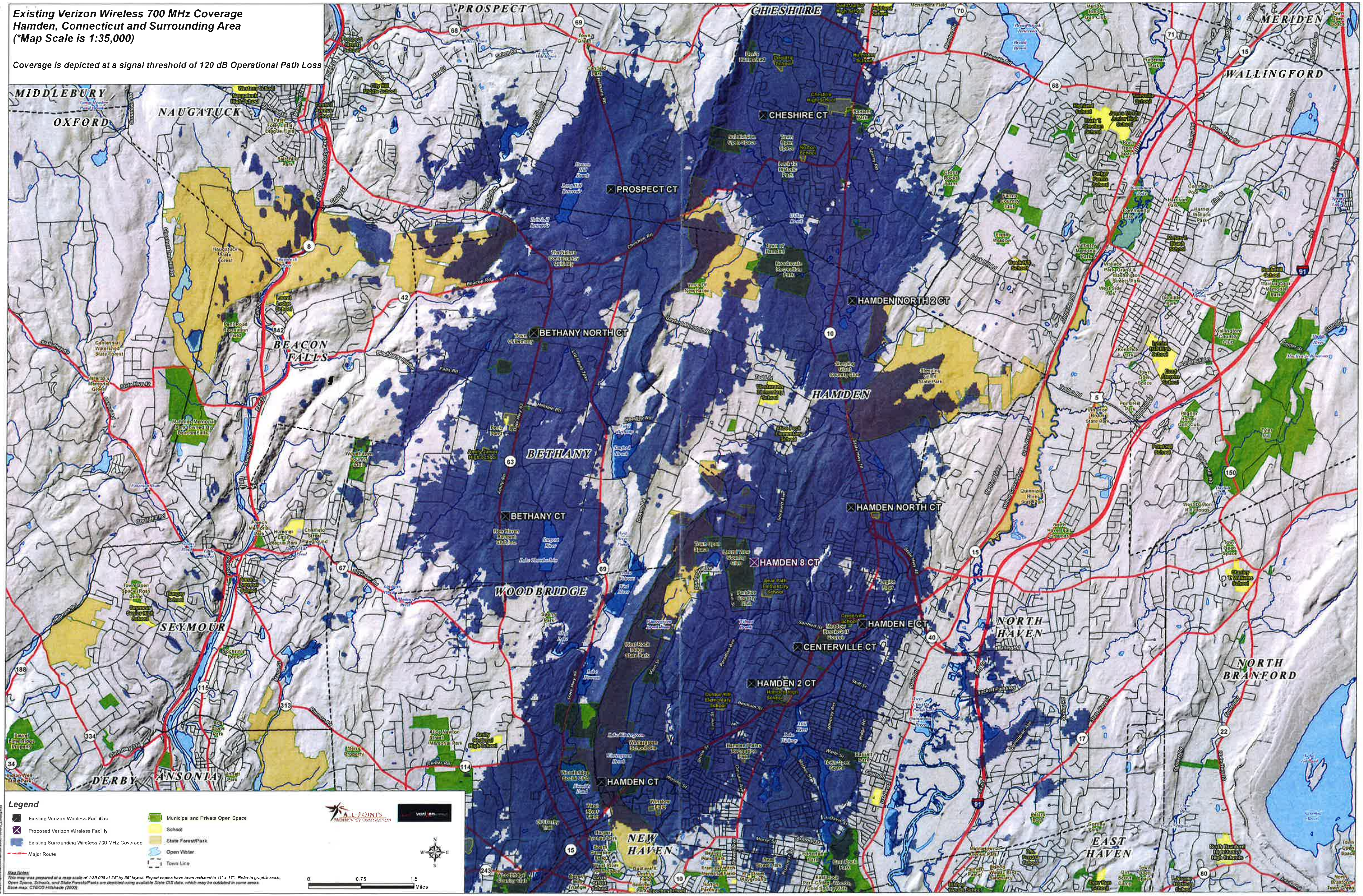
Kenneth C. Baldwin

KCB/kmd
Enclosures
Copy to (*via hand delivery*):
Brack Poitier, Chair, Hamden Planning and Zoning Commission
Joan Larkin, Chair, Hamden Inland Wetlands Commission
Anthony Befera

ATTACHMENT 1

Existing Verizon Wireless 700 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)

Coverage is depicted at a signal threshold of 120 dB Operational Path Loss



Legend

- Existing Verizon Wireless Facilities
- Proposed Verizon Wireless Facility
- Existing Surrounding Wireless 700 MHz Coverage
- Major Route
- Municipal and Private Open Space
- School
- State Forest/Park
- Open Water
- Town Line

<u>Map Notes:</u>
This map was prepared at a map scale of 1:35,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.
Base map: CTECO Hillshade (2000)

0 0.75 1.5 Miles

Proposed Verizon Wireless 700 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)

Coverage is depicted at a signal threshold of 120 dB Operational Path Loss

PROSPECT
CHESHIRE
MERIDEN
WALLINGFORD
MIDDLEBURY
OXFORD
NAUGATUCK
CHESHIRE CT
PROSPECT CT
HAMDEN NORTH 2 CT
BETHANY NORTH CT
BEACON FALLS
HAMDEN
BETHANY
BETHANY CT
HAMDEN NORTH CT
HAMDEN 8 CT
WOODBRIDGE
HAMDEN E CT
CENTERVILLE CT
NORTH HAVEN
SEYMOUR
HAMDEN 2 CT
NORTH BRANFORD
DERBY
ANSONIA
HAMDEN CT
NEW HAVEN
EAST HAVEN

Legend

- Existing Verizon Wireless Facilities
- Proposed Verizon Wireless Facility
- Existing Surrounding Wireless 700 MHz Coverage
- Proposed Wireless 700 MHz Coverage
- Major Route
- Municipal and Private Open Space
- School
- State Forest/Park
- Open Water
- Town Line

ALL-POINTS TECHNOLOGY CORPORATION

verizon

0 0.75 1.5 Miles

Map Notes:
This map was prepared at a map scale of 1:35,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
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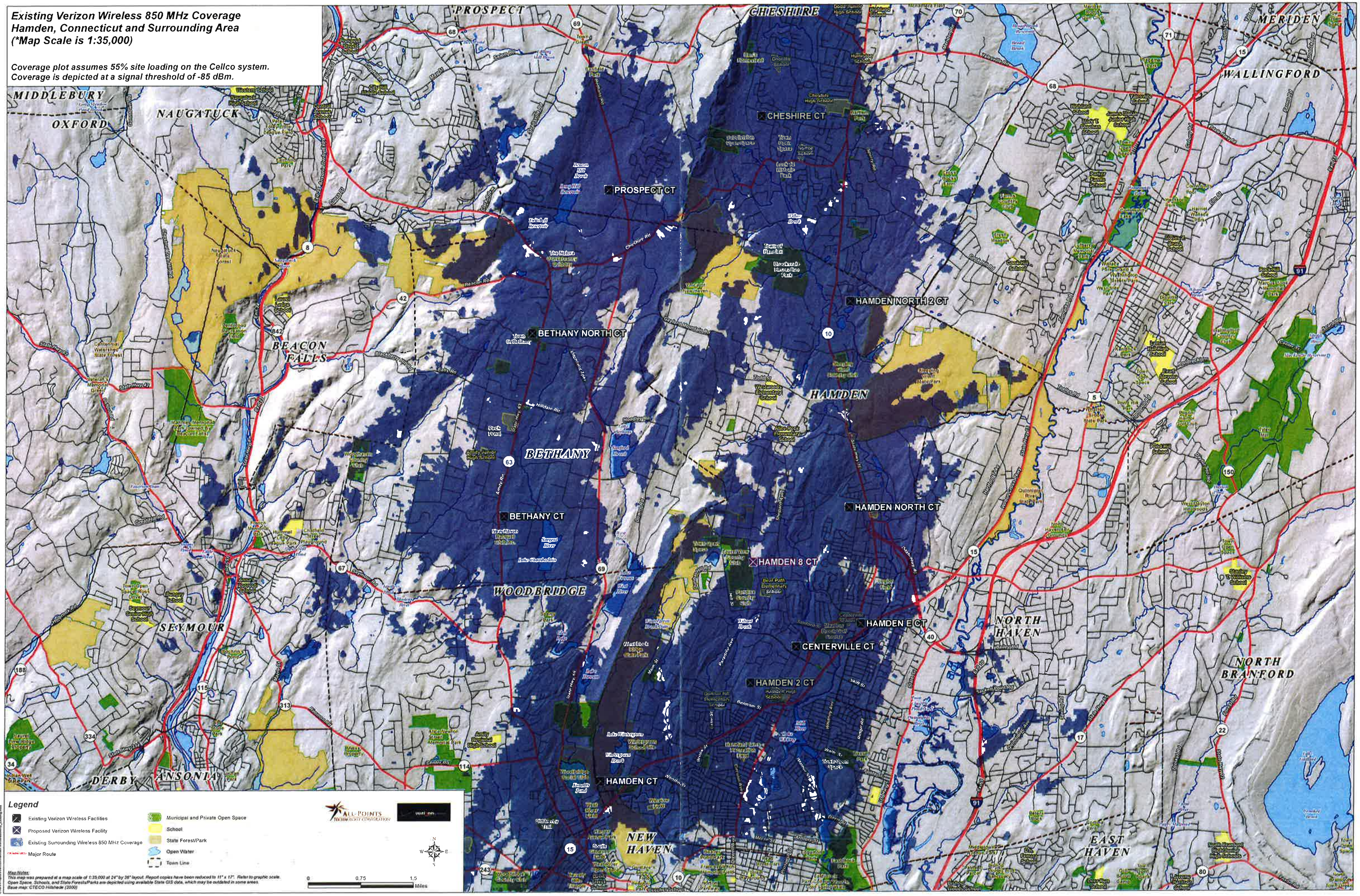
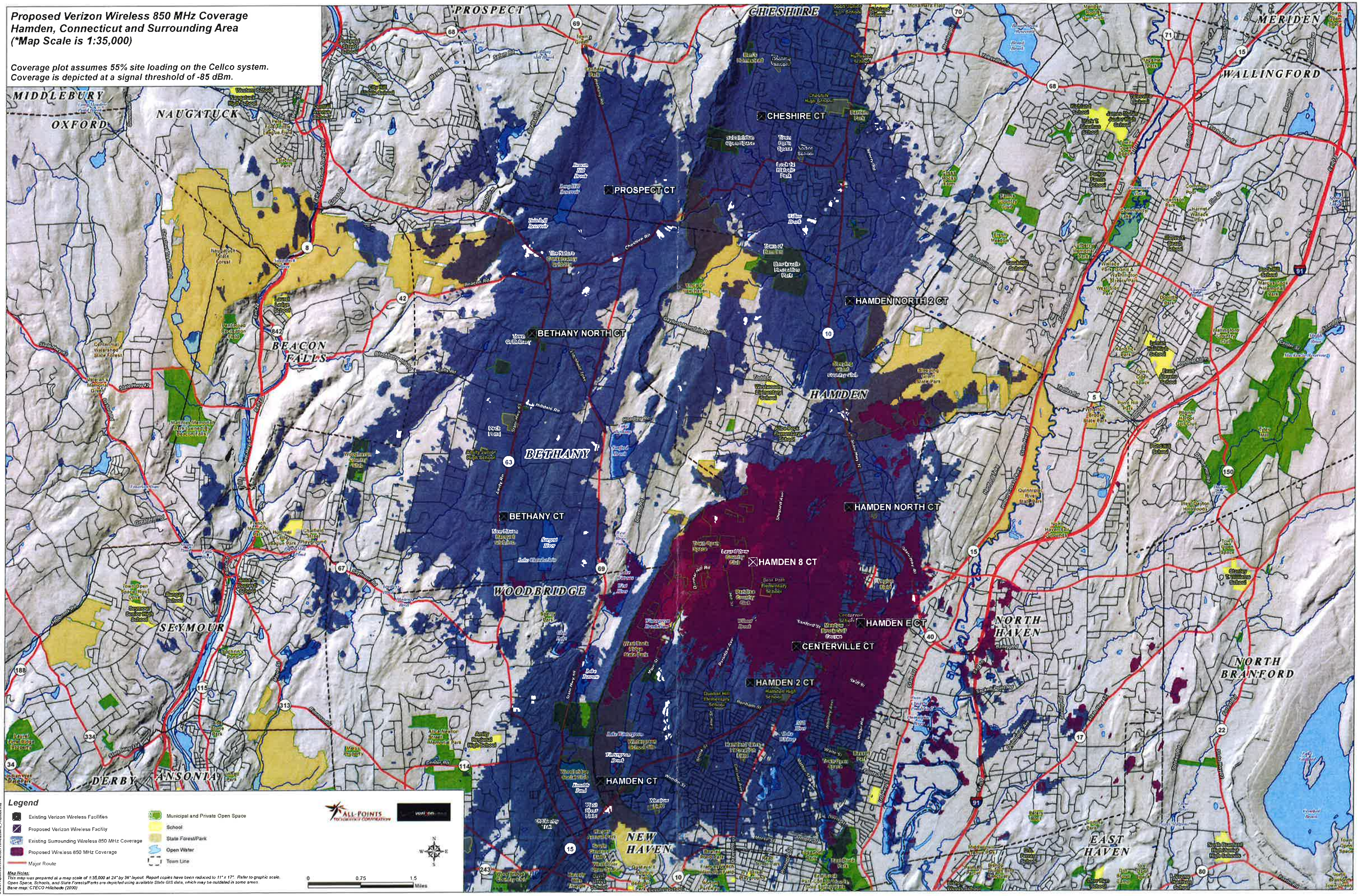
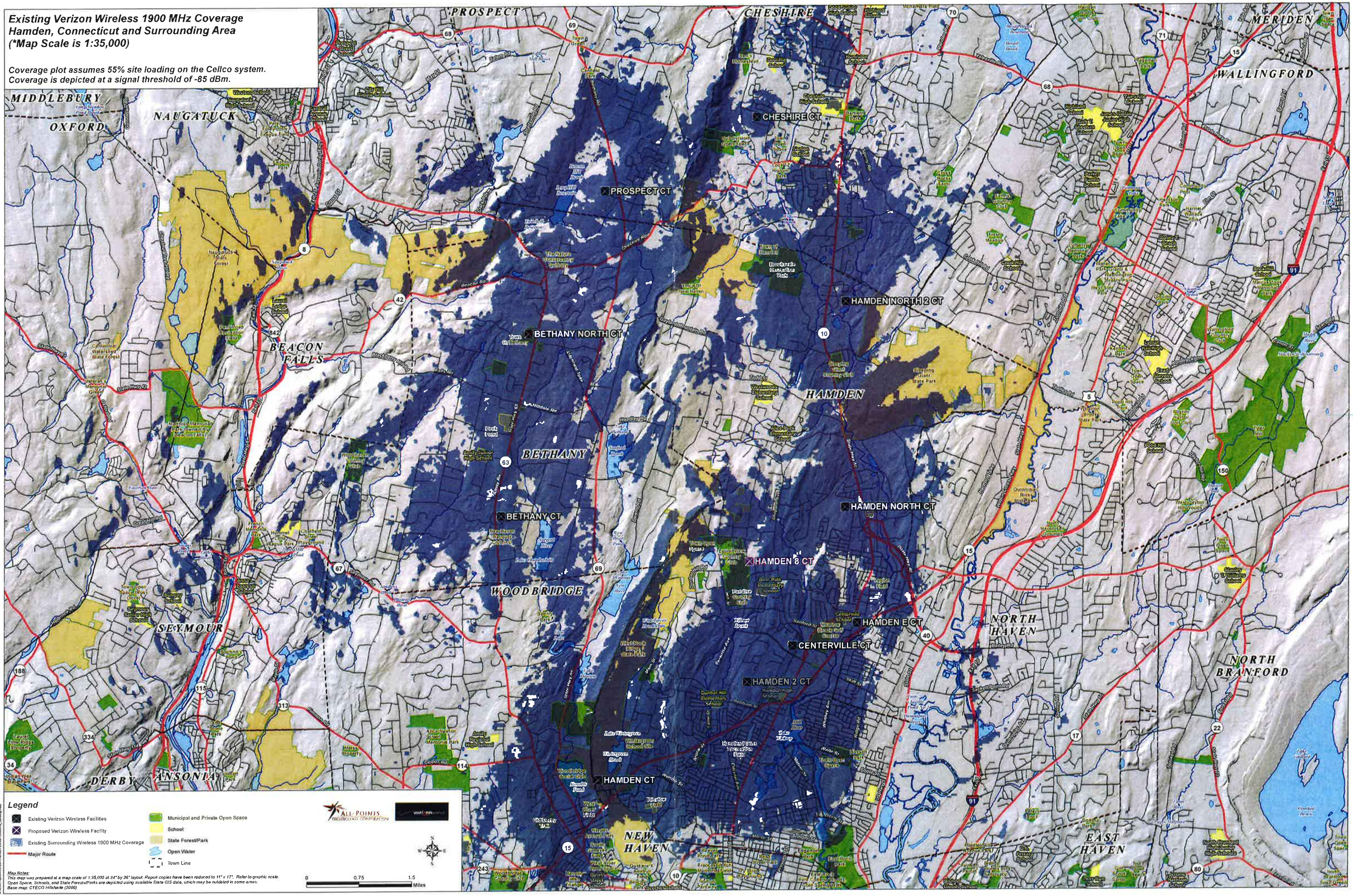
Base map: CTECO Hillshade (2006)


Existing Verizon Wireless 850 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)
Coverage plot assumes 55% site loading on the Cellco system.
Coverage is depicted at a signal threshold of -85 dBm.
PROSPECT
CHESHIRE
MERIDEN
WALLINGFORD
MIDDLEBURY
OXFORD
NAUGATUCK
CHESHIRE CT
PROSPECT CT
HAMDEN NORTH 2 CT
BETHANY NORTH CT
BEACON FALLS
HAMDEN
BETHANY
BETHANY CT
HAMDEN NORTH CT
HAMDEN 8 CT
WOODBRIDGE
SEYMOUR
HAMDEN E CT
CENTERVILLE CT
NORTH HAVEN
NORTH BRANFORD
HAMDEN 2 CT
DERBY
ANSONIA
HAMDEN CT
NEW HAVEN
EAST HAVEN
Legend
Existing Verizon Wireless Facilities
Proposed Verizon Wireless Facility
Existing Surrounding Wireless 850 MHz Coverage
Major Route
Municipal and Private Open Space
School
State Forest/Park
Open Water
Town Line
Map Notes:
This map was prepared at a map scale of 1:35,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.
Base map: CTECO Hillshade (2000)
ALL-POINTS
0
0.75
1.5
Miles


Proposed Verizon Wireless 850 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)
Coverage plot assumes 55% site loading on the Cellco system.
Coverage is depicted at a signal threshold of -85 dBm.
PROSPECT
CHESHIRE
MERIDEN
WALLINGFORD
MIDDLEBURY
OXFORD
NAUGATUCK
BEACON FALLS
BETHANY
HAMDEN
WOODBRIDGE
SEYMOUR
DERBY
ANSONIA
NEW HAVEN
NORTH HAVEN
NORTH BRANFORD
EAST HAVEN
CHESHIRE CT
PROSPECT CT
HAMDEN NORTH 2 CT
BETHANY NORTH CT
BETHANY CT
HAMDEN NORTH CT
HAMDEN 8 CT
HAMDEN E CT
CENTERVILLE CT
HAMDEN 2 CT
HAMDEN CT
Legend
Existing Verizon Wireless Facilities
Proposed Verizon Wireless Facility
Existing Surrounding Wireless 850 MHz Coverage
Proposed Wireless 850 MHz Coverage
Major Route
Municipal and Private Open Space
School
State Forest/Park
Open Water
Town Line
Map Notes:
This map was prepared at a map scale of 1:35,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.
Base map: CTECO Hillshade (2000)
0
0.75
1.5
Miles
N
S
E
W



Existing Verizon Wireless 1900 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)
Coverage plot assumes 55% site loading on the Cellco system.
Coverage is depicted at a signal threshold of -85 dBm.
PROSPECT
CHESHIRE
MERIDEN
WALLINGFORD
MIDDLEBURY
NAUGATUCK
OXFORD
BEACON FALLS
BETHANY
HAMDEN
WOODBRIDGE
SEYMOUR
NORTH HAVEN
NORTH BRANFORD
DERBY
ANSONIA
NEW HAVEN
EAST HAVEN
CHESHIRE CT
PROSPECT CT
HAMDEN NORTH 2 CT
BETHANY NORTH CT
BETHANY CT
HAMDEN NORTH CT
HAMDEN 8 CT
HAMDEN E CT
CENTERVILLE CT
HAMDEN 2 CT
HAMDEN CT
Legend
Existing Verizon Wireless Facilities
Proposed Verizon Wireless Facility
Existing Surrounding Wireless 1900 MHz Coverage
Major Route
Municipal and Private Open Space
School
State Forest/Park
Open Water
Town Line
Map Notes:
This map was prepared at a map scale of 1:35,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
Open Space, Schools, and State Forests/Parks are depicted using available State GIS data, which may be outdated in some areas.
Base map: CTECO Hillshade (2000)
0
0.75
1.5
Miles

Proposed Verizon Wireless 1900 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)

Coverage plot assumes 55% site loading on the Cellco system.
Coverage is depicted at a signal threshold of -85 dBm.

PROSPECT
CHESHIRE
MERIDEN
WALLINGFORD
MIDDLEBURY
OXFORD
NAUGATUCK
CHESHIRE CT
PROSPECT CT
HAMDEN NORTH 2 CT
BETHANY NORTH CT
BEACON FALLS
HAMDEN
BETHANY
BETHANY CT
HAMDEN NORTH CT
HAMDEN 8 CT
WOODBRIDGE
HAMDEN E CT
CENTERVILLE CT
NORTH HAVEN
NORTH BRANFORD
SEYMOUR
HAMDEN 2 CT
HAMDEN CT
DERBY
ANSONIA
NEW HAVEN
EAST HAVEN

Legend

- Existing Verizon Wireless Facilities
- Proposed Verizon Wireless Facility
- Existing Surrounding Wireless 1900 MHz Coverage
- Proposed Wireless 1900 MHz Coverage
- Major Route
- Municipal and Private Open Space
- School
- State Forest/Park
- Open Water
- Town Line

ALL-POINTS TECHNOLOGY CORPORATION

verizon

N W E S

0 0.75 1.5 Miles

Map Notes:
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Base map: CTECO Hillshade (2000)

Existing Verizon Wireless 2100 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)

Coverage is depicted at a signal threshold of 120 dB Operational Path Loss

PROSPECT
CHESHIRE
MERIDEN
WALLINGFORD
MIDDLEBURY
OXFORD
NAUGATUCK
CHESHIRE CT
PROSPECT CT
HAMDEN NORTH 2 CT
BETHANY NORTH CT
BEACON FALLS
HAMDEN
BETHANY
BETHANY CT
HAMDEN NORTH CT
HAMDEN 8 CT
WOODBRIDGE
HAMDEN E CT
NORTH HAVEN
CENTERVILLE CT
SEYMOUR
HAMDEN 2 CT
NORTH BRANFORD
HAMDEN CT
DERBY
ANSONIA
NEW HAVEN
EAST HAVEN

Legend

- Existing Verizon Wireless Facilities
- Proposed Verizon Wireless Facility
- Existing Surrounding Wireless 2100 MHz Coverage
- Major Route
- Municipal and Private Open Space
- School
- State Forest/Park
- Open Water
- Town Line

ALL POINTS TECHNOLOGY CORPORATION

verizon

N W E S

0 0.75 1.5 Miles

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This map was prepared at a map scale of 1:35,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
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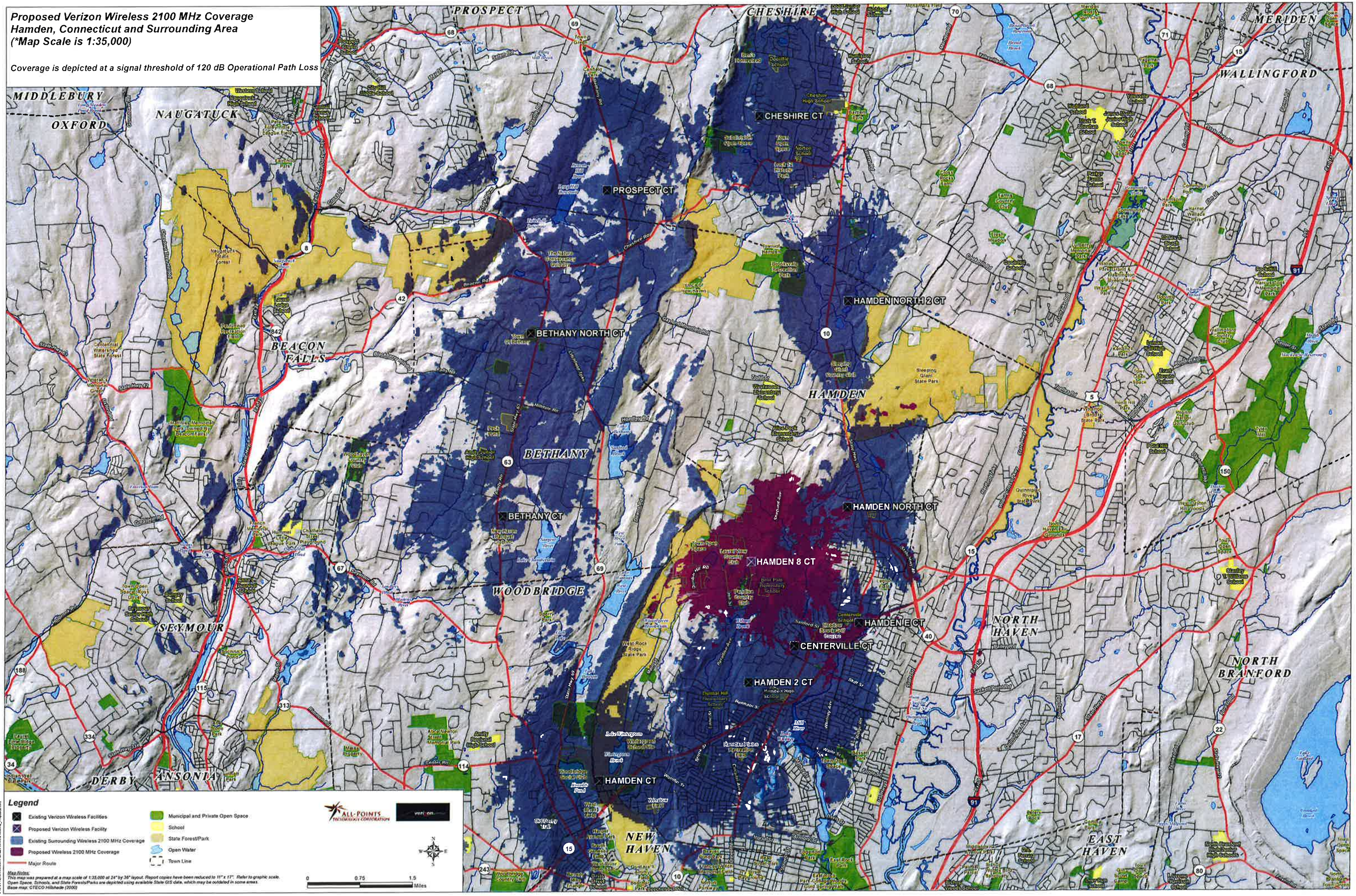
Base map: CTECO Hillshade (2000)

Proposed Verizon Wireless 2100 MHz Coverage
Hamden, Connecticut and Surrounding Area
(*Map Scale is 1:35,000)

Coverage is depicted at a signal threshold of 120 dB Operational Path Loss


PROSPECT
CHESHIRE
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OXFORD
NAUGATUCK
BEACON FALLS
BETHANY
HAMDEN
WOODBRIDGE
SEYMOUR
NORTH HAVEN
NORTH BRANFORD
DERBY
ANSONIA
NEW HAVEN
EAST HAVEN
CHESHIRE CT
PROSPECT CT
HAMDEN NORTH 2 CT
BETHANY NORTH CT
HAMDEN NORTH CT
BETHANY CT
HAMDEN 8 CT
HAMDEN E CT
CENTERVILLE CT
HAMDEN 2 CT
HAMDEN CT
Sleeping Giant State Park
West Rock Ridge State Park
Legend
Existing Verizon Wireless Facilities
Proposed Verizon Wireless Facility
Existing Surrounding Wireless 2100 MHz Coverage
Proposed Wireless 2100 MHz Coverage
Major Route
Municipal and Private Open Space
School
State Forest/Park
Open Water
Town Line
ALL-POINTS TECHNOLOGY CORPORATION
0
0.75
1.5
Miles
Map Notes:
This map was prepared at a map scale of 1:35,000 at 24" by 36" layout. Report copies have been reduced to 11" x 17". Refer to graphic scale.
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Base map: CTECO Hillshade (2000)

ATTACHMENT 2

verizon

WIRELESS COMMUNICATIONS FACILITY

HAMDEN 8
208 KIRK ROAD
HAMDEN, CT 06514

SITE DIRECTIONS

FROM: 99 EAST RIVER DRIVE
EAST HARTFORD, CONNECTICUT

TO: 208 KIRK ROAD
HAMDEN, CONNECTICUT

1.	HEAD SOUTHEAST ON E RIVER DR TOWARD PITKIN ST	0.9 MI.
2.	CONTINUE ONTO E RIVER DR EXTENSION	0.3 MI.
3.	TURN RIGHT ONTO THE US-5 S/CT-15 S RAMP TO NEW HAVEN-I-91 S	0.2 MI.
4.	MERGE ONTO US-5 S	0.8 MI.
5.	TAKE EXIT 86 TO MERGE ONTO I-91 S TOWARD NEW HAVEN/NYC	17.1 MI.
6.	TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY	0.4 MI.
7.	MERGE ONTO CT-15 S	12.7 MI.
8.	TAKE EXIT 62 FOR WHITNEY AVE TOWARD HAMDEN	0.2 MI.
9.	TURN RIGHT ONTO WHITNEY AVE	0.3 MI.
10.	TURN LEFT ONTO CT-10 S	0.6 MI.
11.	TURN RIGHT ONTO SANFORD ST	0.4 MI.
12.	TURN RIGHT ONTO SHEPARD AVE	0.8 MI.
13.	TURN LEFT ONTO BEAR PATH RD	0.3 MI.
14.	TURN RIGHT ONTO COUNTRY CLUB DR.	0.1 MI.

GENERAL NOTES

1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDED BY CELLCO PARTNERSHIP.

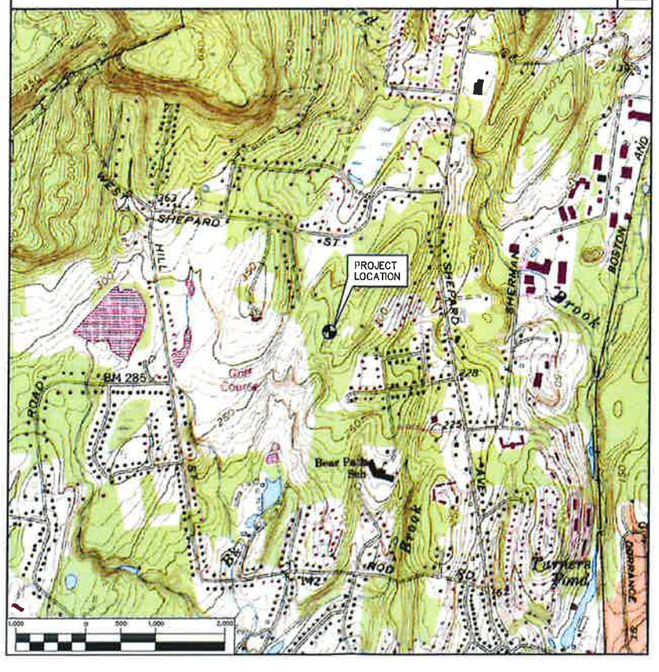
SITE INFORMATION

THE SCOPE OF WORK SHALL INCLUDE:

1. THE CONSTRUCTION OF A 55'x50' FENCED WIRELESS COMMUNICATIONS COMPOUND.
2. A TOTAL OF UP TO TWELVE (12) DIRECTIONAL PANEL ANTENNAS ARE PROPOSED TO BE MOUNTED AT A CENTERLINE ELEVATION OF 160'-0"± AGL ON A 150'-0"± PROPOSED STEEL MONOPOLE TOWER.
3. POWER AND TELCO UTILITIES SHALL BE ROUTED UNDERGROUND FROM EXISTING RESPECTIVE DEMARCS TO THE PROPOSED UTILITY BACKBOARD LOCATED ADJACENT TO THE PROPOSED FENCED COMPOUND. FINAL DEMARC LOCATION AND UTILITY ROUTING TO PROPOSED BACKBOARD WILL BE VERIFIED/DETERMINED BY LOCAL UTILITY COMPANIES. UTILITIES WILL BE ROUTED UNDERGROUND FROM UTILITY BACKBOARD TO THE PROPOSED EQUIPMENT CABINETS ATOP A 12'x26' RAISED STEEL GRATING PLATFORM LOCATED WITHIN FENCED COMPOUND AREA.
4. FINAL DESIGN FOR TOWER AND ANTENNA MOUNTS SHALL BE INCLUDED IN THE D&M PLANS.
5. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED IN ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.
6. THERE WILL NOT BE ANY LIGHTING UNLESS REQUIRED BY THE FCC OR THE FAA.
7. THERE WILL NOT BE ANY SIGNS OR ADVERTISING ON THE ANTENNAS OR EQUIPMENT.

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

SITE NAME:	HAMDEN 8
SITE ADDRESS:	208 KIRK ROAD HAMDEN, CT 06514
PROPERTY OWNER:	JOSEPH A. VIGNOLA & DENISE COURTEMANCHE 208 KIRK ROAD HAMDEN, CT 06514
LESSEE/TENANT:	CELLCO PARTNERSHIP d.b.a. VERIZON WIRELESS 99 EAST RIVER DRIVE EAST HARTFORD, CT 06108
VERIZON SITE ACQUISITION CONTACT:	SHELBY DOCKER CELLCO PARTNERSHIP (860) 549-3739
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE (860) 257-8345
TOWER COORDINATES:	LATITUDE 41°-23'-43.034" LONGITUDE 72°-55'-52.307" GROUND ELEVATION: 296.5'± A.M.S.L. COORDINATES AND GROUND ELEVATION REFERENCED FROM FAA 1-A SURVEY CERTIFICATION AS PREPARED BY MARTINEZ COUCH AND ASSOCIATES LLC, DATED JUNE 23, 2015, REVISED AUGUST 04, 2016.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	4
C-1	SITE LOCATION PLAN	4
C-2	COMPOUND PLAN, ELEVATION AND ANTENNA MOUNTING CONFIGURATION	4

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	09/25/16	LGL	RMR	ISSUED FOR CT SITING COUNCIL - REVISED PER CLIENT COMMENTS
3	06/04/16	HMR	DMD	ISSUED FOR CT SITING COUNCIL - REVISED OUTDOOR EQUIP & TOWER TYPE
2	09/28/15	HMR	DMD	ISSUED FOR CT SITING COUNCIL - REVISED FOR SITE ADDRESS
1	08/20/15	HMR	DMD	ISSUED FOR CT SITING COUNCIL
0	05/20/15	HMR	DMD	ISSUED FOR CT SITING COUNCIL - CLIENT REVIEW

PROFESSIONAL ENGINEER SEAL

verizon

CENTEK engineering
Centered on Solutions
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road
Branford, CT 06405
www.CentekEng.com

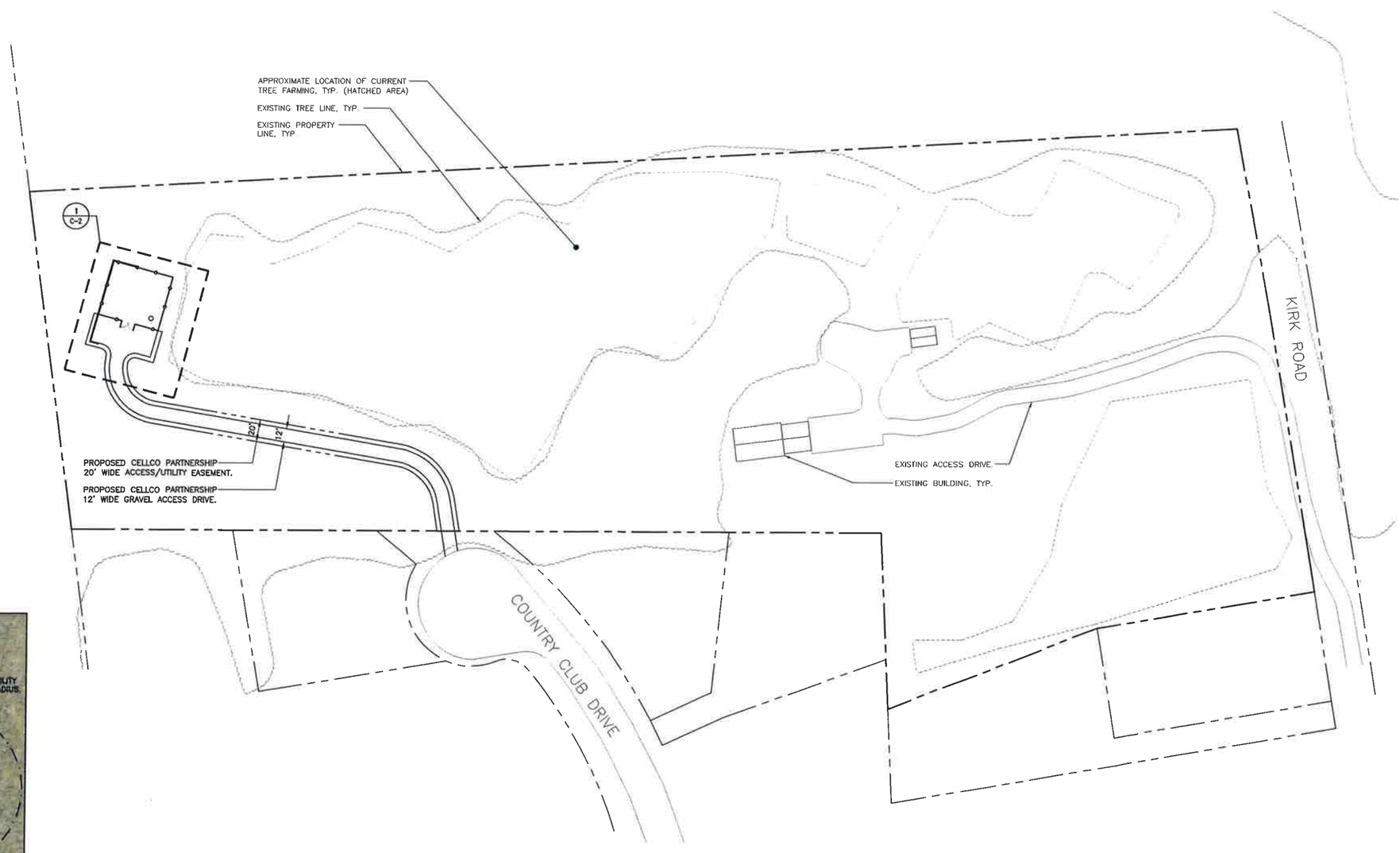
Cellco Partnership d/b/a Verizon Wireless
WIRELESS COMMUNICATIONS FACILITY
HAMDEN 8
208 KIRK ROAD
HAMDEN, CT 06514

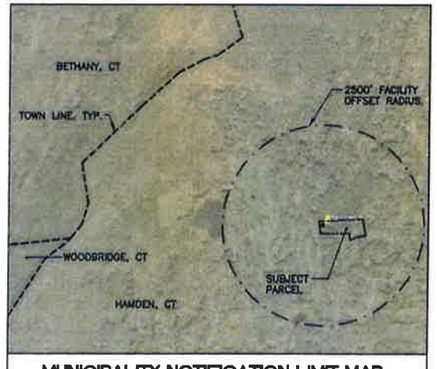
DATE: 05/20/15
SCALE: AS NOTED
JOB NO. 14170.000

TITLE SHEET

T-1

Sheet No. 1 of 3





MUNICIPALITY NOTIFICATION LIMIT MAP

1 / C-1 SITE LOCATION PLAN
SCALE: 1"=50'

APPROXIMATE NORTH

GRAPHIC SCALE
50 0 25 50 100 200
(IN FEET)
1 inch = 50 ft.

PROFESSIONAL ENGINEER SEAL

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
4	08/25/16	LGL	HMR	ISSUED FOR CT SITING COUNCIL – REVISED PER CLIENT COMMENTS
3	08/04/16	HMR	DMD	ISSUED FOR CT SITING COUNCIL – REVISED OUTDOOR EQUIP. & TOWER TYPE
2	06/26/15	HMR	DMD	ISSUED FOR CT SITING COUNCIL – REVISED FOR SITE ADDRESS
1	07/20/15	HMR	DMD	ISSUED FOR CT SITING COUNCIL
0	05/20/15	HMR	DMD	ISSUED FOR CT SITING COUNCIL – CLIENT REVIEW

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HAMDEN 8

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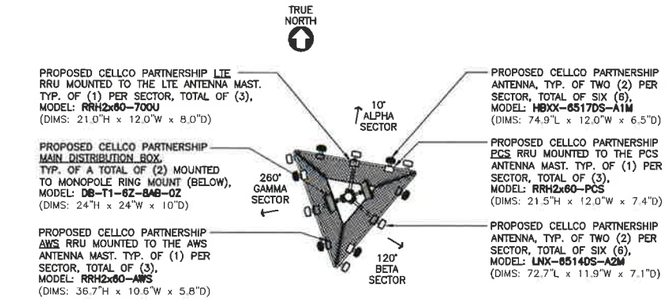
HAMDEN, CT 06514

DATE: 05/20/15
SCALE: AS NOTED
JOB NO. 14170.000

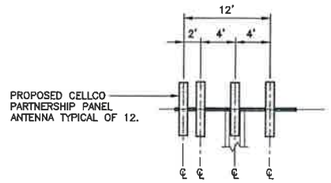
SITE LOCATION PLAN

C-1

Sheet No. 2 of 3



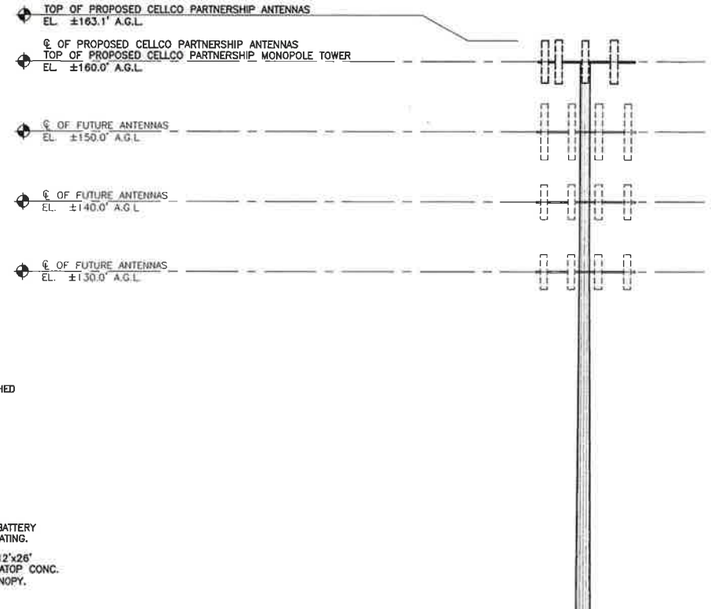
PLAN VIEW

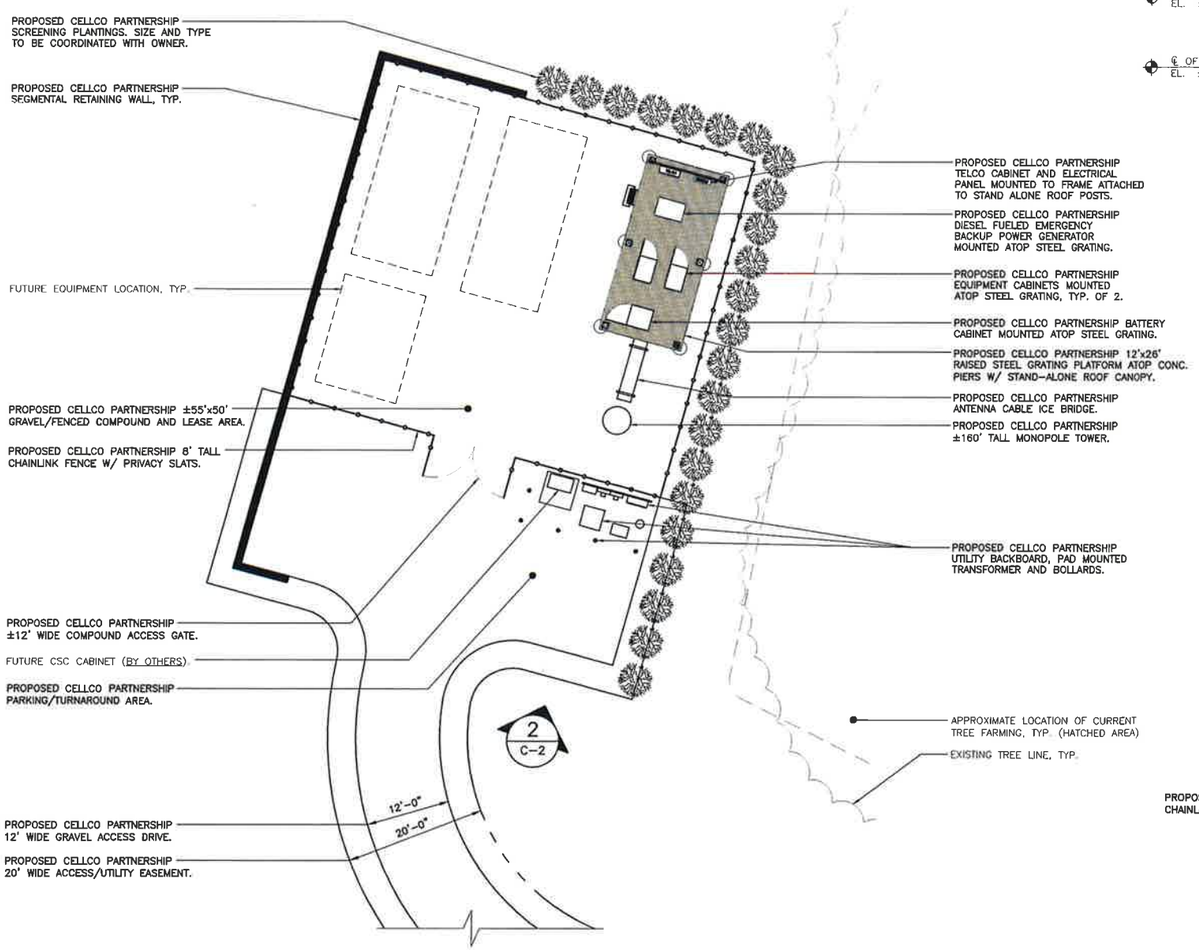


TYPICAL SECTOR ELEVATION

3 C-2 ANTENNA MOUNTING CONFIGURATION

SCALE: 1/8" = 1'



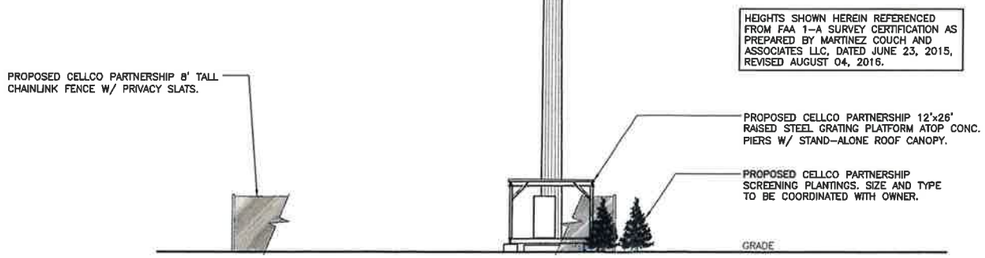


1 C-2 COMPOUND PLAN

SCALE: 1" = 10'

APPROXIMATE NORTH

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.



NOTE:
PROPOSED UTILITY EQUIPMENT AND BOLLARDS NOT SHOWN FOR CLARITY.

2 C-2 SOUTH ELEVATION

SCALE: 1" = 10'

GRAPHIC SCALE
10 0 5 10 20 40
(IN FEET)
1 inch = 10 ft.

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
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COMPOUND PLAN, ELEVATION AND ANTENNA MOUNTING CONFIG.

C-2

Sheet No. 3 of 3

ATTACHMENT 3

ALL-POINTS
TECHNOLOGY CORPORATION

VISIBILITY ANALYSIS

HAMDEN 8
208 KIRK ROAD
HAMDEN, CONNECTICUT

Prepared for:

Verizon Wireless
99 East River Drive
East Hartford CT 06108

Prepared by:

All-Points Technology Corporation, P.C.
3 Saddlebrook Drive
Killingworth, CT 06419

AUGUST 2015

Project Introduction

Cellco Partnership d/b/a Verizon Wireless is pursuing a Certificate of Environmental Compatibility and Public Need from the Connecticut Siting Council ("Council") for the development of a new wireless communications facility ("Facility") at 208 Kirk Road in Hamden, Connecticut (the "Property"). At the request of Verizon Wireless, All-Points Technology Corporation, P.C. ("APT") prepared this Visibility Analysis to evaluate the potential visual impacts associated with the proposed Facility from within a two-mile radius (the "Study Area"). Parts of the neighboring municipalities of Bethany and Woodbridge are located in the western portion of the Study Area; similarly, a small part of North Haven is located in the east portion of the Study Area.

Site Description and Setting

The Property consists of a large parcel of mixed woods and areas currently used for tree farming. The area proposed for the Facility (the "Site") is located northwest corner of the Property at an approximate ground elevation of 296 feet Above Mean Sea Level ("AMSL"). The proposed Facility would include a 160-foot tall monopole with appurtenances surrounded by a 55-foot by 50-foot, gravel base equipment compound. The Verizon Wireless antenna arrays would extend approximately 3 feet above the proposed top of pole bringing the total Facility height up to 163.1 feet above ground level ("AGL").

Land use within the immediate vicinity of the Property is primarily residential to the east and south with undeveloped woods to the north. The Laurel View Country Club is located immediately to the west. The topography within the Study Area is characterized generally by steep hills and river valleys; ground elevations range from approximately 40 feet AMSL to 700 feet AMSL. The tree cover within the Study Area (consisting of mixed deciduous hardwoods with interspersed stands of conifers) occupies approximately 5,468 acres of the 8,042-acre study area (±68%).

Methodology

APT used the combination of a predictive computer model and in-field analysis to evaluate the visibility associated with the proposed Facility on both a quantitative and qualitative basis. The predictive model provides a measurable assessment of potential visibility throughout the entire Study Area including private properties and other areas inaccessible for direct observations. The in-field analyses included a balloon float and reconnaissance of the Study Area to record existing conditions, verify results of the model, inventory visible and nonvisible locations, and provide photographic documentation from publicly accessible areas. A description of the procedures used in the analysis is provided below.

Preliminary Computer Modeling

To conduct this assessment, a predictive computer model was developed specifically for this project using TerrSet, an image analysis program developed by Clark Labs at Clark University, to provide an estimation of potential visibility throughout the Study Area. The predictive model incorporates Project- and Study Area-specific data, including the site location, its ground elevation and the proposed Facility height, as well as the surrounding topography, existing vegetation, and structures (which are the primary features that can block direct lines of sight).

Information used in the model included lidar[1]-based digital elevation data and customized land use data layers developed specifically for this analysis. Lidar is a remote-sensing technology that develops elevation data in meters by measuring the time it takes for laser light to return from the surface to the instrument's sensors. The varying reflectivity of objects also means that the returns can be classified based on the characteristics of the reflected light, normally into categories such as "bare earth," "vegetation," "road," or "building." The system is also designed to capture many more data points than older radar-based systems. Thus, lidar-based digital elevation models ("DEM"s) have a much finer resolution and can also identify the different features of the landscape at the time that it was captured.

Viewshed analysis using lidar data provide a much more detailed view of the potential obstacles (especially trees and buildings), and therefore the viewshed modeling produces results with many smaller areas of visibility than those produced by using radar-based DEMs. Its precision makes lidar a superior source of data, but at present it is only available for limited areas of the state. The viewshed results are also checked against the most current aerial photographs in case significant changes (a new housing development, for example) have occurred since the time the lidar data was captured.

The lidar-based DEM created for this analysis represents topographic information for the state of Connecticut that was derived through the spatial interpolation of airborne LiDAR-based data collected in the years 2007 through 2012 and has a horizontal resolution of approximately two (2) feet. In addition, multiple land use data layers were created from the Natural Resources Conservation Service (through the USDA) aerial photography (1-meter resolution, flown in 2012) using the image processing tools. Terrset develops light reflective classes defined by statistical analysis of individual pixels, which are then grouped based on common reflective values such that distinctions can be made automatically between deciduous and coniferous tree species, as well as grassland, impervious surface areas, surface water and other distinct land use features.

---

[1] Lidar (a word invented to mean "light radar") may also be referred to as LiDAR, an acronym for Light Detection and Ranging. It is a technology that utilized lasers to determine the distance to an object or surface. LiDAR is similar to radar, but incorporates laser pulses rather than sound waves. It measures the time delay between transmission and reflection of the laser pulse.

With these data inputs, the model is then queried to determine where the top of the Facility can be seen from any point(s) within the Study Area, given the intervening existing topography and vegetation. The results of the preliminary analysis are intended to provide a representation of those areas where portions of the Facility *may* potentially be visible to the human eye without the aid of magnification, based on a viewer eye-height of five (5) feet above the ground and the combination of intervening topography, trees and other vegetation, and structures. The Facility however may not necessarily be visible from all locations within those areas identified by the predictive model. It is important to note that the computer model cannot account for mass density, the height, diameter and branching variability of the trees, or the degradation of views that occur with distance. In addition, each point – or pixel - represents about one square meter in area, and thus is not predicting visibility from all viewpoints through all possible obstacles. Although large portions of the predicted viewshed may theoretically offer visibility of the Facility, because of these unavoidable limitations the quality of those views may not be sufficient for the human eye to recognize the tower or discriminate it from other surrounding objects. Visibility also varies seasonally with increased, albeit obstructed, views occurring during "leaf-off" conditions. Beyond the density of woodlands found within the given Study Area, each individual tree has its own unique trunk, pole timber and branching pattern characteristics that provide varying degrees of screening in leafless conditions which cannot be precisely modeled.

Once the data layers were entered, image processing tools were applied and overlaid onto USGS topographic base maps and aerial photographs to achieve an estimate of locations where the Facility might be visible. Additional data was reviewed and incorporated into the visibility analysis, including protected private and public open space, parks, recreational facilities, hiking trails, schools, and historic districts. Two major trail systems are located within the Study Area. The Farmington Canal Trail is located approximately 0.82 mile to the east and the West Rock Park Trail system is located approximately 0.75 mile to the west. Based on a review of publicly-available information, no designated state scenic roads exist within the Study Area.

Field Reconnaissance

To supplement and fine tune the results of the computer modeling efforts, APT completed in-field verification activities consisting of a balloon float, vehicular and pedestrian reconnaissance, and photo-documentation.

Balloon Float and Field Reconnaissance

A balloon float and field reconnaissance were conducted on March 24, 2015 to evaluate the visibility associated with the proposed Facility and to obtain photographs for use in this report. The balloon float consisted of raising an approximately four-foot diameter, red helium-filled balloon tethered to a string height of 167 feet above ground level ("AGL") at the proposed Facility location. Weather conditions were favorable for the in-field activities, with calm winds (less than 3 miles per hour) and mostly sunny skies. Once the balloon was secured, APT conducted a Study Area reconnaissance by driving along the local and State roads and other publicly accessible locations to document and inventory where the balloon could be seen above/through the tree canopy. Visual

observations from the reconnaissance were also used to evaluate the results of the preliminary visibility mapping and identify any discrepancies in the initial modeling.

Photographic Documentation and Simulations

APT drove the public roads within the Study Area during the balloon float and photo-documented representative areas where the balloon was and was not visible. At each photo location, the geographic coordinates of the camera's position were logged using global positioning system ("GPS") technology. Photographs were taken with a Canon EOS 6D digital camera body and Canon EF 24 to 105 millimeter ("mm") zoom lens. APT uses a standard focal length of 50mm; presenting a consistent field of view throughout the document. The scale of the subject in the photograph (the balloon) and its corresponding simulation (the tower) are proportional to its surroundings.

Final Visibility Mapping

Information obtained during the field reconnaissance was incorporated into the mapping data layers, including observations of the balloon float, the photo locations, areas that experienced recent land use changes and those places where the initial model was found to over or under-predict visibility. Once the additional data was integrated into the model, APT re-calculated the visibility of the proposed Facility from within the Study Area to assist in producing the final viewshed map.

Photographic Simulations

Photographic simulations were generated to portray scaled renderings of the proposed Facility from representative locations where the proposed Facility would be visible. Using field data, site plan information and 3-dimension (3D) modeling software, spatially referenced models of the site area and Facility were generated and merged. The geographic coordinates obtained in the field for the photograph locations were incorporated into the model to produce virtual camera positions within the spatial 3D model. Photo simulations were then created using a combination of renderings generated in the 3D model and photo-rendering software programs[2].

For presentation purposes in this report, the photographs were taken with a 50 mm focal length and produced in an approximate 7-inch by 10.5-inch format. When viewing in this format size, we believe it is important to provide the largest representational image while maintaining an accurate relation of sizes between objects within the frame of the photograph.

[2] As a final step, the accuracy and scale of select simulations are tested against photographs of similar existing facilities with recorded camera position, focal length, photo location, and tower location.

Photo-documentation of the balloon float and photo-simulations of the proposed Facility are presented in the attachment at the end of this report. The balloon float photos provide visual reference points for the approximate height and location of the proposed Facility relative to the scene. The photo-simulations are intended to provide the reader with a general understanding of the different views that might be achieved of the Facility. It is important to consider that the publicly-accessible locations selected are typically representative of a "worst case" scenario. They were chosen to present unobstructed view lines (wherever possible), are static in nature and do not necessarily fairly characterize the prevailing views from all locations within a given area. From several locations, moving a few feet in any direction will result in a far different perspective of the Facility than what is presented in the photographs. In several cases, a view of the Facility may be limited to the immediate area of the specific photo location.

Photograph Locations

The table below summarizes characteristics of the photographs and simulations presented in the attachment to this report including a description of each location, view orientation, the distance from where the photo was taken relative to the proposed Facility and the general characteristics of that view. The photo locations are depicted on the visibility analysis maps provided as attachments to this report.

View	Location	Orientation	Distance to Site	View Characteristics
1	Laurel View Drive	Southeast	±0.23 Mile	Year-round
2	Paradise Avenue	South	±0.26 Mile	Seasonal
3	Hill Street	Southeast	±0.53 Mile	Seasonal
4	Hill Street	East	±0.43 Mile	Seasonal
5	Country Club Drive	Northwest	±0.39 Mile	Seasonal
6	Bear Path Road	Northwest	±0.20 Mile	Seasonal
7	Kirk Road	Northwest	±0.27 Mile	Seasonal

Visibility Analysis Results

Results of this analysis are graphically displayed on the viewshed maps provided in the attachment at the end of this report. Areas from where the proposed Facility would be visible above the tree canopy year-round comprise a total of approximately 42 acres. When the leaves are off the trees, seasonal views through intervening tree trunks and branches have the potential to occur over some locations within an area of 772± additional acres.

In general, year-round views of portions of the Facility appear limited to locations within 0.25 mile of the Property. At nearby locations large portions of the monopole may be visible (see Photo #1 for example). Beyond 0.25 mile, views become more sporadic and intervening vegetation serve to

obstruct large portions of the Facility (see photos 2 through 7). Potential views from those locations beyond 0.5 mile from the Property would be heavily obscured and largely unrecognizable through the trees due to the separating distances. A large portion of the potential seasonal visibility is located on the east facing slope of West Rock, at distances of more than one mile away; although parts of the West Rock Park Trail system traverse this general area, most of locations within the predicted visibility consists of steep slopes and is inaccessible to the general public.

Proximity to Schools And Commercial Child Day Care Centers

No schools or commercial child day care centers are located within 250 feet of the Property. The nearest school and commercial child day care center are commonly located at Bear Path School at 10 Kirk Road, approximately 0.6 mile to the southeast. No substantive views of the Facility are anticipated from this area.

Limitations

The viewshed maps presented in the attachment to this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating 2012 aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The simulations provide a representation of the Facility under similar settings as those encountered during the balloon floats and reconnaissance. Views of the Facility can change throughout the seasons and the time of day, and are dependent on weather and other atmospheric conditions (e.g., haze, fog, clouds); the location, angle and intensity of the sun; and the specific viewer location. Weather conditions on the day of the balloon float included partly cloudy skies and the photo-simulations presented in this report provide an accurate portrayal of the Facility during comparable conditions.

ATTACHMENTS

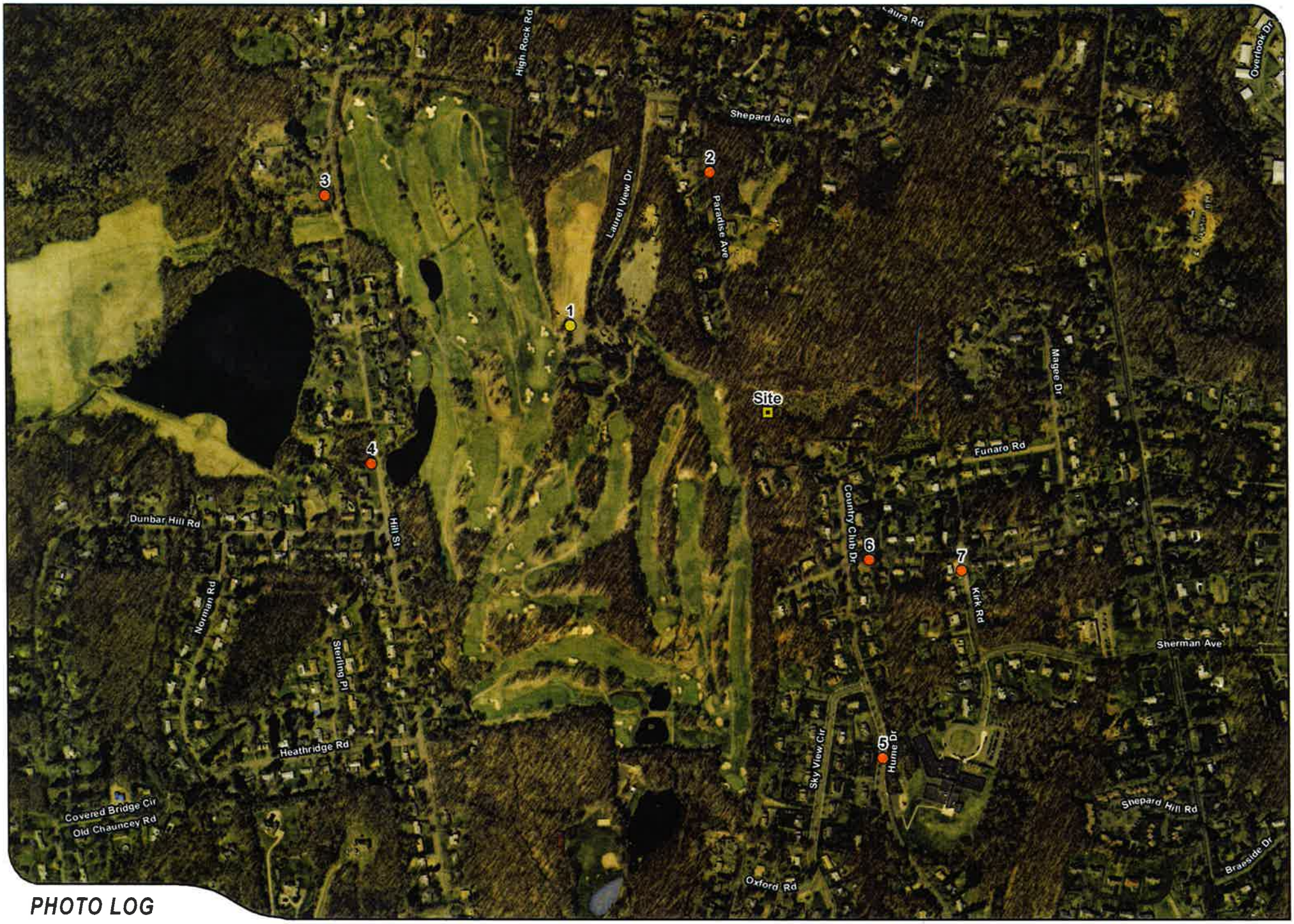


PHOTO LOG

Legend

Site | Year-Round Visibility | Seasonal | Not Visible

N W E S

700 350 0 700 Feet

1 inch = 700 feet

ALL-POINTS

verizon

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**LAUREL VIEW DRIVE**	**SOUTHEAST**	**+/- 0.23 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
1	**LAUREL VIEW DRIVE**	**SOUTHEAST**	**+/- 0.23 MILE**	**YEAR ROUND**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**PARADISE AVENUE**	**SOUTH**	**+/- 0.26 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
2	**PARADISE AVENUE**	**SOUTH**	**+/- 0.26 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**HILL STREET**	**SOUTHEAST**	**+/- 0.53 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
3	**HILL STREET**	**SOUTHEAST**	**+/- 0.53 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**HILL STREET**	**EAST**	**+/- 0.43 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

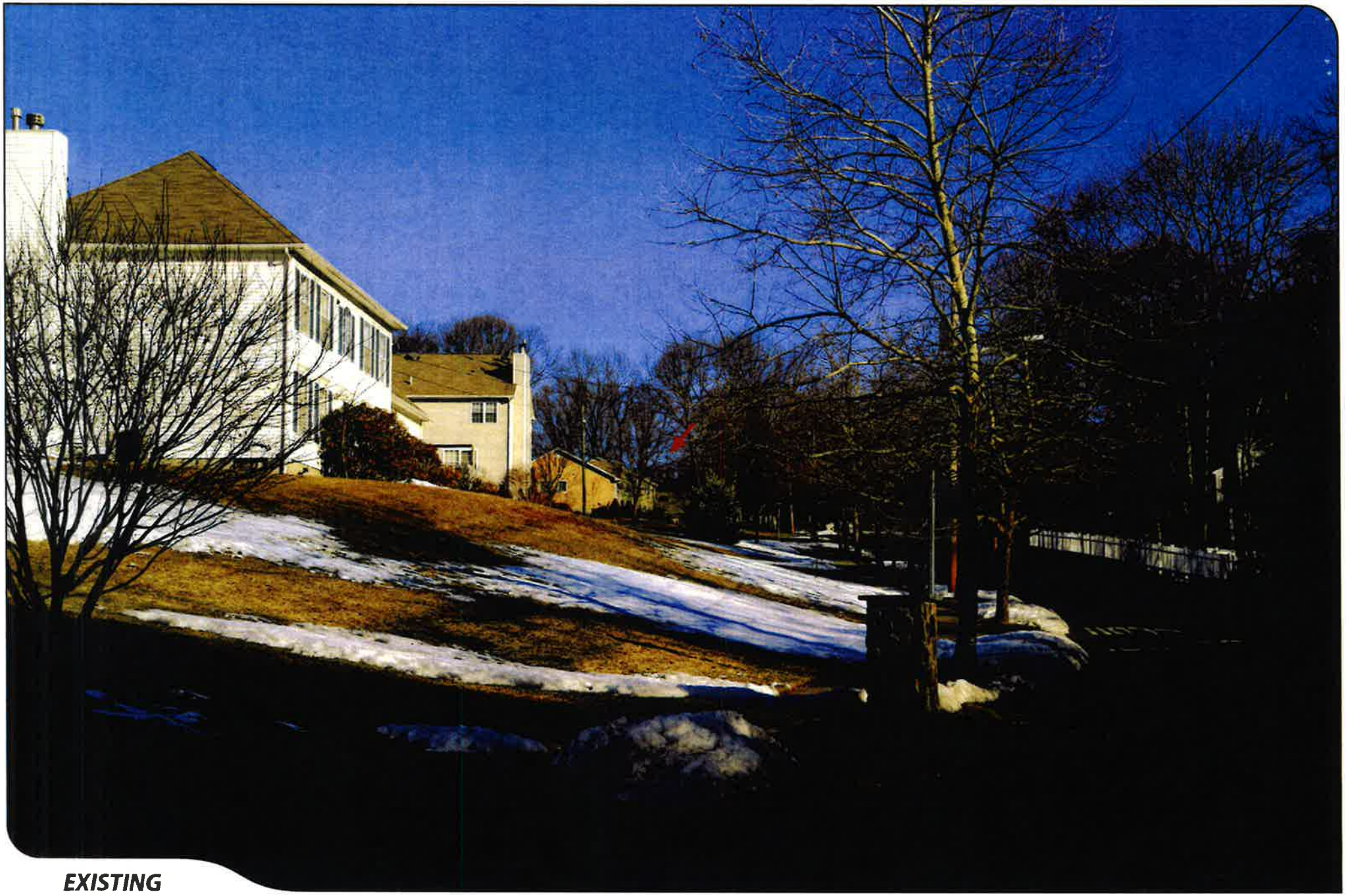
verizon wireless

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
4	**HILL STREET**	**EAST**	**+/- 0.43 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon

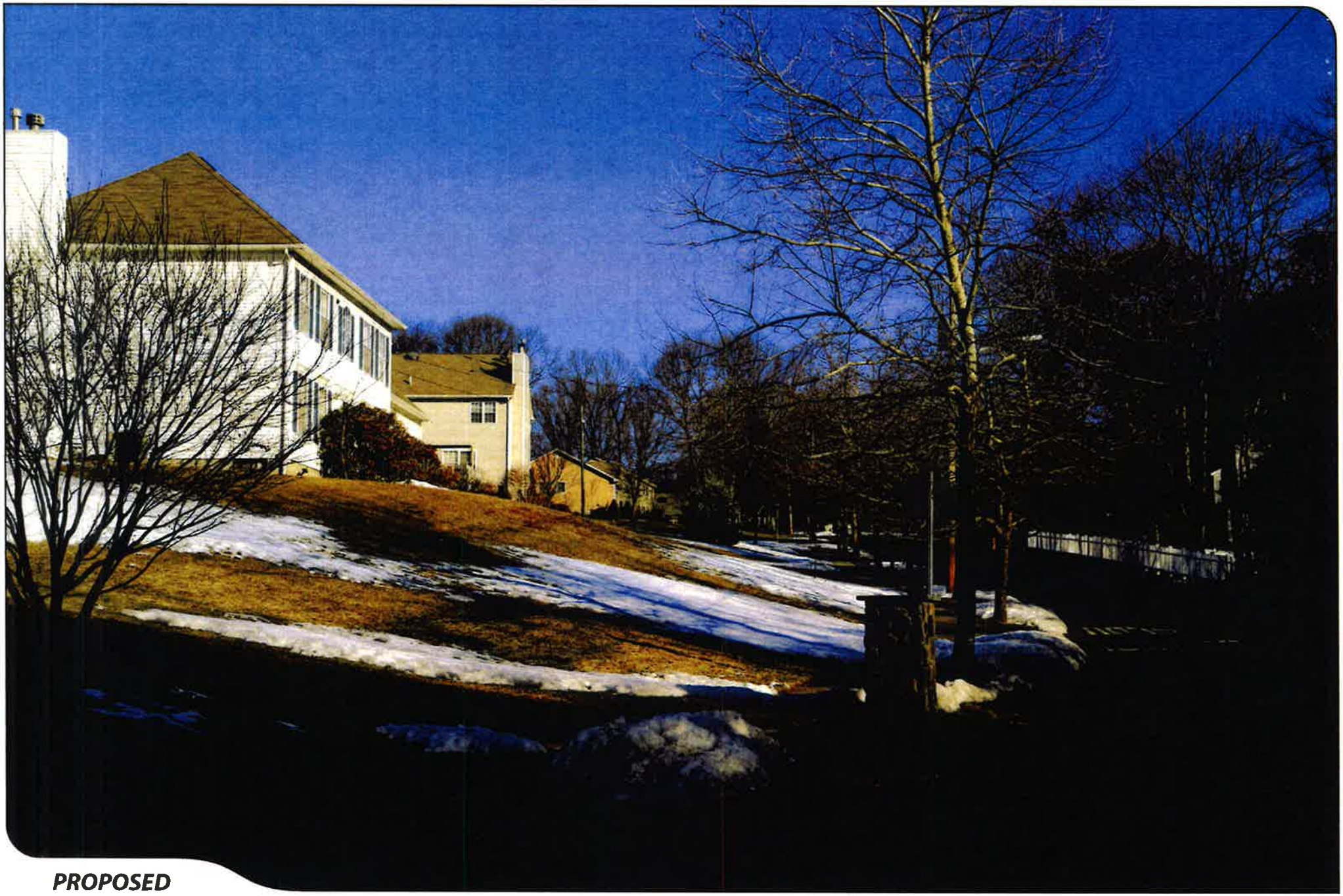


EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**COUNTRY CLUB DRIVE**	**NORTHWEST**	**+/- 0.39 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless



PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
5	**COUNTRY CLUB DRIVE**	**NORTHWEST**	**+/- 0.39 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

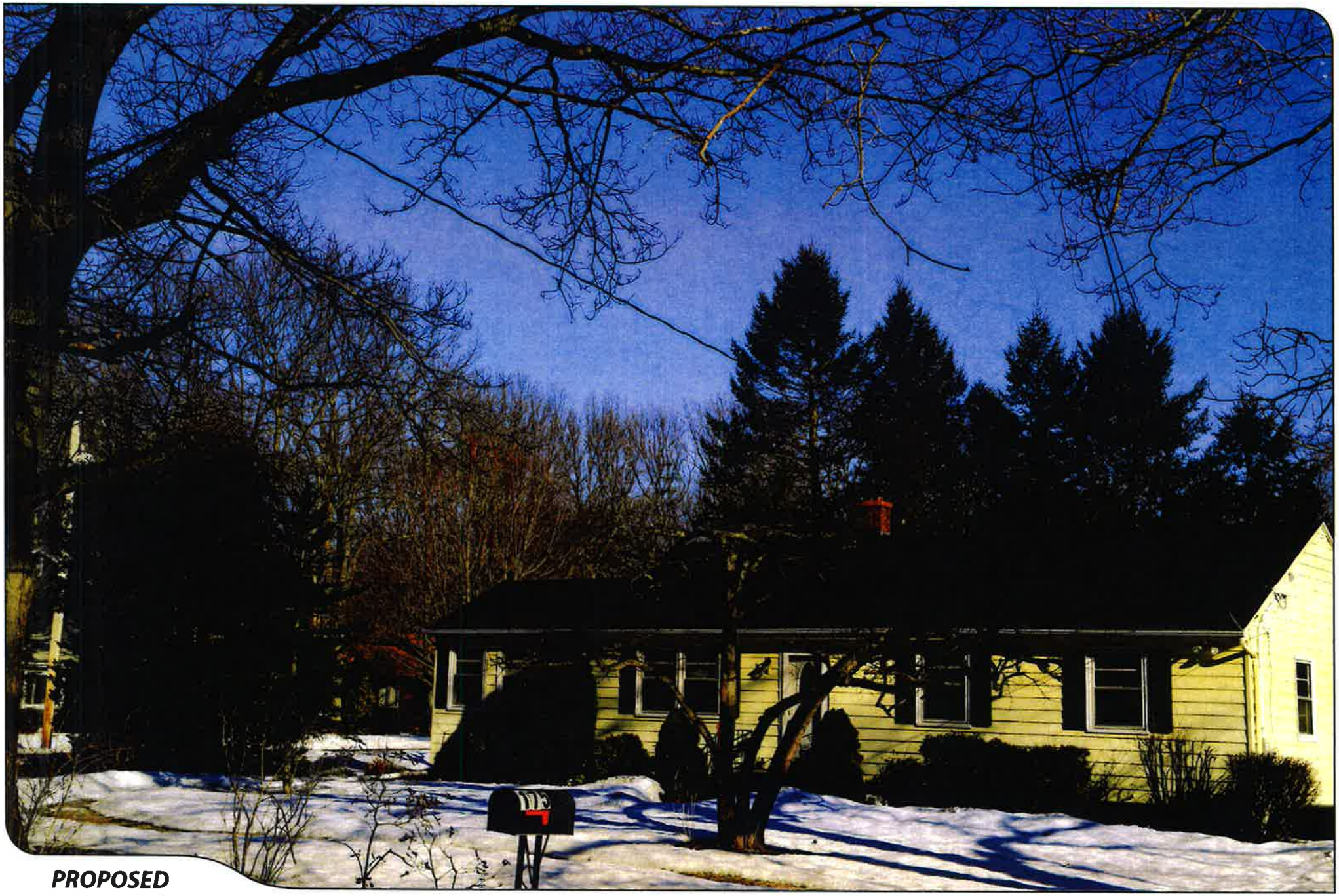
verizon wireless

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**BEAR PATH ROAD**	**NORTHWEST**	**+/- 0.20 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless



PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
6	**BEAR PATH ROAD**	**NORTHWEST**	**+/- 0.20 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless

EXISTING

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**KIRK ROAD**	**NORTHWEST**	**+/- 0.27 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

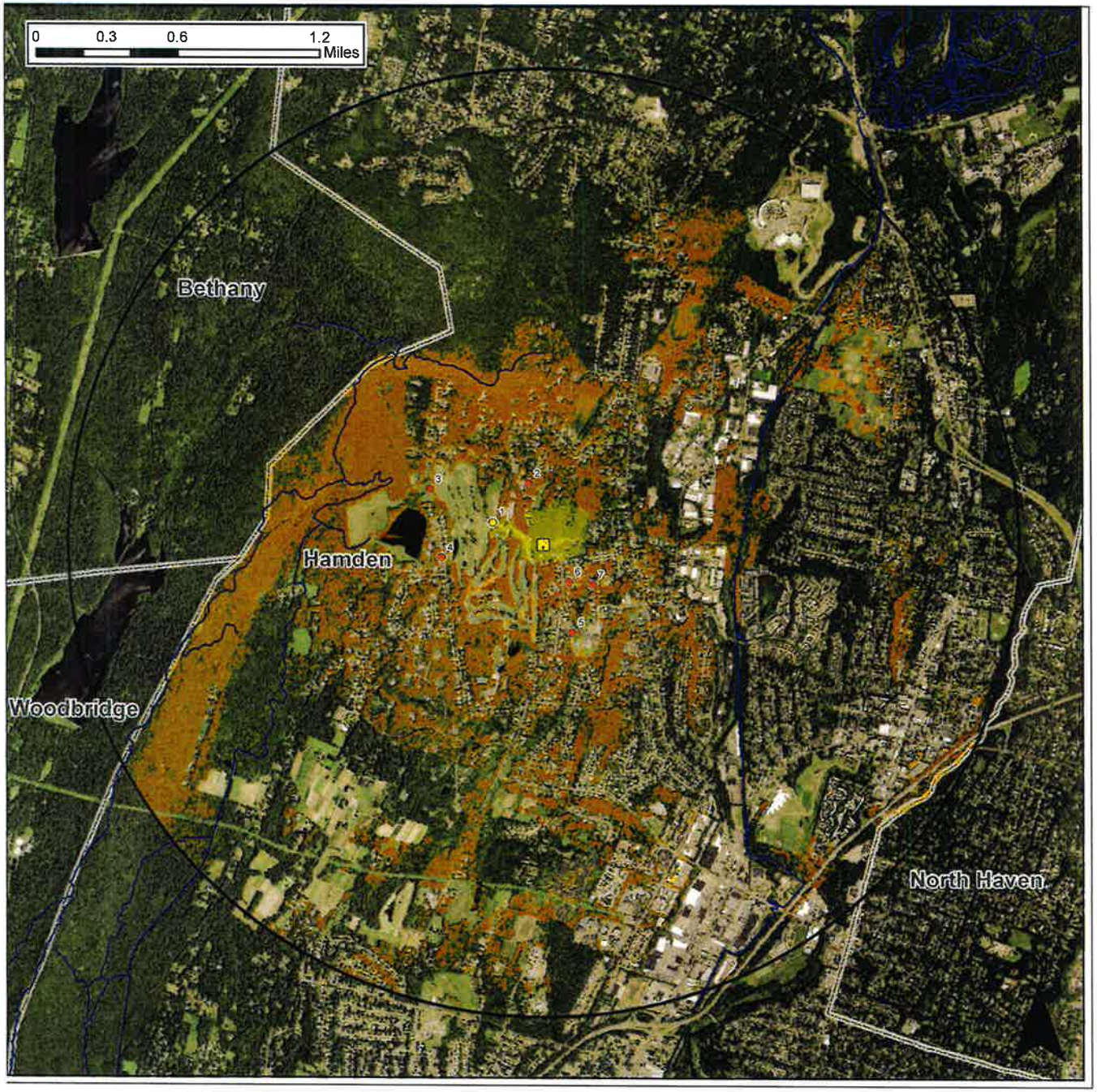
verizon wireless

PROPOSED

PHOTO	LOCATION	ORIENTATION	DISTANCE TO SITE	VISIBILITY
7	**KIRK ROAD**	**NORTHWEST**	**+/- 0.27 MILE**	**SEASONAL**

ALL-POINTS TECHNOLOGY CORPORATION

verizon wireless



Viewshed Map – Aerial Base

Proposed Wireless Telecommunications Facility
Hamden 8
208 Kirk Road, Hamden, CT

Proposed facility height is 167 feet AGL.
Forest canopy height is derived from lidar data.
Study area encompasses a two-mile radius and includes 8,042 acres of land.

Map compiled 8/12/2015

Map information field verified by APT on 03/24/2015.

Only those resources located within the extent of the map are depicted. For a complete list of data sources consulted for this analysis, please refer to the Documentation Page.

Legend

- Proposed Tower

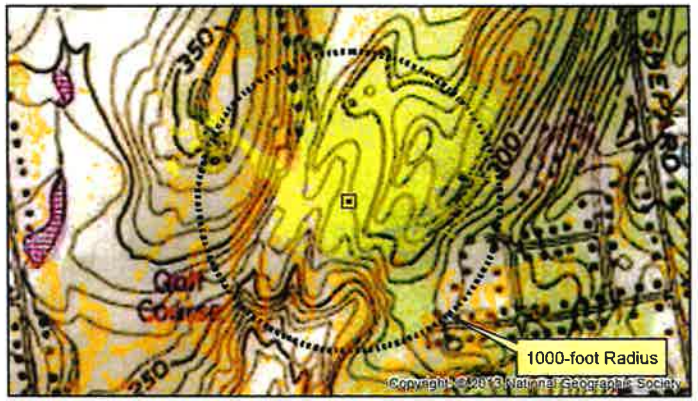
Photo Locations

- Seasonal Views
- Year-round Views
- Trails
- Predicted Seasonal Visibility (722 Acres)
- Predicted Year-Round Visibility (42 Acres)
- Towns
- 2-Mile Study Area

Location

verizon

ALL-POINTS TECHNOLOGY CORPORATION



Viewshed Map – Topo Base

Proposed Wireless Telecommunications Facility
Hamden 8
208 Kirk Road, Hamden, CT

Proposed facility height is 167 feet AGL.
Forest canopy height is derived from lidar data.
Study area encompasses a two-mile radius and includes 8,042 acres of land.

Map compiled 8/12/2015

Map information field verified by APT on 03/24/2015.

Only those resources located within the extent of the map are depicted. For a complete list of data sources consulted for this analysis, please refer to the Documentation Page.

Legend

- Proposed Tower

Photo Locations

- Seasonal Views
- Year-round Views
- Trails
- Predicted Seasonal Visibility (722 Acres)
- Predicted Year-Round Visibility (42 Acres)
- Towns
- 2-Mile Study Area

Location

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DOCUMENTATION

SOURCES CONSULTED FOR VIEWSHED MAPS
208 Kirk Road
Hamden, Connecticut

Physical Geography / Background Data

- Digital elevation model (DEM) derived from 0.64-meter USGS lidar data obtained from NOAA
- Forest areas are generated with TerrSet (Clark University) image processing from the lidar data and 2012 NRCS/NAIP digital orthophotos with 1-foot pixel resolution
- Municipal Open Space, State Recreation Areas, Trails, County Recreation Areas, and Town Boundary data obtained from CT DEEP and the towns

United States Geological Survey
*USGS topographic quadrangle maps – Mount Carmel (1984)
Department of Transportation data
^State Scenic Highways (updated monthly)
Heritage Consultants
^Municipal Scenic Roads

Cultural Resources

Heritage Consultants
^National Register
^ Local Survey Data

Dedicated Open Space & Recreation Areas

Connecticut Department of Energy and Environmental Protection (DEEP)
*DEEP Property (May 2007)
*Federal Open Space (1997)
*Municipal and Private Open Space (1997)
*DEEP Boat Launches (1994)
Connecticut Forest & Parks Association
^Connecticut Walk Books East & West –
The Guide to the Blue-Blazed Hiking Trails of Western Connecticut Western Connecticut, 19th Edition, 2006.

Other

^ConnDOT Scenic Strips (based on Department of Transportation data)

*Available to the public in GIS-compatible format (some require fees)
^ Data not available to general public in GIS format. Reviewed independently and, where applicable, GIS data later prepared specifically for this Study Area.

NOTE Not all the sources listed above appear on the Viewshed Maps. Only those features within the scale of the graphic are shown.

LIMITATIONS

Viewshed analysis conducted using Clark University's TerrSet. The visibility analysis map(s) presented in this report depict areas where the proposed Facility may potentially be visible to the human eye without the aid of magnification based on a viewer eye-height of 5 feet above the ground and intervening topography, tree canopy and structures. This analysis may not necessarily account for all visible locations, as it is based on the combination of computer modeling, incorporating the lidar DEM, 2012 digital aerial photographs, and in-field observations from publicly-accessible locations. No access to private properties beyond the host Property was provided to APT personnel. This analysis does not claim to depict the only areas, or all locations, where visibility may occur; it is intended to provide a representation of those areas where the Facility is likely to be seen.

The photo-simulations in this report are provided for visual representation only. Actual visibility depends on various environmental conditions, including (but not necessarily limited to) weather, season, time of day, and viewer location.

ATTACHMENT 4

Site Name: ***HAMDEN 8 CT***
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans.	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW 700	746	1	1304	1304	160	0.0183	0.4973	3.68%
VZW Cellular	869	9	327	2939	160	0.0413	0.5793	7.13%
VZW PCS	1970	7	358	2506	160	0.0352	1.0000	3.52%
VZW AWS	2145	1	2812	2812	160	0.0395	1.0000	3.95%
Total Percentage of Maximum Permissible Exposure								18.28%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Part 1 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used.

ATTACHMENT 5

Cellco Partnership d/b/a Verizon Wireless
208 Kirk Road
Hamden, Connecticut

Hamden 8 Facility

Site Search Summary

Section 16-50j-74(j) of the Regulations of Connecticut State Agencies requires the submission of a statement that describes "the narrowing process by which other possible sites were considered and eliminated." In accordance with this requirement, descriptions of the general site search process, the identification of the applicable search area and the alternative locations considered for development of the proposed telecommunications facility in central Hamden are provided below.

Site Search Process

To initiate its site selection process in an area where wireless service problems have been identified, Cellco first establishes a "site search ring" or "site search area". In any search ring or search area, Cellco seeks to avoid the unnecessary proliferation of towers and to reduce the potential adverse environmental effects of the cell site, while at the same time maximizing the quality of service provided from a particular facility. These objectives are achieved by initially locating existing towers and other sufficiently tall structures within and near the site search area. If any are found, they are evaluated to determine whether they are capable of supporting Cellco's telecommunications antennas and related equipment at a location and elevation that satisfies its technical requirements.

The list of available locations may be further reduced if, after preliminary negotiations, the property owners withdraw a site from further consideration. From among the remaining locations, the proposed sites are selected by eliminating those that have greater potential for adverse environmental effects and fewer benefits to the public (i.e., those requiring taller towers; those with substantial adverse environmental impacts, or located in densely populated areas; and those with limited ability to share space with other public or private telecommunications service providers). It should be noted that in any given site search, the weight afforded to factors considered in the selection process will vary depending upon the availability and nature of sites within the search area.

Need for the Hamden 8 Facility

Cellco currently maintains seven (7) wireless telecommunications facilities within approximately four (4) miles of the proposed Hamden 8 Facility. These facilities are identified as Cellco's Hamden North, Hamden East, Centerville, Hamden 2, Hamden, Hamden North 2, and Bethany cell sites. Cellco's Hamden North facility consists of antennas inside a faux-silo at the Connecticut Agricultural Station at 890 Evergreen Avenue in Hamden. Cellco's Hamden East facility consists of antennas on the roof of a building at 2313 Whitney Avenue in Hamden. Cellco's Centerville facility consists of antennas on the roof of a building at 955 Mix Avenue in

Hamden. Cellco's Hamden 2 facility consists of antennas on a roof-mounted tower at 265 Benham Street in Hamden. Cellco's Hamden facility consists of antennas at the 170-foot level on a 250-foot tower at 1055 Wintergreen Avenue in Hamden. Cellco's Hamden North 2 facility consists of antennas at the 147-foot level on a 160-foot self-supporting monopole tower at 150 Willow Street in Hamden. Cellco's Bethany facility consists of antennas at the 180-foot level on a 338-foot tower at 93 Old Amity Road in Bethany. Today, these existing facilities provide wireless coverage in central portions of Hamden and western portions of North Haven but cannot serve the significant area of need described in this report. In addition, Cellco's existing Hamden 2 and Hamden North facilities are currently operating at or near their capacity limits, resulting in more significant reductions in reliable wireless service in the area. Cellco's Hamden 8 cell site will also provide capacity relief to the Hamden 2 and Hamden North cell sites.

Identification of the Hamden 8 Search Area

The purpose of the proposed Hamden 8 Facility is to provide coverage along portions of Shepard Avenue and West Shepard Avenue in the area, and to the surrounding commercial and residential land uses in central Hamden. The facility will also provide network capacity relief to Cellco's existing Hamden 2 and Hamden North cell sites which is currently operating at or near its capacity limit. (*See* attached Coverage Maps behind Attachment 1).

Sites Investigated

Cellco investigated a total of four (4) sites in central Hamden. A listing of the sites investigated is provided below.

1. **208 Kirk Road, Hamden, CT:** Cellco entered into a lease agreement with the owner for this parcel, the Hamden 8 Facility.

2. **112 Shepard Avenue, Hamden, CT:** This parcel was rejected by Cellco's RF Engineers. This potential site location was too far outside the site search ring and cannot cover the majority of the Hamden 8 wireless service objectives.

3. **905 Shepard Avenue, Hamden, CT:** This parcel was rejected by Cellco's RF Engineers. Overall, the ground elevation at this location was too low to allow Cellco to satisfy its wireless service objectives in the area.

4. **310 W. Shepard Avenue, Hamden, CT:** This parcel was rejected by Cellco's RF Engineers. This potential site location was too far outside the site search ring and cannot cover the majority of the Hamden 8 wireless service objectives.