

**PETITION OF NEXTEL COMMUNICATIONS:  
OF THE MID-ATLANTIC, INC. D/B/A  
NEXTEL COMMUNICATIONS TO THE  
CONNECTICUT SITING COUNCIL  
FOR A DECLARATORY RULING THAT NO  
CERTIFICATE OF ENVIRONMENTAL  
COMPATIBILITY AND PUBLIC NEED IS  
REQUIRED AS THE PROPOSED  
MODIFICATIONS TO THE FACILITY WILL  
NOT HAVE A SUBSTANTIAL ADVERSE  
ENVIRONMENTAL EFFECT**

**PETITION NO. 697**



**CONNECTICUT  
SITING COUNCIL**

**PETITION FOR DECLARATORY RULING  
143 OLD BLUE HILLS ROAD, DURHAM, CONNECTICUT**

**I. INTRODUCTION**

Nextel Communications of the Mid-Atlantic, Inc. d/b/a Nextel Communications ("Nextel") hereby petitions the Connecticut Siting Council ("Council") pursuant to §§ 16-50j-38 and 16-50j-39 of the Regulations of Connecticut State Agencies ("R.C.S.A.") for a determination that no Certificate of Environmental Compatibility and Public Need ("Certificate") is required under the provisions of § 16-50k of the Connecticut General Statutes ("C.G.S.") to modify the existing monopole located at 143 Old Blue Hills Road in Durham, Connecticut (the "Durham Facility" or "Facility"). Nextel respectfully requests that the Council issue a ruling that the increase in monopole height, antenna installation, and relocation of existing town whip antennas on the Facility will not have a substantial adverse environmental effect and, therefore, are not modifications that require a Certificate.

**II. PETITIONER**

Nextel is a provider of fully integrated wireless communications services that owns, operates and maintains telecommunications towers throughout the State of Connecticut and the

country. Nextel is licensed by the Federal Communications Commission ("FCC") to provide wireless service throughout the State of Connecticut, including the Durham area.

### **III. FACTUAL BACKGROUND**

The existing Facility consists of a 100-foot monopole and related equipment located at 143 Old Blue Hills Road (Town of Durham Assessor's Map 69, Lot 12) in Durham, Connecticut. The Facility is owned by Crown Castle Atlantic ("Crown Castle"), and currently supports antenna arrays operated by Nextel, AT&T, Sprint, and the Town of Durham ("Town" or "Durham"). Both Nextel and the Town have omni-directional whip antennas located at the top of the tower; the Nextel antennas are 20' and the Town antenna is 30'. As a result, the total height of the monopole with appurtenances is 132' AGL. The Council approved the Facility on March 11, 1994 under Docket No. 161. In addition, the Council approved Crown Castle's request for tower sharing under TS-CROWN-038-990526, and AT&T Wireless's notice of intent to modify under EM-AT&T-020626.

Nextel seeks to replace its three (3) 20' omni-directional antennas currently located at the top of the monopole, extend the monopole height by 20', and install an array of panel antennas. In addition, Nextel proposes to remove the Town's 30' whip antenna and replace it with a 14' whip antenna located on a 4' standoff arm.

### **IV. THE MODIFICATIONS TO THE DURHAM FACILITY WILL NOT HAVE AN ADVERSE ENVIRONMENTAL IMPACT**

#### **A. Project Description**

Nextel proposes to modify the Facility to provide (i) improved frequency reuse, (ii) more control over the coverage footprint, (iii) greater localized coverage within the intended coverage



area, and (iv) reduce interference to neighboring sites. In order to do so, Nextel proposes to make the following modifications to the monopole and compound ("Modified Facility"):

1. Extend the height of the 100' monopole to a height of 120' AGL. See Sheet SC-1 of the Site Plans attached hereto as Exhibit A.
2. Install twelve (12) panel antennas on a 14' low-profile platform at the height of approximately 113' AGL on the proposed 20' monopole extension. See Sheet SC-1 of the Site Plans attached hereto as Exhibit A.
3. Remove three (3) omni-directional whip antennas as shown by Sheet SC-1 of the Site Plans attached hereto as Exhibit A.
4. Remove the Town's 30' whip antenna currently located at a height of 100'. At Nextel's expense, the Town's whip antenna will be replaced by a 14' whip antenna located on a 4' standoff arm at a height of 118'. See Sheet SC-1 of the Site Plans attached hereto as Exhibit A.
5. Relocate the Town's cellwave antenna from its location at 122' to a 4' standoff arm at a height of 118' AGL. See Sheet SC-1 of the Site Plans attached hereto as Exhibit A.
6. Remove Nextel's existing equipment shelter and ice bridge located inside the southwest portion of the existing compound. See Sheet SC-1 of the Site Plans attached hereto as Exhibit A.
7. Install a 10' x 20' equipment shelter, ice bridge, and small concrete retaining wall within the chain link fence along the northeast side of the existing compound. See Sheet SC-1 of the Site Plans attached hereto as Exhibit A. The addition of the

concrete retaining wall will be approximately twelve (12) lineal feet long and 4' high. The retaining wall is necessitated by the sloping topography in the northeast corner of the compound.

8. Remove three (3) coax cable and install twelve (12) coaxial cables within the proposed ice bridge to the Nextel panel antennas. See Sheet SC-1 of the Site Plans attached hereto as Exhibit A. All new cable ports will be reinforced with welded rims that are compatible with the monopole.

Upon completion of the proposed work, the height of the monopole with all appurtenances will be no greater than that of the existing Facility with appurtenances. Nextel does not propose expansion of the lease area and only minimal expansion of the compound area of the existing Facility to support the concrete retaining wall.

The existing access and utilities servicing the Facility will remain unchanged. An eight-foot chain link fence encloses the Facility. Due to the sloping ground surface grade inside the northeast portion of the compound, Nextel will need to construct a four-foot concrete retaining wall that will connect to the existing chain link fence. In order to facilitate the construction of the proposed concrete retaining wall, Nextel will need to remove pavement along the northeast side of the compound area and install gravel and crushed stone. The gravel and crushed stone will extend one-foot beyond the existing fence line so as to reset the ground surface along the retaining wall. All improvements will be made as depicted in the Site Plans attached hereto as Exhibit A.

As set forth in Structural Analysis dated January 2, 2004 from All-Points Technology Corporation, P.C. ("APT"), attached hereto as Exhibit B, upon completion of the proposed modifications, the Facility will satisfy all applicable structural standards.

**B. Surrounding Land Uses**

The Facility is located on a 9-acre parcel of property owned by Francis E. Behrens and Marie C. Behrens, identified on the Town of Durham's Assessor's Map 69, Lot 12, and is within a Farm Residential District (the "Property"). The Facility is located on a hilltop in the northern portion of the Property and is surrounded primarily by undeveloped land. The land uses within the general vicinity of the Property consist primarily of low-density single-family residential development with large tracts of undeveloped forestlands.

**C. Notice**

Notice of this Petition was mailed to each abutting landowner in the form attached hereto as Exhibit C. Also included at Exhibit D is the list of all abutting property owners that have been sent such notice by certified mail.

**D. Proposed Site Modification Will Not Have An Adverse Environmental Effect**

The proposed Facility modifications will have little or no environmental impact based upon the following:

1. The existing access road and minimal expansion of the compound will have no impact to wetlands or watercourses.
2. It is not expected that the Modified Facility will have an impact on historic or Indian sites, threatened or endangered species, designated critical habitats, or wilderness areas. See Council Opinion in Docket No. 161 dated March 11, 1994.

3. Utilities will be available via the existing utility routing at the site. Storm drainage, sewage disposal and water supplies will not be required.
4. Nextel will continue to utilize the Facility, thereby complying with the Town's and the Connecticut Legislature's preference to minimize the construction of new towers.
5. The Modified Facility will operate at 23.2791% of the maximum permissible exposure ("MPE") level for telecommunications facilities as prescribed by the FCC. This demonstrates that with the upgrade of systems at the Facility, the extension to the Tower and the installation of additional antennas, it is still safe for continuous exposure of the general population based on FCC requirements. See Power Density Calculations prepared by Nextel attached hereto as Exhibit E.
6. The Modified Facility will not require marking or lighting. See ASAC Study Report dated September 27, 1999 attached hereto as Exhibit F.
7. The Modified Facility will have a very limited visual impact to the area. In order to determine visual impact, Nextel retained Vanasse Hangen Brustlin, Inc. ("VHB") to prepare a Visual Resource Evaluation for the Facility that compared the current visibility of the tower with the proposed visibility, attached hereto as Exhibit G. The Modified Facility will not include an increase in the total height of the monopole and will be visible from a total of only 32 additional acres within the study area. Views of the Modified Facility are not expected to impact either Route 17 or Route 77 (state-designated scenic roadways). As the visibility map shows, the monopole extension and proposed antenna configurations of both

Nextel and the Town will not be materially more visible from nearby properties than the existing Facility and its approved configuration. The seasonal visibility will remain unchanged. In addition, it is not anticipated that the monopole extension will visually impact any historic resources or other sensitive receptors (including state parks and forests, recreational facilities, dedicated open space and CTDEP boat launches). See the Visual Resource Evaluation report attached as Exhibit G. See also photographs of existing views compared to photosims as prepared by URS Corporation attached hereto as Exhibit H.

## **V. PROPOSED SHARED USE**

### **A. Proposed Co-location**

Nextel seeks to modify its installation at the existing Facility rather than construct an entirely new telecommunications facility in this area. Nextel proposes to co-locate at an antenna centerline height of 120 feet AGL.

### **B. Need**

Nextel currently has coverage in this area. See Propagation Plot at Exhibit I. However, the existing omni-directional antennas create substantial interference issues with approximately sixty (60) surrounding on-air sites, reaching as far north as downtown Hartford at a distance of fifteen (15) miles from the Facility. Nextel seeks to modify the Facility in order to improve system performance, maintain frequency re-use and accommodate increased customer demand. Specifically, for Nextel to maintain its existing coverage while reducing interference with surrounding sites and improving system performance, Nextel requires an approximate height of 120 feet AGL at this site. Propagation plots depicting Nextel's (1) existing coverage in this area,

(2) anticipated coverage from the Modified Facility, (3) composite coverage from the surrounding sites with the existing Facility, and composite coverage from the surrounding sites with the Modified Facility are attached as Exhibit I. The proposed omni to sector conversion is critical to maintaining Nextel's system performance and will significantly improve Nextel's need to meet increased customer demand and reduce interference in this area.

**C. Co-location Consistent With Legislative Mandate of Tower Sharing**

The shared use of the Facility by Nextel is technically, legally, environmentally and economically feasible and meets public safety concerns in accordance with Section 16-50aa of the Connecticut General Statutes. Because the monopole was built to support multiple carriers, Nextel requests that the Council issue a ruling that, as proposed, its co-location on this monopole will not have a substantial adverse environmental effect requiring a Certificate, so that they may co-locate on the Facility for this purpose.

**IV. CONCLUSION**

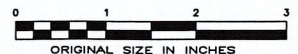
The proposed modification of the Facility will allow Nextel to provide improved frequency reuse, more control over the coverage footprint, greater localized coverage within the intended coverage area, and reduce interference issues to neighboring sites. The proposed modifications to the Facility are the most feasible method of accommodating growth and frequency re-use in the area. In addition, modification of the Facility will further the Council's mandate of eliminating the proliferation of telecommunications towers in the state.

Nextel respectfully submits that the Modified Facility will not cause a significant change to the physical or environmental characteristics of this site and will not have a substantial adverse environmental effect. Nextel respectfully requests that the Council issue an order that these

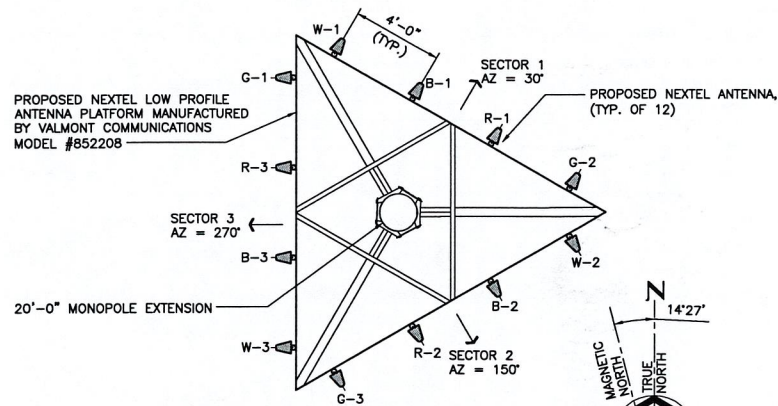
modifications do not require a Certificate under C.G.S. §16-50k and issue an order approving the proposed monopole extension of the Facility by Nextel.



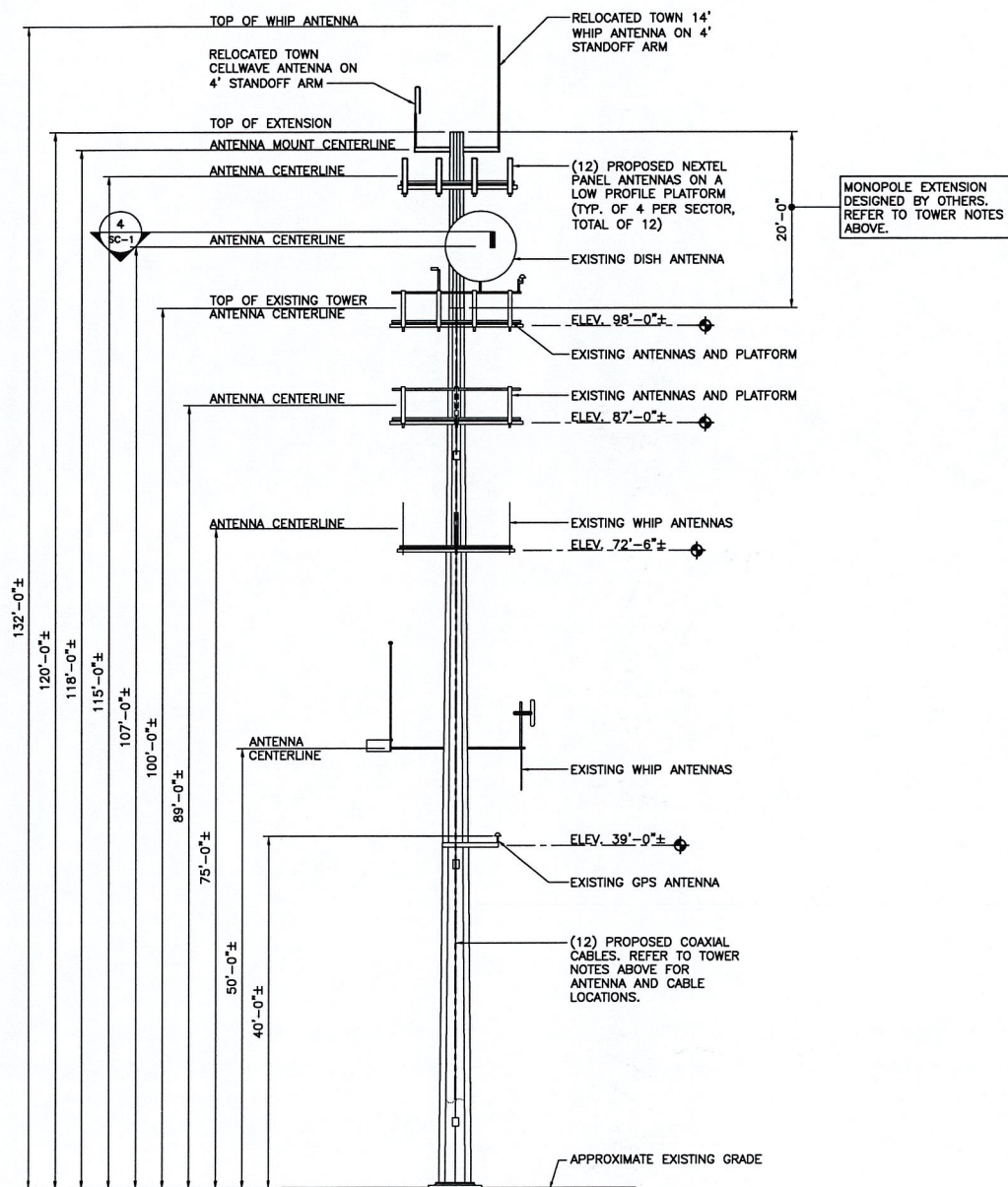
DBA NEXTEL COMMUNICATIONS  
CT-0944 DURHAM







**4 ANTENNA SECTOR PLAN**  
SC-1 SCALE: 1" = 10'-0"

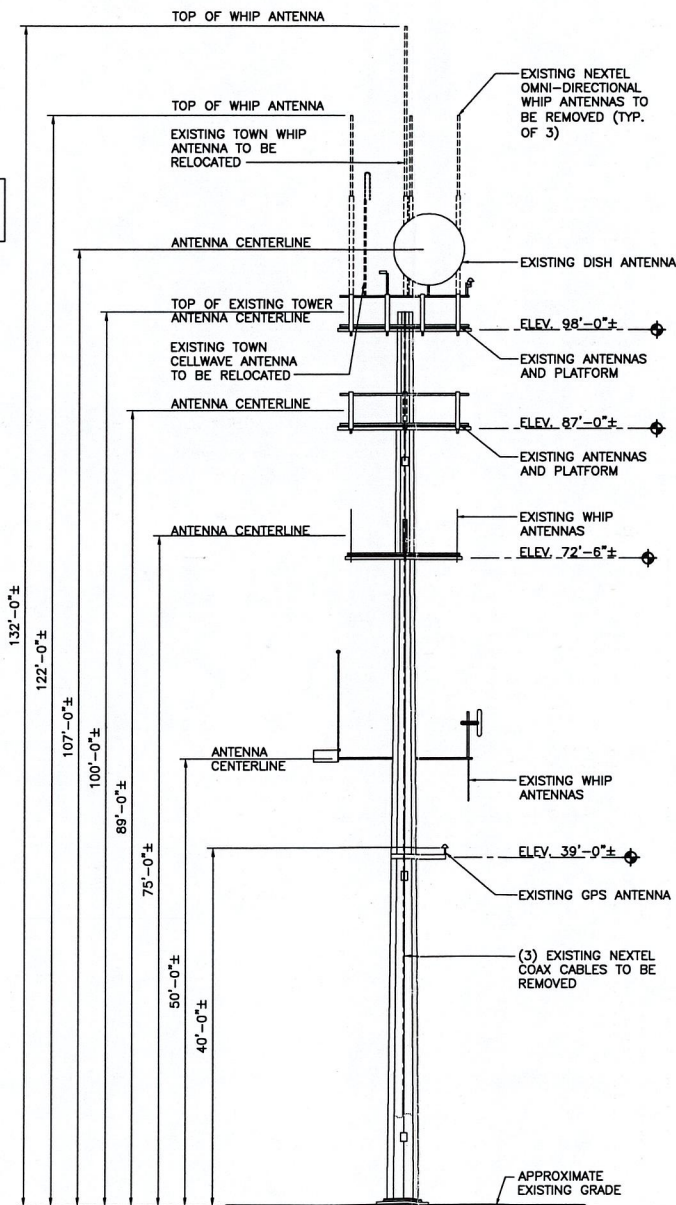


**3 PROPOSED MONOPOLE ELEVATION**  
SC-1 SCALE: 1" = 10'-0"

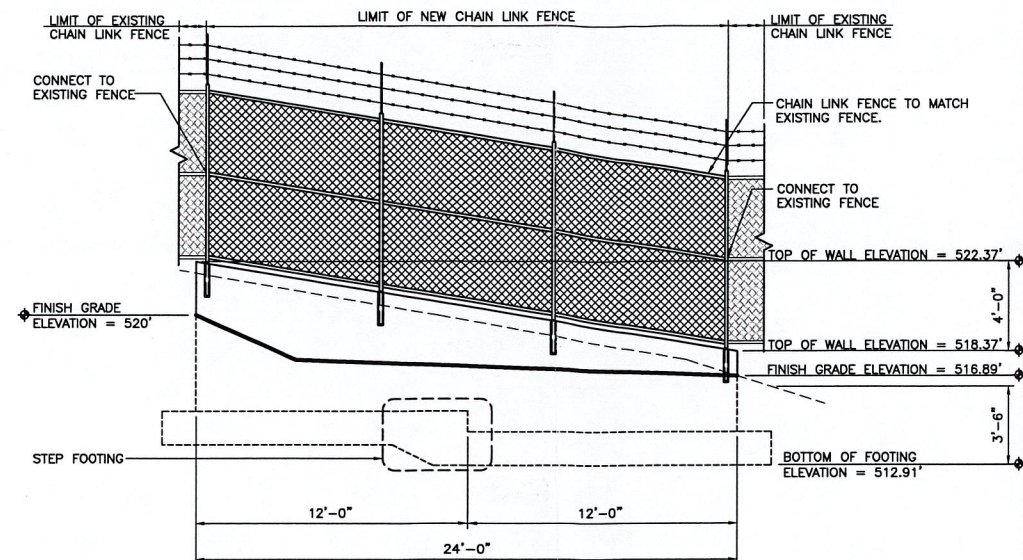
GENERAL LEGEND		
DESCRIPTIONS	EXISTING	PROPOSED
PROPERTY LINE	---	---
HIGHWAY LINE	---	---
LEASE LINE	---	---
CHAIN LINK FENCE	○-○	○-○
CONTOUR LINES	128	128
UTILITY POLE	∅	∅
SEDIMENTATION FENCE	---	---
TREE LINE	---	---
SPOT ELEVATION	X 276.5	X 276.5
SAW CUT	---	---

### TOWER NOTES

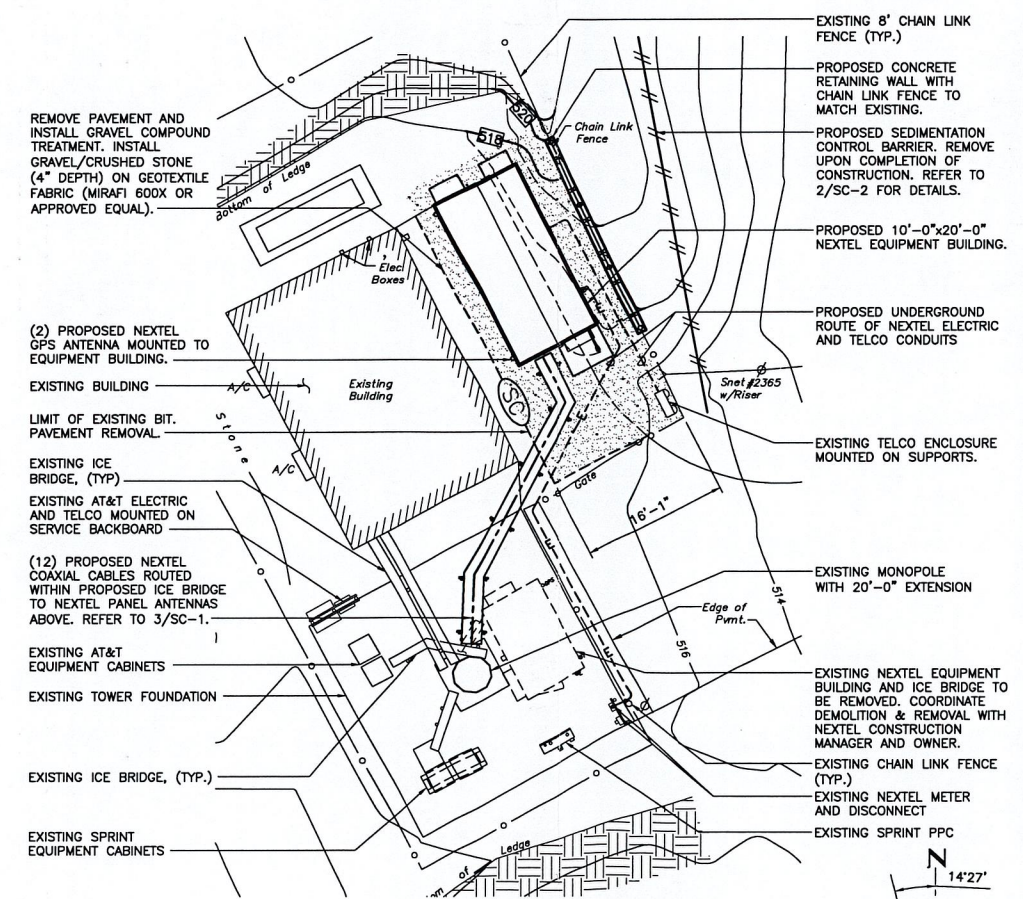
- COORDINATE MONOPOLE EXTENSION, ANTENNA INSTALLATION, ANTENNA PLATFORM AND COAXIAL CABLE LOCATIONS WITH ENGINEER'S STRUCTURAL ANALYSIS REPORT PERFORMED BY VALMONT MICROFLECT COMMUNICATION DIVISION, ANALYSIS ORDER NO. 17248-64, DATED MAY 5, 2004 PRIOR TO INSTALLATION.
- THIS PROJECT MAY REQUIRE THE INSTALLATION OF ADDITIONAL COAX CABLE ENTRY PORTS AT THE EXISTING MONOPOLE. ALL NEW CABLE PORTS SHALL BE REINFORCED WITH WELDED RIMS THAT ARE COMPATIBLE WITH THE POLE AND SHALL BE SIZED AND SUPPLIED BY THE POLE MANUFACTURER. REFER TO STRUCTURAL ANALYSIS FOR MORE INFORMATION.



**2 EXISTING MONOPOLE ELEVATION**  
SC-1 SCALE: 1" = 10'-0"



**5 SECTION**  
SC-1 SCALE: 1/4" = 1'-0"



**1 COMPOUND PLAN**  
SC-1 SCALE: 1" = 10'-0"

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ORIGINAL SIZE IN INCHES

A&E FIRM  
**URS CORPORATION AES**  
795 BROOK STREET, BLDG 5  
ROCKY HILL, CONNECTICUT  
1-(860)-529-8882

**NEXTEL**



URS PROJECT NUMBER 36918543 (NX1 010) DRAWN BY PD

NO. DATE ISSUED FOR

0 07.09.04 REVIEW  
1 09.03.04 SITING COUNCIL

RELEASE BY AA DATE 07.09.04

APPROVALS

CONSTRUCTION DATE: \_\_\_\_\_  
LEASING DATE: \_\_\_\_\_  
RF DATE: \_\_\_\_\_  
ZONING DATE: \_\_\_\_\_  
QC DATE: \_\_\_\_\_  
NETWORK ENG DATE: \_\_\_\_\_  
OWNER DATE: \_\_\_\_\_

DURHAM CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CT 06422

NEXTEL COMMUNICATIONS OF THE MID-ATLANTIC, INC  
DBA NEXTEL COMMUNICATIONS  
100 CORPORATE PLACE  
ROCKY HILL, CT 06067  
OFFICE: (860) 513-5400  
FAX: (860) 513-5444

SHEET TITLE

PARTIAL SITE PLAN, ELEVATIONS AND ANTENNA SECTOR PLAN

SHEET NUMBER

SC-1



- 1) THE EROSION CONTROL PROCEDURES SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE "DEP BULLETIN 34, CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL DATED 2002".
- 2) DURING CONSTRUCTION AND THEREAFTER EROSION CONTROL MEASURES ARE TO BE IMPLEMENTED AS NOTED. NOT GREATER THAN 80,000 SQ. FT. OF LAND SHALL BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHOULD BE KEPT TO THE SHORTEST PRACTICAL PERIOD OF TIME AND SHALL NOT EXCEED 90 DAYS. LAND SHOULD NOT BE LEFT EXPOSED DURING THE WINTER MONTHS.
- 3) SILTATION FENCING SHALL BE INSTALLED WHERE SHOWN PRIOR TO ANY ON SITE GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. IT SHOULD BE MAINTAINED DURING AND AFTER DEVELOPMENT TO REMOVE SEDIMENT FROM RUNOFF WATER AND FROM LAND UNDERGOING DEVELOPMENT, WHERE POSSIBLE NATURAL DRAINAGE--WAYS SHOULD BE UTILIZED AND LEFT OPEN TO REMOVE EXCESS SURFACE WATER.
- 4) ALL DISTURBED AREAS AND SIDE SLOPES WHICH ARE FINISH GRADED WITH NO FURTHER CONSTRUCTION TO TAKE PLACE SHALL BE LOAMED AND SEEDED. A MINIMUM OF 4" OF LOAM SHALL BE INSTALLED. SEED, LIME AND FERTILIZER PROGRAM SHALL CONFORM TO ALL APPLICABLE SECTIONS OF THE "DEP BULLETIN 34, CONNECTICUT GUIDELINES FOR SOIL EROSION AND SEDIMENT CONTROL DATED 2002".
- 5) ANY DISTURBED AREAS WHICH ARE TO BE LEFT TEMPORARILY, AND WHICH SHALL BE REGRADED LATER DURING CONSTRUCTION SHALL BE MACHINE HAY MULCHED AND SEEDED WITH RYE GRASS TO PREVENT EROSION. HAY OR STRAW MULCH SHALL BE APPLIED TO ALL FRESHLY SEEDED AREAS AT A RATE OF 2 TONS PER ACRES. BALES SHALL BE UNSPOILED, AIR-DRIED, AND FREE FROM WEED, SEEDS AND ANY COARSE MATERIAL.
- 6) UPON ESTABLISHMENT OF VEGETATION OF ALL DISTURBED AREAS AND UPON COMPLETION OF CONSTRUCTION, ALL SEDIMENTATION CONTROL MEASURES SHALL BE REMOVED THE SITE.

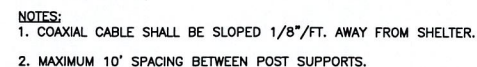
- 1) THE GEOTEXTILE FABRIC SHALL MEET THE DESIGN CRITERIA FOR SILT FENCES
- 2) MAINTENANCE SHALL BE PERFORMED AS NEEDED TO PREVENT BULGES IN THE SILT FENCE DUE TO DEPOSITION OF SEDIMENT.
- 3) SILT FENCES SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL AND AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REPAIRS THAT ARE REQUIRED SHALL BE MADE IMMEDIATELY.
- 4) IF THE FABRIC ON A SILT FENCE SHOULD DECOMPOSE OR BECOME INEFFECTIVE DURING THE EXPECTED LIFE OF THE FENCE, THE FABRIC SHALL BE REPLACED PROMPTLY.
- 5) SEDIMENT DEPOSITS SHOULD BE INSPECTED AFTER EVERY STORM EVENT, THE DEPOSITS SHOULD BE REMOVED WHEN THEY REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.
- 6) SEDIMENT DEPOSITS THAT ARE REMOVED OR LEFT IN PLACE AFTER THE FABRIC HAS BEEN REMOVED SHALL BE GRADED TO CONFORM WITH THE EXISTING TOPOGRAPHY AND VEGETATION.



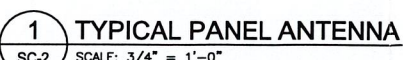
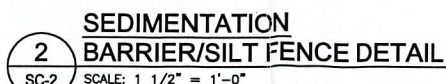
9 EMERGENCY SIGN DETAIL  
SC-2 SCALE: NTS



8 RF SIGN NOTICE  
SC-2 SCALE: NTS



3 ICE BRIDGE DETAIL  
SC-2 SCALE: 1" = 1'-0"

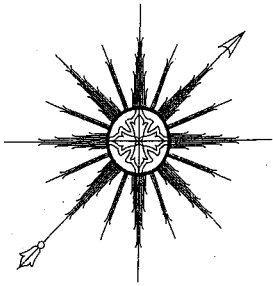


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SC-2





# ALL-POINTS TECHNOLOGY CORPORATION, P.C.

January 2, 2004

Crown Castle Atlantic  
500 West Cummings Park  
Suite 3400  
Woburn, MA 01801

Attn: Lincoln Erhard  
Re: Nextel Communications Collocation  
100' Valmont Monopole Tower  
Durham, Connecticut  
BU #806364

Dear Lincoln,

All-Points Technology Corporation, P.C. performed a structural analysis of Crown Castle's 100' Valmont monopole tower located at 143 Old Blue Hills Road in Durham, Connecticut. The tower was analyzed in accordance with EIA/TIA-222-F, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a wind speed of 85-mph and 1/2" radial ice. The analysis evaluated Nextel Communications proposed 20' tower extension and installation of twelve DB844 panel antennas on a 14' low profile platform at 120'. Waveguide cables are to be twelve 1-5/8" cables.

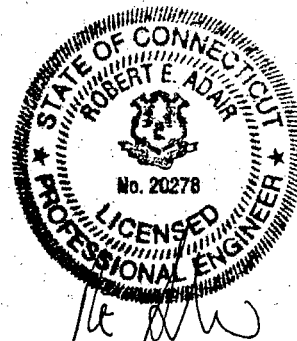
Our analysis indicates the tower and foundation are capable of supporting the proposed extension and antennas.

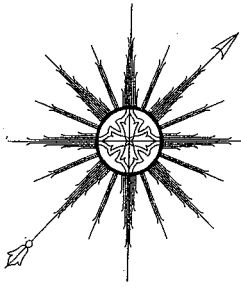
We appreciate this opportunity to provide you with our services. Please call if you have any questions.

Sincerely,  
All-Points Technology Corporation, P.C.

Robert E. Adair, P.E.  
Principal

CT105561 Durham ltr 1-2-04.doc





# ALL-POINTS TECHNOLOGY CORPORATION, P.C.

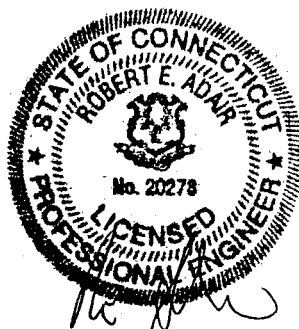
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## STRUCTURAL ANALYSIS REPORT 100' VALMONT MONOPOLE TOWER DURHAM, CONNECTICUT

Prepared for  
Crown Castle Atlantic

**Crown BU #806364**

January 2, 2004



APT Project #CT105561

**STRUCTURAL ANALYSIS REPORT  
100' MONOPOLE TOWER  
DURHAM, CONNECTICUT  
prepared for  
Crown Castle Atlantic**

**EXECUTIVE SUMMARY:**

All-Points Technology Corporation, P.C. (APT) performed a structural analysis of this 100-foot monopole tower located in Durham, Connecticut. The analysis was performed for Nextel Communications' proposed 20' extension and installation of twelve DB844 panel antennas on a 14' low-profile platform at 120'. Waveguide cables are to be twelve 1-5/8" cables.

Our analysis indicates the tower and foundation are capable of supporting the proposed extension and antennas.

**INTRODUCTION:**

A structural analysis of this communications tower was performed by All-Points Technology Corp., P.C. (APT) for Crown Castle Atlantic. The tower is located at 143 Old Blue Hills Road in Durham, Connecticut.

APT did not visit the tower site. This analysis relied on information provided by Crown Castle, which included photographs, existing antenna inventory prepared by CSB Communications dated December 19, 2003, antennas proposed by Nextel Communications, and Valmont design drawings.

The structure is a 100-foot, galvanized steel, two section monopole manufactured by Valmont Industries, proposed to be extended an additional 20'. The analysis was conducted with the following antenna inventory:

Antenna	Elev.	Mount	Coax.
<b>(12) DB844 panels</b>	<b>120'</b>	<b>14' low-profile platform</b>	<b>(12) 1-5/8"</b>
14' whip, ground plane omni	120'	Pipe extensions on above platform	(2) 7/8"
(12) ALP7130.16 panels, (2) GPS	98'	13' platform with rails	(12) 7/8", (2) 1/2"
6' grid dish	98'	On above platform	7/8"
(9) DB980 panels	87'	13' platform with rails	(9) 1-5/8"
(6) ALP7250.03 panels, DB636 whip	73'	14' low-profile platform	(13) 7/8"
PD-1142 whip, yagi, dipole, 5' whip	50'	(2) 5' stand-offs	(3) 7/8", 1/2"
GPS	39'	3' standoff	1/2"

**All-Points Technology Corporation, P.C.**

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

3 Saddlebrook Drive  
Killingworth, CT 06419  
(860) 663-1697

## STRUCTURAL ANALYSIS:

### Methodology:

The structural analysis was done in accordance with TIA/EIA-222-F (EIA), Structural Standards for Steel Antenna Towers and Antenna Supporting Structures; and the American Institute of Steel Construction (AISC), Manual of Steel Construction, Allowable Stress Design, Ninth Edition.

The analysis was conducted using a wind speed of 85 miles per hour and one-half inch of radial ice over the entire structure and all appurtenances. The TIA/EIA Standard requires a minimum of 85-mph wind load for Middlesex County, Connecticut. Two analytical methods were used to evaluate the structure: a two-dimensional linear computer model developed by APT, and a P-delta analysis using CSTRAD finite element software distributed by Digital Canal Software. The 2-D model was used to generate dead loads of the tower and all of its appurtenances, radial ice loads and the resultant wind loading. The maximum bending moments and axial loads were used to calculate combined axial and bending stresses at intervals on the monopole, which were compared to allowable stresses according to AISC and TIA/EIA.

Loads generated in the 2-D model were input into the CSTRAD program to evaluate secondary bending moments induced during deflection of the structure under load and to independently evaluate stresses. Evaluation of secondary bending moments is required by EIA paragraph 3.1.15. Our analysis indicates that the secondary moments exceed those of the linear analysis, and therefore govern in determining the capacity of the structure.

EIA requires two loading conditions to be evaluated to determine the tower's capacity. The higher stresses resulting from the two cases is used to calculate the tower capacity:

- Case 1 = Wind Load (without ice) + Tower Dead Load (controls)
- Case 2 = 0.75 Wind Load (with ice) + Ice Load + Tower Dead Load

EIA permits a one-third increase in allowable stresses for towers less than 700-feet tall. Allowable stresses of tower members were increased by one-third in computing the load capacity values indicated herein.

## ANALYSIS RESULTS:

Our analysis determined the tower will support the proposed antenna array. The following table summarizes the capacity of the tower based on combined axial and bending stresses:

---

### All-Points Technology Corporation, P.C.

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

3 Saddlebrook Drive  
Killingworth, CT 06419  
(860) 663-1697

Elevation	Capacity
0'-50'	92%
50'-100'	89%
100'-120'	83%

The capability of the existing foundation, a reinforced concrete mat and pier, was evaluated from foundation drawings by SAC Engineering dated April 5, 1994. We found the existing foundation to be adequate to support the proposed loads.

Base reactions imposed with the proposed antennas were calculated to be as follows:

Compression:	27.5 kips
Total Shear:	28.5 kips
Overturning Moment:	2245 ft-kips

#### **CONCLUSIONS AND SUGGESTIONS:**

As detailed above, our analysis indicates that the existing 100' Valmont monopole tower and foundation in Durham, Connecticut are capable of supporting Nextel Communications' proposed 20' extension and antenna installation.

The proposed extension was assumed to be comprised of 12" standard pipe, adequately attached to the existing pole.

#### **LIMITATIONS:**

This report is based on the following:

1. Tower is properly installed and maintained.
2. All members are in new condition.
3. All required members are in place.
4. All bolts are in place and are properly tightened.
5. Tower is in plumb condition.
6. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
7. Record drawings accurately reflect tower dimensions and height.

All-Points Technology Corporation, P.C. (APT) is not responsible for any modifications completed prior to or hereafter which APT is not or was not directly involved. Modifications include but are not limited to:

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#### **All-Points Technology Corporation, P.C.**

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

3 Saddlebrook Drive  
Killingworth, CT 06419  
(860) 663-1697

1. Adding or relocating antennas.
2. Installing antenna mounting gates or side arms.
3. Extending tower.

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**All-Points Technology Corporation, P.C.**

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

3 Saddlebrook Drive  
Killingworth, CT 06419  
(860) 663-1697



# ***Appendix A***

## ***Calculations***

# All-Points Technology Corp., P.C.

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

Client: **Crown Castle**  
Job: **Durham, CT**  
Calculated By: **R. Adair**

Job No.: **CT105561**  
Date: **29-Dec-03**

## General Information

Tower Manufacturer Valmont  
Tower Type Monopole  
Total Height of Tower 120 ft.  
Wind Speed 85 mph.  
Radial Ice 0.5 in.  
25% Reduction for ice yes (yes or no)  
1/3 increase for allowable loads yes (yes or no)  
Number of faces 12 faces  
Calculations based on EIA/TIA-222-F, using the following formulas:  
Force on discrete appurtenance:  $F = Q_z * G_h * C_a * A$   
Force on microwave antennae:  $F = C_r * A * G_h * K_z * V^2$ , where  $C_r = ((C_a^2) + (C_s^2))^{1/2}$   
Gust response factor  $G_h = 1.69$   
V as specified EIA-222-F  
E (Modulus of Elasticity) 29000 ksi  
Fb 0.6  
K 1  
Min. Width = 20.26 in  
Max. Width = 44.00 in  
Slope of Tower = 0.0165 in/in

## Tower Information

Section	Length (ft.)	Midpt Elev.	Base Width (in.)	Top Width (in.)	Area (sf) w/o Ice	Area (sf) w/ Ice	Wall Thknss	Wt. (lbs) Tower	Wt. (lbs) Ice
11	20.00	110.00	12.75	12.75	21.25	22.92	0.375	1289.84	161.88
10	10.00	95.00	26.20	20.26	19.36	20.19	0.281	896.09	144.94
9	10.00	85.00	28.17	26.20	22.65	23.49	0.281	1050.60	169.11
8	10.00	75.00	30.15	28.17	24.30	25.14	0.281	997.72	181.20
7	10.00	65.00	32.13	30.15	25.95	26.78	0.281	1066.06	193.28
6	10.00	55.00	34.11	32.13	27.60	28.43	0.281	1134.40	205.37
5	10.00	45.00	36.09	34.11	29.25	30.08	0.375	1600.75	217.45
4	10.00	35.00	38.07	36.09	30.90	31.73	0.375	1691.96	229.54
3	10.00	25.00	40.04	38.07	32.55	33.38	0.375	1783.16	241.62
2	10.00	15.00	42.02	40.04	34.19	35.03	0.375	1874.37	253.71
1	10.00	5.00	44.00	42.02	35.84	36.68	0.375	1965.57	265.79
120.00							Total	15351	2264

**All-Points Technology Corp., P.C.**

150 Old Westside Road

North Conway, NH 03860

(603) 356-5214

Client: **Crown Castle**Job: **Durham, CT**Calculated By: **R. Adair**Job No.: **CT105561**Date: **29-Dec-03*****Monopole Properties***

Section	I in <sup>4</sup>	Area in <sup>2</sup>	Area mid	I mid	J mid	r in	S in <sup>3</sup>	L / side in
11	292.74	14.92	14.6	279	558	4.43	45.92	3.42
10	2012.69	23.41	20.7	1468	2935	9.27	153.67	7.02
9	2509.70	25.20	24.3	2261	4522	9.98	178.16	7.55
8	3082.45	26.99	26.1	2796	5592	10.69	204.46	8.08
7	3736.32	28.78	27.9	3409	6819	11.39	232.57	8.61
6	4476.68	30.56	29.7	4106	8213	12.10	262.50	9.14
5	7029.52	43.06	36.8	5753	11506	12.78	389.59	9.67
4	8263.59	45.45	44.3	7647	15293	13.48	434.18	10.20
3	9634.25	47.83	46.6	8949	17898	14.19	481.19	10.73
2	11148.68	50.22	49.0	10391	20783	14.90	530.62	11.26
1	12814.03	52.60	51.4	11981	23963	15.61	582.46	11.79

***Tower Dead Load Summary***

Elev.	Dead load	Dead load
	Tower (lbs)	Ice (lbs)
100.0	1290	162
90.0	2186	307
80.0	3237	476
70.0	4234	657
60.0	5300	850
50.0	6435	1056
40.0	8035	1273
30.0	9727	1503
20.0	11511	1744
10.0	13385	1998
0.0	15351	2264

## All-Points Technology Corp., P.C.

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

Client: **Crown Castle**  
Job: **Durham, CT**  
Calculated By: **R. Adair**

Job No.: **CT105561**  
Date: **29-Dec-03**

### ***Antenna Information***

Wind Velocity= 85 mph  
Tower Hgt= 120 ft.

#### **ANTENNAS**

Type	Elev. (z)	Coeff. (C)	Kz	Qz	Area (no ice)	Force (no ice)	Weight
(12) DB844, omni & whip on LP platform	120	1.4	1.45	26.75	40.6	<b>2571</b>	470
(12) ALP7130, (2) GPS, dish	120	2.0	1.45	26.75	12.3	<b>1112</b>	1300
13' platform w/rails	98	1.4	1.36	25.24	51.6	<b>3084</b>	625
(9) DB980 panels on	98	2.0	1.36	25.24	13.8	<b>1180</b>	1400
13' platform w/rails	87	1.4	1.32	24.40	22.5	<b>1299</b>	225
(6) ALP7250.03 & DB636 whip on 14' LP platform	87	2.0	1.32	24.40	13.8	<b>1141</b>	1400
Whips, dipole & yagi w/radome	73	2.0	1.25	23.21	18.3	<b>1439</b>	210
GPS	73	2.0	1.25	23.21	12.3	<b>965</b>	1200
	50	1.2	1.13	20.83	9.4	<b>398</b>	435
	39	1.0	1.05	19.40	0.9	<b>30</b>	50
<b><u>DISHES</u></b>							
6' grid dish	98	0.00137	1.36	25.24	28.3	<b>646</b>	75.0

### ***LINEAR APPURTENANCES***

Section	Area w/o Ice	Area w/ Ice	Weight w/o Ice	Weight w/ Ice
11	10.53	17.19	500	540
10	5.26	8.60	170	190
9	5.26	8.60	280	300
8	5.26	8.60	310	330
7	5.26	8.60	430	512
6	5.26	8.60	430	512
5	5.26	8.60	430	512
4	5.26	8.60	430	512
3	5.26	8.60	430	512
2	5.26	8.60	430	512
1	5.26	8.60	430	512

# All-Points Technology Corp., P.C.

150 Old Westside Road  
North Conway, NH 03860  
(603) 356-5214

Client: **Crown Castle**  
Job: **Durham, CT**  
Calculated By: **R. Adair**

Job No.: **CT105561**  
Date: **29-Dec-03**

Wind Velocity = 85 mph  
Height of Tower = 120 feet

$K_z$  = Exposure coefficient =  $(z/33)^{2/7}$ ;  $1.00 \leq K_z \leq 2.58$

$Q_z$  = Velocity pressure =  $.00256 \cdot K_z \cdot V^2$

$G_h$  = Gust response factor = 1.69

$C_f$  = Structure force coefficient from Table 1 of TIA/EIA

Force =  $Q_z \cdot G_h \cdot (C_f \cdot A_e + C_a \cdot A_a)$

## Wind Load Without Ice

Section	Midpoint Height	Areas		$K_z$	$Q_z$	$G_h$	$C_f$	Wind Load	Wind Load
		$A_e$	$A_a$						
11	110.00	21.3	10.53	1.41	26.09	1.69	1.03	1522 lbs.	76 plf.
10	95.00	19.4	5.26	1.35	25.02	1.69	1.03	1110 lbs.	111 plf.
9	85.00	22.7	5.26	1.31	24.24	1.69	1.03	1214 lbs.	121 plf.
8	75.00	24.3	5.26	1.26	23.39	1.69	1.03	1239 lbs.	124 plf.
7	65.00	26.0	5.26	1.21	22.45	1.69	1.03	1254 lbs.	125 plf.
6	55.00	27.6	5.26	1.16	21.40	1.69	1.03	1257 lbs.	126 plf.
5	45.00	29.2	5.26	1.09	20.21	1.69	1.03	1245 lbs.	124 plf.
4	35.00	30.9	5.26	1.02	18.81	1.69	1.03	1212 lbs.	121 plf.
3	25.00	32.5	5.26	1.00	18.50	1.69	1.03	1245 lbs.	125 plf.
2	15.00	34.2	5.26	1.00	18.50	1.69	1.03	1298 lbs.	130 plf.
1	5.00	35.8	5.26	1.00	18.50	1.69	1.03	1351 lbs.	135 plf.

**All-Points Technology Corp., P.C.**

150 Old Westside Road  
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Client: **Crown Castle**  
Job: **Durham, CT**  
Calculated By: **R. Adair**

Job No.: **CT105561**  
Date: **29-Dec-03**

**Wind Load With Ice**

Section	Midpoint	Areas		Kz	Qz	Gh	Cf	Wind Load	75% Wind Load
	Height	Ae	Ai						
11	110.00	22.9	7.26	1.41	26.09	1.69	1.03	1425 lbs.	53 plf.
10	95.00	20.2	8.60	1.35	25.02	1.69	1.03	1315 lbs.	99 plf.
9	85.00	23.5	8.60	1.31	24.24	1.69	1.03	1413 lbs.	106 plf.
8	75.00	25.1	8.60	1.26	23.39	1.69	1.03	1431 lbs.	107 plf.
7	65.00	26.8	8.60	1.21	22.45	1.69	1.03	1438 lbs.	108 plf.
6	55.00	28.4	8.60	1.16	21.40	1.69	1.03	1432 lbs.	107 plf.
5	45.00	30.1	8.60	1.09	20.21	1.69	1.03	1411 lbs.	106 plf.
4	35.00	31.7	8.60	1.02	18.81	1.69	1.03	1367 lbs.	103 plf.
3	25.00	33.4	8.60	1.00	18.50	1.69	1.03	1397 lbs.	105 plf.
2	15.00	35.0	8.60	1.00	18.50	1.69	1.03	1450 lbs.	109 plf.
1	5.00	36.7	8.60	1.00	18.50	1.69	1.03	1503 lbs.	113 plf.

# Frame Static Analysis Report

Project: CT105560 Durham  
 Description: 100' Monopole extended to 120'; Crown BU #806364  
 Date: 01/02/2004 12:19 PM

Company: All-Points Technology Corporation  
 User: Robert Adair, P.E.  
 Software: Digital Canal Frame Analysis & Design

N O D A L C O O R D I N A T E S					B O U N D A R Y   C O N D I T I O N S (F=FIX, S=SUP, M=MASTER/SLAVE)						
NODE NO	REBAND NO	X	Y	Z	NODE TEMP	ALPHA	BETA	GAMMA	DIR	DDDDOO XYZXYZ	STIFFNESS
Units:		Ft	Ft	Ft	F	Deg	Deg	Deg			K /In /Deg
1	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00		FFFFFF	
2	2	0.00	10.00	0.00	0.00	0.00	0.00	0.00			
3	3	0.00	20.00	0.00	0.00	0.00	0.00	0.00			
4	4	0.00	30.00	0.00	0.00	0.00	0.00	0.00			
5	5	0.00	40.00	0.00	0.00	0.00	0.00	0.00			
6	6	0.00	50.00	0.00	0.00	0.00	0.00	0.00			
7	7	0.00	60.00	0.00	0.00	0.00	0.00	0.00			
8	8	0.00	70.00	0.00	0.00	0.00	0.00	0.00			
9	9	0.00	80.00	0.00	0.00	0.00	0.00	0.00			
10	10	0.00	90.00	0.00	0.00	0.00	0.00	0.00			
11	11	0.00	100.00	0.00	0.00	0.00	0.00	0.00			
12	12	0.00	120.00	0.00	0.00	0.00	0.00	0.00			

2 N O D E   P R I S M A T I C   B E A M   E L E M E N T														
EL NO	NE NO	PE NO	ALPHA	BETA	GAMMA	LENGTH	MAT TYPE	PROP TYPE	RELEASE NE	RELEASE PE	REF TEMP	DIR	OFFSET NE	OFFSET PE
Units:			Deg	Deg	Deg	Ft					F		Ft	Ft
1	1	2	90.00	-90.00	0.00	10.00	1	1						
2	2	3	90.00	-90.00	0.00	10.00	1	2						
3	3	4	90.00	-90.00	0.00	10.00	1	3						
4	4	5	90.00	-90.00	0.00	10.00	1	5						
5	5	6	90.00	-90.00	0.00	10.00	1	6						
6	6	7	90.00	-90.00	0.00	10.00	1	7						
7	7	8	90.00	-90.00	0.00	10.00	1	8						
8	8	9	90.00	-90.00	0.00	10.00	1	9						
9	9	10	90.00	-90.00	0.00	10.00	1	10						
10	10	11	90.00	-90.00	0.00	10.00	1	4						
11	11	12	90.00	-90.00	0.00	20.00	1	11						

M A T E R I A L   P R O P E R T I E S						
MATL NO	DESIGNATION	YOUNG'S MODULUS	POISSON'S RATIO	THERMAL COEFF	MASS DENSITY	WEIGHT DENSITY
Units:		K /In ^2		F	Slug/Ft^3	Lb/Ft ^3
1	Steel	2.9e+004	0.295	6.5e-006	15.2	490
2	Cable	9e+004	0.151	6.5e-006	11.9	382

2 NODE PRISMATIC BEAM ELEMENT PROPERTIES									
DESIGNATION	A	IXX	IYY	J	IXY	SFY	SFX	CW	
Units:	In <sup>2</sup>	In <sup>4</sup>	In <sup>4</sup>	In <sup>4</sup>	In <sup>4</sup>			In <sup>6</sup>	
1 DURHAM1	51.2	1.18e+004	1.18e+004	2.36e+004	0	1.000	1.000	0	
2 DURHAM2	48.3	9.95e+003	9.95e+003	1.99e+004	0	1.000	1.000	0	
3 DURHAM3	45.4	8.29e+003	8.29e+003	1.66e+004	0	1.000	1.000	0	
4 DURHAM10	19.1	1.11e+003	1.11e+003	2.21e+003	0	1.000	1.000	0	
5 DURHAM4	42.6	6.82e+003	6.82e+003	1.36e+004	0	1.000	1.000	0	
6 DURHAM5	35	4.94e+003	4.94e+003	9.87e+003	0	1.000	1.000	0	
7 DURHAM6	27.7	3.35e+003	3.35e+003	6.7e+003	0	1.000	1.000	0	
8 DURHAM7	25.6	2.63e+003	2.63e+003	5.26e+003	0	1.000	1.000	0	
9 DURHAM8	23.4	2.03e+003	2.03e+003	4.05e+003	0	1.000	1.000	0	
10 DURHAM9	21.3	1.52e+003	1.52e+003	3.04e+003	0	1.000	1.000	0	
11 P12x.375	14.6	279	279	559	0	2.970	2.970	0	

2 NODE PRISMATIC BEAM ELEMENT LOAD INFORMATION										
REC NO	LOAD TYPE	LOAD SYS	LOAD DIST SPEC	DIST	PX	PY	PZ	MX	MY	MZ
Units:				Ft	K	K	K	Ft-K	Ft-K	Ft-K
DESCRIPTION : Wind on section 1										
LOAD CASES : 1										
ELEMENT LIST : 1										
1	LINR	GLO	FRAC	B	0.000	0.135	0.000	0.000	0.000	0.000
				E	1.000	0.135	0.000	0.000	0.000	0.000
DESCRIPTION : Wind on section 2										
LOAD CASES : 1										
ELEMENT LIST : 2										
2	LINR	GLO	FRAC	B	0.000	0.130	0.000	0.000	0.000	0.000
				E	1.000	0.130	0.000	0.000	0.000	0.000
DESCRIPTION : Wind on section 3										
LOAD CASES : 1										
ELEMENT LIST : 3										
3	LINR	GLO	FRAC	B	0.000	0.125	0.000	0.000	0.000	0.000
				E	1.000	0.125	0.000	0.000	0.000	0.000
DESCRIPTION : GPS @ 39'										
LOAD CASES : 1										
ELEMENT LIST : 4										
DISTANCES : 9										
4	CONC	GLO	DIST		0.030	-0.050	0.000	0.000	0.000	0.000
DESCRIPTION : Wind on section 4										
LOAD CASES : 1										
ELEMENT LIST : 4										
5	LINR	GLO	FRAC	B	0.000	0.121	0.000	0.000	0.000	0.000
				E	1.000	0.121	0.000	0.000	0.000	0.000
DESCRIPTION : Wind on section 5										
LOAD CASES : 1										
ELEMENT LIST : 5										
6	LINR	GLO	FRAC	B	0.000	0.124	0.000	0.000	0.000	0.000
				E	1.000	0.124	0.000	0.000	0.000	0.000



DESCRIPTION : Wind on section 6

LOAD CASES : 1

ELEMENT LIST : 6

7	LINR	GLO	FRAC	B	0.000	0.126	0.000	0.000	0.000	0.000	0.000
				E	1.000	0.126	0.000	0.000	0.000	0.000	0.000

DESCRIPTION : Wind on section 7

LOAD CASES : 1

ELEMENT LIST : 7

8	LINR	GLO	FRAC	B	0.000	0.125	0.000	0.000	0.000	0.000	0.000
				E	1.000	0.125	0.000	0.000	0.000	0.000	0.000

DESCRIPTION : (6) ALP7250.03 @ 73'

LOAD CASES : 1

ELEMENT LIST : 8

DISTANCES : 0.300000

9	CONC	GLO	FRAC			2.404	-1.410	0.000	0.000	0.000	0.000
---	------	-----	------	--	--	-------	--------	-------	-------	-------	-------

DESCRIPTION : Wind on section 8

LOAD CASES : 1

ELEMENT LIST : 8

10	LINR	GLO	FRAC	B	0.000	0.124	0.000	0.000	0.000	0.000	0.000
				E	1.000	0.124	0.000	0.000	0.000	0.000	0.000

DESCRIPTION : (9) DB980 panels @ 87'

LOAD CASES : 1

ELEMENT LIST : 9

DISTANCES : 7

11	CONC	GLO	DIST			2.440	-1.625	0.000	0.000	0.000	0.000
----	------	-----	------	--	--	-------	--------	-------	-------	-------	-------

DESCRIPTION : Wind on section 9

LOAD CASES : 1

ELEMENT LIST : 9

12	LINR	GLO	FRAC	B	0.000	0.121	0.000	0.000	0.000	0.000	0.000
				E	1.000	0.121	0.000	0.000	0.000	0.000	0.000

DESCRIPTION : (12) ALP9212, (2) GPS, dish

LOAD CASES : 1

ELEMENT LIST : 10

DISTANCES : 8

13	CONC	GLO	DIST			4.910	-2.100	0.000	0.000	0.000	0.000
----	------	-----	------	--	--	-------	--------	-------	-------	-------	-------

DESCRIPTION : Wind on section 10

LOAD CASES : 1

ELEMENT LIST : 10

14	LINR	GLO	FRAC	B	0.000	0.111	0.000	0.000	0.000	0.000	0.000
				E	1.000	0.111	0.000	0.000	0.000	0.000	0.000

DESCRIPTION : Wind on 20' extension

LOAD CASES : 1

ELEMENT LIST : 11

15	LINR	GLO	FRAC	B	0.000	0.076	0.000	0.000	0.000	0.000	0.000
				E	1.000	0.076	0.000	0.000	0.000	0.000	0.000

## GRAVITY LOAD MULTIPLIERS

REC NO	PX	PY	PZ
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 1			
1	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 2			
2	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 3			
3	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 4			
4	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 5			
5	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 6			
6	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 7			
7	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 8			
8	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 9			
9	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 10			
10	0.000	-1.300	0.000
DESCRIPTION : Self Weight			
LOAD CASES : 1			
ELEMENT LIST : 11			
11	0.000	-1.300	0.000

REC NO	ALPHA	BETA	GAMMA	PX	N O D A L L O A D S			MX	MY	MZ
					PY	PZ				
Units:	Deg	Deg	Deg	K	K	K	Ft-K	Ft-K	Ft-K	
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 2										
1	0.00	0.00	0.00	0.000	-0.430	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 3										
2	0.00	0.00	0.00	0.000	-0.430	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 4										
3	0.00	0.00	0.00	0.000	-0.430	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 5										
4	0.00	0.00	0.00	0.000	-0.430	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 6										
5	0.00	0.00	0.00	0.000	-0.430	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : (2) whips, dipole & yagi @ 50'										
LOAD CASES : 1										
NODE LIST : 6										
6	0.00	0.00	0.00	0.398	-0.435	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 7										
7	0.00	0.00	0.00	0.000	-0.430	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 8										
8	0.00	0.00	0.00	0.000	-0.430	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 9										
9	0.00	0.00	0.00	0.000	-0.310	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
LOAD CASES : 1										
NODE LIST : 10										
10	0.00	0.00	0.00	0.000	-0.280	0.000	0.000	0.000	0.000	0.000
DESCRIPTION : D.L. of waveguide										
CASES : 1										
NODE LIST : 11										
11	0.00	0.00	0.00	0.000	-0.170	0.000	0.000	0.000	0.000	0.000

DESCRIPTION : (12) DB844, whip, omni @ 120'

LOAD CASES : 1

NODE LIST : 12

2	0.00	0.00	0.00	4.329	-1.770	0.000	0.000	0.000	0.000
---	------	------	------	-------	--------	-------	-------	-------	-------

# L I N E A R   A N A L Y S I S   R E S U L T S

## N O D A L   D I S P L A C E M E N T S

(\* Indicates Displacements Occur in Nodal Local System)

NODE NO	LOAD COMB	DX	DY	DZ	OX	OY	OZ
Units:		In	In	In	Deg	Deg	Deg
2	1	0.5326	-0.0021	0.0000	0.0000	0.0000	-0.4919
3	1	2.1126	-0.0042	0.0000	0.0000	0.0000	-0.9988
4	1	4.7700	-0.0061	0.0000	0.0000	0.0000	-1.5188
5	1	8.5288	-0.0079	0.0000	0.0000	0.0000	-2.0482
6	1	13.4738	-0.0099	0.0000	0.0000	0.0000	-2.6455
7	1	19.7812	-0.0120	0.0000	0.0000	0.0000	-3.3400
8	1	27.5165	-0.0141	0.0000	0.0000	0.0000	-4.0031
9	1	36.5784	-0.0159	0.0000	0.0000	0.0000	-4.6039
10	1	46.8090	-0.0175	0.0000	0.0000	0.0000	-5.1139
11	1	57.9736	-0.0186	0.0000	0.0000	0.0000	-5.4958
12	1	83.8065	-0.0200	0.0000	0.0000	0.0000	-6.4820

## 2   N O D E   P R I S M A T I C   B E A M   E L E M E N T   --   E L E M E N T   R E P O R T S

SIGN CONVENTION : BEAM DESIGNERS

ELEM NO	LOAD COMB	NODE NO	AXIAL	TORSION	SHEAR X	MOMENT Y	MAX MOM/DEFL	DIST	SHEAR Y	MOMENT X	MAX MOM/DEFL	DIST
Units:			K	K -Ft	K	K -Ft	K -Ft / In	Ft	K	K -Ft	K -Ft / In	Ft
1	1	1	-27.4743	0.0000	0.0000	0.0000			28.4510	-2184.2013		
		2	-25.2094	0.0000	0.0000	0.0000			27.1010	-1906.4414	0.1287	4.94
2	1	2	-24.7794	0.0000	0.0000	0.0000			27.1010	-1906.4414		
		3	-22.6428	0.0000	0.0000	0.0000			25.8010	-1641.9315	0.1327	4.94
3	1	3	-22.2128	0.0000	0.0000	0.0000			25.8010	-1641.9315		
		4	-20.2045	0.0000	0.0000	0.0000			24.5510	-1390.1716	0.1361	4.93
4	1	4	-19.7745	0.0000	0.0000	0.0000			24.5510	-1390.1716		
		5	-17.8400	0.0000	0.0000	0.0000			23.3110	-1150.7417	0.1386	4.92
5	1	5	-17.4100	0.0000	0.0000	0.0000			23.3110	-1150.7417		
		6	-15.8617	0.0000	0.0000	0.0000			22.0710	-923.8318	0.1563	4.91
6	1	6	-14.9967	0.0000	0.0000	0.0000			21.6730	-923.8318		
		7	-13.7714	0.0000	0.0000	0.0000			20.4130	-713.4018	0.1818	4.89
7	1	7	-13.3414	0.0000	0.0000	0.0000			20.4130	-713.4018		
		8	-12.2090	0.0000	0.0000	0.0000			19.1630	-515.5219	0.1736	4.87

8	1	8	-11.7790	0.0000	0.0000	0.0000	19.1630	-515.5219	0.1569	4.84
		9	-9.3338	0.0000	0.0000	0.0000	15.5190	-346.9200		
9	1	9	-9.0238	0.0000	0.0000	0.0000	15.5190	-346.9200	0.1331	4.78
		10	-6.4566	0.0000	0.0000	0.0000	11.8690	-205.1000		
10	1	10	-6.1766	0.0000	0.0000	0.0000	11.8690	-205.1000	0.0994	4.69
		11	-3.2317	0.0000	0.0000	0.0000	5.8490	-101.7800		
11	1	11	-3.0617	0.0000	0.0000	0.0000	5.8490	-101.7800	0.5242	8.35
		12	-1.7700	0.0000	0.0000	0.0000	4.3290	-0.0000		

## R E A C T I O N S

(\* Indicates Reactions Occur in Nodal Local System)

NODE NO	LOAD COMB	PX	PY	PZ	MX	MY	MZ
Units:		K	K	K	K -Ft	K -Ft	K -Ft
1	1	-28.4510	27.4743	0.0000	0.0000	0.0000	2184.2013

## P-D E L T A   A N A L Y S I S   R E S U L T S

 N O D A L   D I S P L A C E M E N T S  
 (\* Indicates Displacements Occur in Nodal Local System)

LOAD COMB		DX	DY	DZ	OX	OY	OZ
Units:		In	In	In	Deg	Deg	Deg
2	1	0.5479	-0.0034	0.0000	0.0000	0.0000	-0.5065
3	1	2.1763	-0.0164	0.0000	0.0000	0.0000	-1.0301
4	1	4.9192	-0.0497	0.0000	0.0000	0.0000	-1.5689
5	1	8.8042	-0.1143	0.0000	0.0000	0.0000	-2.1188
6	1	13.9222	-0.2254	0.0000	0.0000	0.0000	-2.7407
7	1	20.4586	-0.4055	0.0000	0.0000	0.0000	-3.4654
8	1	28.4836	-0.6760	0.0000	0.0000	0.0000	-4.1584
9	1	37.8920	-1.0469	0.0000	0.0000	0.0000	-4.7869
10	1	48.5190	-1.5197	0.0000	0.0000	0.0000	-5.3204
11	1	60.1190	-2.0827	0.0000	0.0000	0.0000	-5.7200
12	1	86.9646	-3.5899	0.0000	0.0000	0.0000	-6.7514

## 2   N O D E   P R I S M A T I C   B E A M   E L E M E N T   --   E L E M E N T   R E P O R T S

SIGN CONVENTION : BEAM DESIGNERS

ELEM NO	LOAD COMB	NODE NO	AXIAL	TORSION	SHEAR X	MOMENT Y	MAX MOM/DEFL	DIST	SHEAR Y	MOMENT X	MAX MOM/DEFL	DIST
Units:			K	K -Ft	K	K -Ft	K -Ft / In	Ft	K	K -Ft	K -Ft / In	Ft
1	1	1	-27.3441	0.0000	0.0000	0.0000			28.5762	-2245.4216		
		2	-25.0854	0.0000	0.0000	0.0000			27.2158	-1966.4617	0.1326	4.94
2	1	2	-24.4094	0.0000	0.0000	0.0000			27.4349	-1966.4623		
		3	-22.2906	0.0000	0.0000	0.0000			26.1060	-1698.7577	0.1370	4.94
3	1	3	-21.6172	0.0000	0.0000	0.0000			26.3022	-1698.7588		
		4	-19.6380	0.0000	0.0000	0.0000			25.0066	-1442.2151	0.1410	4.93
4	1	4	-18.9692	0.0000	0.0000	0.0000			25.1783	-1442.2147		
		5	-17.0760	0.0000	0.0000	0.0000			23.8763	-1196.8152	0.1439	4.92
5	1	5	-16.4000	0.0000	0.0000	0.0000			24.0322	-1196.8122		
		6	-14.9060	0.0000	0.0000	0.0000			22.7273	-963.0142	0.1628	4.91
6	1	6	-13.7940	0.0000	0.0000	0.0000			22.4578	-963.0104		
		7	-12.6391	0.0000	0.0000	0.0000			21.1329	-745.0568	0.1897	4.89
7	1	7	-11.9463	0.0000	0.0000	0.0000			21.2598	-745.0529		
		8	-10.9000	0.0000	0.0000	0.0000			19.9368	-539.0697	0.1814	4.87
8	1	8	-10.2404	0.0000	0.0000	0.0000			20.0270	-539.0633		
		9	-8.0885	0.0000	0.0000	0.0000			16.2026	-362.9296	0.1641	4.84
9	1	9	-7.6137	0.0000	0.0000	0.0000			16.2570	-362.9255		
		10	-5.3798	0.0000	0.0000	0.0000			12.3940	-214.5217	0.1391	4.78
10	1	10	-5.0013	0.0000	0.0000	0.0000			12.4098	-214.5254		
		11	-2.6521	0.0000	0.0000	0.0000			6.1333	-106.5399	0.1039	4.69
11	1	11	-2.3888	0.0000	0.0000	0.0000			6.1503	-106.2928		
		12	-1.2752	0.0000	0.0000	0.0000			4.4954	0.1643	0.5494	8.39

R E A C T I O N S  
(\* Indicates Reactions Occur in Nodal Local System)

LOAD COMB		PX	PY	PZ	MX	MY	MZ
Units:		K	K	K	K -Ft	K -Ft	K -Ft
1	1	-28.4510	27.4743	0.0000	0.0000	0.0000	2245.4216

**All-Points Technology Corp., P.C.**  
 150 Old Westside Road  
 North Conway, NH 03860  
 (603) 356-5214

Client: **Crown Castle**  
 Job: **Durham, CT**  
 Calculated By: **R. Adair**

Job No.: **CT105561**  
 Date: **29-Dec-03**

**Total Moment (ft-kips)**

**Axial Loads (kips)**

**Shear (kips)**

Elevation	Mom. w/o Ice	75% Mom w/ Ice	100% Mom w/ Ice	Secondary	D+A Force	D+A+I Force	Secondary	Tower (lbs.)	Antenna (lbs)	Total (kips)	Secondary
0	2107.3	1765.2	2353.6	2245	23.2	25.5	27.3	15583	13466	29.05	28.6
10	1835.9	1537.8	2050.4	1966	21.2	23.3	24.4	14079	13466	27.55	27.4
20	1577.8	1321.5	1762.0	1699	19.3	21.2	21.6	12629	13466	26.10	26.3
30	1332.4	1115.9	1487.8	1442	17.5	19.1	19.0	11232	13466	24.70	25.2
40	1099.4	920.6	1227.5	1197	15.8	17.2	16.4	9865	13436	23.30	24.0
50	878.9	736.1	981.5	963	14.2	15.3	13.8	8455	13436	21.89	22.5
60	674.8	564.9	753.3	745	12.6	13.6	11.9	7022	13436	20.46	21.3
70	483.3	404.6	539.4	539	11.4	12.1	10.2	5584	13436	19.02	20.0
80	321.2	266.8	355.7	363	9.0	9.5	7.6	4154	11033	15.19	16.3
90	185.8	151.5	202.0	215	6.2	6.6	5.0	2740	8593	11.33	12.4
100	88.9	71.0	94.7	106	3.6	3.8	2.4	1425	3683	5.11	6.2



**All-Points Technology Corp., P.C.**

150 Old Westside Road  
 North Conway, NH 03860  
 (603) 356-5214

Client: **Crown Castle**  
 Job: **Durham, CT**  
 Calculated By: **R. Adair**

Job No.: **CT105561**  
 Date: **29-Dec-03**

***Axial Stresses***

Base Elev.	Stress Ratio			
	w/o ice	Area	Fy	w/o ice
0	27.3	52.60	65	0.52
10	24.4	50.22	65	0.49
20	21.6	47.83	65	0.45
30	19.0	45.45	65	0.42
40	16.4	43.06	65	0.38
50	13.8	30.56	65	0.45
60	11.9	28.78	65	0.41
70	10.2	26.99	65	0.38
80	7.6	25.20	65	0.30
90	5.0	23.41	65	0.21
100	2.4	14.92	42	0.16

***Bending Stresses***

fb= Moment/Section Modulus				Allowable		Actual
Base Elev.	w/o ice	S	(F <sub>y</sub> ) <sup>1/2</sup> w/t	F <sub>b</sub>	1.33 F <sub>b</sub>	w/o ice
0	2245.0	582.46	253.5	38.06	50.62	46.25
10	1966.0	530.62	242.1	38.89	51.72	44.46
20	1699.0	481.19	240.0	39.04	51.93	42.37
30	1442.0	434.18	240.0	39.04	51.93	39.85
40	1197.0	389.59	240.0	39.04	51.93	36.87
50	963.0	262.50	262.2	37.42	49.77	44.02
60	745.0	232.57	247.0	38.53	51.25	38.44
70	539.0	204.46	240.0	39.04	51.93	31.63
80	363.0	178.16	240.0	39.04	51.93	24.45
90	215.0	153.67	240.0	39.04	51.93	16.79
100	106.0	45.92	240.0	25.23	33.55	27.70

***Tower Capacity***

Base Elev.	Comb. Str. Ratio	Capacity
0	0.924	92%
10	0.869	87%
20	0.825	82%
30	0.776	78%
40	0.717	72%
50	0.894	89%
60	0.758	76%
70	0.616	62%
80	0.477	48%
90	0.327	33%
100	0.830	83%

***Via Certified Mail  
Return Receipt Requested***

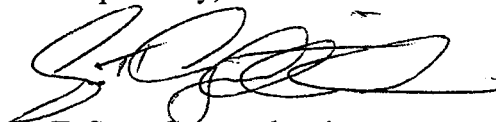
October 29, 2004

To Whom It May Concern:

This is to notify you as an abutting property owner that Nextel Communications of the Mid-Atlantic, Inc. d/b/a Nextel Communications, the lessee of a 100-foot telecommunications tower located at 143 Old Blue Hills Road (Town of Durham Tax Assessor's Map 69, Lot 12) in Durham, Connecticut, will file a Petition for a Declaratory Ruling ("Petition") with the Connecticut Siting Council that no Certificate of Environmental Compatibility and Public Need is necessary for the proposed modifications to the existing tower. Francis E. Behrans and Marie C. Behrens own the parcel of property on which the tower is located. The proposed modifications will include extending the monopole by twenty feet, installing an array of panel antennas, relocating and replacing the Town of Durham's antennas, and installing a new equipment shelter within the existing compound. The modifications will not result in an increase in the total height of the tower.

The Petition will be submitted to the Connecticut Siting Council on or about November 3, 2004 and Nextel Communications will request to be placed on a future agenda.

Respectfully,



T. Scott Cowperthwait

**ABUTTING PROPERTY OWNERS LIST FOR  
NEXTEL COMMUNICATIONS PETITION FOR DECLARATORY RULING  
143 OLD BLUE HILLS ROAD, DURHAM, CONNECTICUT**

<b>Title (Map/Lot)</b>	<b>FirstName</b>	<b>LastName</b>	<b>Owner Address</b>	<b>City</b>	<b>State</b>	<b>PostalCode</b>
Map 69, Lot 12	State of Connecticut		( ) Old Blue Hills Road	Durham	CT	06422
Map 69, Lot 11-3	Vincent L.	Baker	( ) Old Blue Hills Road	Durham	CT	06422
Map 69, Lot 11-2	Walter Lee H.	Kanior Moody	186 Old Blue Hills Road	Durham	CT	06442
Map 69, Lot 35-1	Mitchell P. Jeanine L.	Schnipper Kieft	140 Old Blue Hills Road	Durham	CT	06442
Map 69, Lot 13	Robert A. Kathleen B	Chadd	121 Old Blue Hills Road	Durham	CT	06442
Map 69, Lot 10	The Vasilis Company LLC		178 Old Blue Hills Road	Durham	CT	06442
Map 69, Lot 35-6	Durwood A. Darlene M.	Allen	144R Old Blue Hills Road	Durham	CT	06442
Map 69, Lot 35-7	Thomas W. Josephine M.	Wilt	89R Old Blue Hills Road	Durham	CT	06442
Map 69, Lot 35-3	Donald W. Valentina	Guentmer	120 Old Blue Hills Road	Durham	CT	06442
Map 69, Lot 35-5	Keith R. Pamela J.	Bentley	132R Old Blue Hills Road	Durham	CT	06442
Map 60, Lot 14	Vincent L.	Baker	Pine Ledge Terrace	Durham	CT	06442
Map 70, Lot 1	Eileen M.	Ulizio	207 Old Blue Hills Road	Durham	CT	06442
Map 70, Lot 2	State of Connecticut		( ) Old Blue Hills Road	Durham	CT	06442
Map 70, Lot 14-10	Karen F.	Liquidoli	67 Green Lane	Durham	CT	06442

**ABUTTING PROPERTY OWNERS LIST FOR  
NEXTEL COMMUNICATIONS PETITION FOR DECLARATORY RULING  
143 OLD BLUE HILLS ROAD, DURHAM, CONNECTICUT**

Map 70, Lot 14-11	Vincent L.	Baker	204 Old Blue Hills Road	Durham	CT	06442
Map 70, Lot 14-12	Vincent L.	Baker	210 Old Blue Hills Road	Durham	CT	06442
Map 70, Lot 14-15	Vincent L.	Baker	26R Pine Ledge Terrace	Durham	CT	06442
Map 79, Lot 9	Francis E. Mariel	Behrens	109 Old Blue Hills Road	Durham	CT	06442
Map 79, Lot 9-3	Gary L. Lauren E.	Paxton	40 Stephen Woods Lane	Durham	CT	06442
Map 79, Lot 9-4	Sean M. Tina M.	Doyle	44 Stephen Woods Lane	Durham	CT	06442
Map 79, Lot 9-5 (SD03)	John F. Annem	Hartnig Baranger	46R Stephen Woods Lane	Durham	CT	06442
Map 79, Lot 9-5 (SD04)	Hugh D. Teresa B.	Pearsib	55 Agerola Road	Durham	CT	06442
Map 79, Lot 9-6	Dori J.	DeGennaro	47R Stephen Woods Lane	Durham	CT	06442
Map 79, Lot 9-7 (SD06)	Richard C. Carolyn	Day	45R Stephen Woods Lane	Durham	CT	06442
Map 79, Lot 9-7 (SD07)	Richard C. Carolyn	Day	45R Stephen Woods Lane	Durham	CT	06442
Map 79, Lot 9-8	Susan L.	Tsolis	17 Stephen Woods Lane	Durham	CT	06442
Map 80, Lot 1	Dennis J.	Dombrowski	78R Chalker Road	Durham	CT	06442
Map 80, Lot 1-1	Mark D. Jocelyn D.	Dombrowski	76R Stephen Woods Lane	Durham	CT	06442

**ABUTTING PROPERTY OWNERS LIST FOR  
NEXTEL COMMUNICATIONS PETITION FOR DECLARATORY RULING  
143 OLD BLUE HILLS ROAD, DURHAM, CONNECTICUT**

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Map 80, Lot 2	Old Blue Hill Associates LLD	Dombrowski	( ) Madison Road	Durham	CT	06442
Map 80, Lot 7	Old Blue Hill Associates LLD	Dombrowski	42R Stephen Woods Lane	Durham	CT	06442

[illegible]

AVIATION SYSTEMS ASSOCIATES, INC.  
(310) 378-3299 FAX: (310) 791-1546

FAR PART 77 AIRSPACE OBSTRUCTION REPORT

To:

*Cheryl Sincek*  
*Crown Communications*  
*375 Southpointe Blvd.*  
*Canonsburg, PA 15317*

Date: September 27, 1999

Location: Durham, CT

From: Foster Ruppert

Client Case No.: 806364/CT-Durham

ASA Case No.: 99-O-0141.PA.193

**SITE DATA:**

Proposed Structure: Communications Antenna

Coordinates: 41° - 27' - 33.35"/072° - 39' - 47.46" [NAD 27]  
41° - 27' - 33.70"/072° - 39' - 45.80" [NAD 83]

Site Elevation: 516' [AMSL]

Structure Height Proposed: 500' [AGL]

Total Height: 1016' [AMSL]

**SEARCH RESULTS:**

• The proposed site is located 7.89 NM/47,937 feet East (110°T) of the Meriden Markham Muni Airport Runway 36.

- Other Public or Private Airports or Heliports within 3 NM: ☐ None ☒ Printout attached.
- AM Radio/Radar or NAVAID sites within 3 NM: ☒ None ☐ Printout attached.
- Proposed structure within 3 Statute miles of protected FCC Field Office: ☒ No ☐ Yes.

**ALERT:** FCC Rules and Policy prescribe notice requirements for protection of AM Broadcast Stations.

**STUDY RESULTS AT PROPOSED HEIGHT: 500 ' AGL**

• **FAA Filing:**

☐ Not required    ☒ Required if structure would exceed 200 feet AGL.

**ALERT:** All proposed new or altered antenna structures subject to FAA filing requirements under FAR Part 77 must be registered with the FCC antenna structure registry prior to erecting the antenna, unless specifically exempted. ★See attached form★

• **Obstruction Standards of FAR Part 77:**

☒ Not exceeded

☐ Exceeded if structure would exceed \_\_\_\_\_ feet AGL.

**IMPORTANT:** (The FAA will require Marking/Lighting if Obstruction Standards are exceeded & /or structure exceeds 200'AGL. However, the FAA, for safety reasons, may require marking &/or lighting on non exceeding structures. Structures exceeding Obstruction Standards will also require FAA extended study.)

• **Operational Procedures:**

☒ Not affected

☐ Affected if structure would exceed \_\_\_\_\_ feet AGL.

**IMPORTANT:** (FAA will issue a Determination of Hazard unless proposed structure is reduced by \_\_\_\_\_ feet.)

**Note:**

Due to proximity to operational procedures FAA MAY require a certified survey ☐

**Comments:**

**Actions:**

ASA will file with \_\_\_\_\_ FAA Region and State    ☐ Yes    ☒ No

**ASA Operations Manager:** L. Gene Garrett

**Sent via:**

MAIL ☒ FAX ☒ FED EX ☐



By (initials) BJB Date 8.28.02 BUN 806364  
COD update \_\_\_\_\_ Lease/License # \_\_\_\_\_ Site ID Durham, CT Doc Type BA

Crown Castle USA  
New England Region

# GPS Readings

**Date:** 8/27/02

**Business Number:** 806364

**Site Name:** Durham CT

**Address:** 101 R Old Blue Road

**City:** Durham

**State:** CT

**Zip:** 06422

**County:** Middlesex

**Latitude:** 41 - 27 - 33.7

**Longitude:** 72 - 39 - 45.8

**AMSL:** 516'

**Signature:** Keith D Sullivan  
Keith Sullivan

DO NOT REMOVE CARBONS

PAGE 14


Form Approved OMB No 2120-00

*DUNHAM*

**NOTICE OF PROPOSED CONSTRUCTION OR ALTERATION**

US Department of Transportation  
Federal Aviation Administration  
Office of Operations

Aeronaautical Study Number  
93-ABE-028-DE

<b>1. Type</b> <input checked="" type="checkbox"/> New Construction <input type="checkbox"/> Alteration		<b>B. Class</b> <input type="checkbox"/> Permanent <input type="checkbox"/> Temporary (Duration _____ months)		<b>C. Work Schedule Dates</b> Beginning <u>10-1-93</u> End <u>10-1-94</u>	
<b>3A. Name and address of individual, company, corporation, etc. proposing the construction or alteration.</b> (Number, Street, City, State and Zip Code) (203) <u>269-8858</u> area code Telephone Number  <b>METRO MOBILE CTS OF HARTFORD, INC.</b> 20 Alexander Drive Wallingford, CT 06492					
<b>3B. Name, address and telephone number of proponent's representative if different than 3A above.</b>  N/A					
<b>4. Location of Structure</b>					
<b>A. Coordinates</b> (To nearest second) 41° 27' 31" N 72° 39' 47" W		<b>B. Nearest City or Town, and State</b> Durham, Connecticut		<b>C. Name of nearest airport, heliport, light tower, or seaplane base</b> Meriden	
(1) Distance from structure to nearest point of nearest runway <u>approx. 8.6 mi</u>		(2) Direction from structure to airport <u>West-Northwest</u>		<b>5. Height and Elevation</b> (Complete to the nearest foot)	
(1) Distance from structure to nearest point of nearest runway <u>approx. 8.6 mi</u>		(2) Direction from structure to airport <u>West-Northwest</u>		<b>A. Elevation of site above mean sea level</b> <u>515'</u>	
(1) Distance from structure to nearest point of nearest runway <u>approx. 8.6 mi</u>		(2) Direction from structure to airport <u>West-Northwest</u>		<b>B. Height of structure including all appurtenances and lighting (if any) above ground, or water if so situated</b> <u>115'</u>	
(1) Distance from structure to nearest point of nearest runway <u>approx. 8.6 mi</u>		(2) Direction from structure to airport <u>West-Northwest</u>		<b>C. Overall height above mean sea level (A + B)</b> <u>630'</u>	
Description of location of site with respect to highways, streets, airports, prominent terrain features, existing structures, etc. Attach a U.S. Geological Survey quadrangle map or equivalent showing the relationship of construction site to nearest airport; (if more space is required, continue on a separate sheet of paper and attach to this notice.) The proposed tower will be located approximately 3,000 feet east of route 75 and Old Mill Hills Road in the town of Durham, County of Middlesex, Connecticut. Reference Page 2 (section "Durham, Conn." 7 1/2' map)					
Notice is required by Part 77 of the Federal Aviation Regulations (14 C.F.R. Part 77) pursuant to Section 1101 of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1101). Persons who knowingly and willfully violate the Notice requirements of Part 77 are subject to a fine (criminal penalty) of not more than \$500 for the first offense and not more than \$2,000 for subsequent offenses, pursuant to Section 902(a) of the Federal Aviation Act of 1958, as amended (49 U.S.C. 1472(a)).					
I HEREBY CERTIFY that all of the above statements made by me are true, complete, and correct to the best of my knowledge. In addition, I agree to obstruction mark and/or light the structure in accordance with established marking & lighting standards if necessary.					
Date <u>1/5/92</u>		Typed Name/Title of Person Filing Notice <u>Joseph P. Puziavics, Real Estate Repre</u>		Signature 	

DO NOT REMOVE CARBONS

FAA Form 7460-1 (8-85)

# Airports with Runways

Search Latitude: 41-27-34 Search Radius: 3  
 Search Longitude: 072-39-46 Height (MSL):

ID	Name	City	State	ARP Lat	ARP Long	Type	Rways	Primary	RwyLat	RwyLong	Elev.	Dist/NM	Dist/feet	Bear
CT39	MAPLEWOOD FARM	DURHAM	CT	41-28-06.352N	072-42-30.344W	PR	15/33	15				2.12	12.878	284.57
CT39	MAPLEWOOD FARM	DURHAM	CT	41-28-06.352N	072-42-30.344W	PR	15/33	33				2.12	12.878	284.57



*Vanasse Hangen Brustlin, Inc.*

54 Tuttle Place  
Middletown, Connecticut 06457  
860 632-1500  
FAX 860 632-7879

**Memorandum**

To: Scott Cowperthwait, Esq.  
Hurwitz & Sagarin, LLC  
147 North Broad Street  
Milford, CT 06460

Date: June 2, 2004

Project No.: 40862.02

From: Vanasse Hangen Brustlin, Inc.

Re: Comparative Viewshed Map  
Proposed Tower Expansion to  
Existing Facility  
Old Blue Hills Road  
Durham, Connecticut

---

URS Corporation, on behalf of Nextel Communications, has requested that Vanasse Hangen Brustlin, Inc. (VHB) prepare a comparative viewshed map for a proposed 20-foot tower extension to an existing 100-foot tall wireless telecommunications facility located off of Blue Hills Road in the Town of Durham, Connecticut. The following provides a brief description of the methodologies used in this analysis.

Using ESRI's ArcView® Spatial Analyst, a computer modeling tool, areas from which at least the top of the respective towers are expected to be visible are calculated. This is based on information entered into the computer model, such as tower heights, ground elevation, surrounding topography, existing vegetation, and potential visual receptors. Data incorporated in the model includes 7.5 minute digital elevation models (DEMs) and a digital forest layer for the project 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 1990 digital orthophotos with a 1 meter pixel resolution. The viewshed was calculated for heights of both 100 feet and 120 feet in order to evaluate and compare the visibility of existing and proposed conditions. A two-mile radius surrounding the Site was chosen as the Study Area for the purposes of this analysis. The Study Area includes approximately 8,042 acres of land. Lastly, VHB conducted a drive by reconnaissance within the Study Area to verify the results of the viewshed analysis.

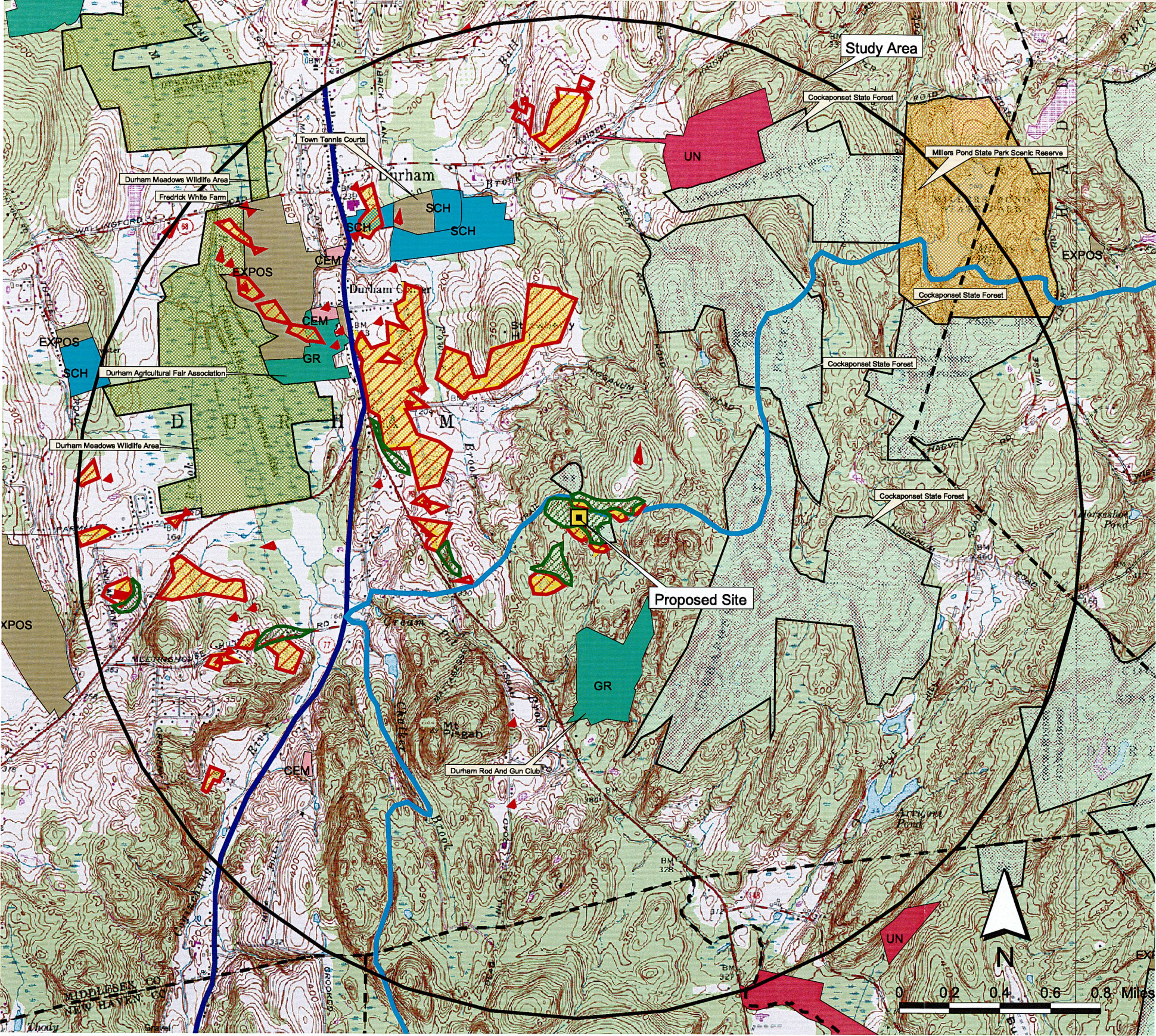
Also included on the map is a data layer, obtained from the Connecticut State Department of Environmental Protection (CTDEP), which depicts various land and water resources such as state parks and forests, recreational facilities, dedicated open space, CTDEP boat launches and others. This layer is useful in identifying potential visual impacts to State, local or other resources located within the Study Area. In addition, based on a review of the *Connecticut Walk Book*, VHB determined that portions of the Mattabesett Trail traverse the Study Area. An approximate 0.5-mile segment of the trail follows Old



Comparative Viewshed Map

Existing 100-Foot Tower Vs. Proposed Tower Expansion to 120 Feet

Town of Durham Connecticut



CT-0944  
Old Blue Hills Road  
Durham, Connecticut

NOTE:  
Viewshed analysis conducted using ESRI's ArcView Spatial Analyst.  
Existing Tower Height is 100 feet; Proposed tower height is 120 feet.  
Forest cover calculated at height of 65 feet.

DATA SOURCES for viewshed analysis:  
- 7.5 minute digital elevation model (DEM) at 30 meter resolution produced by USGS, 1982  
- Forested areas derived from 1990 digital orthophotos with 1 meter pixel resolution - digitized by VHB, 2004  
- Base map comprised of Haddam and Durham USGS Quadrangle Maps.  
- Coordinates of proposed site: Lat.41 27 33 Long. 72 39 45  
- Protected properties data layer provided CTDEP, July 2001  
- Scenic Roads derived from State and Local listings

Map Compiled September 2, 2004

LEGEND

- Proposed Tower Location (Includes area of visibility approximately 500 feet around facility)

Anticipated seasonal visibility - Existing and Proposed (Approximately 43 acres)

Year-round visibility - Existing Tower (approximately 218 acres)

Year-round visibility - Proposed Tower Expansion (approximately 250 acres)

Scenic Roads (Local and/or State designated)

Mattabesett Trail (CT Blue Blaze)

DEP Boat Ramps

Protected Properties (Municipal)

Cemetery (CEM)

Conservation (CONS)

Existing Preserved Open Space (EXPOS)

General Recreation (GR)

Preservation (P)

Recreation (REC)

School (SCH)

Uncategorized (UN)
- Protected Properties (Federal)

Protected Properties (DEP)

State Forest (SF)

State Park (SP)

State Park Scenic Reserve (SPSR)

State Park Trail (SPT)

Natural Area Preserve (NAP)

Wildlife Area (W)

Wildlife Sanctuary (WS)

Historic Preserve (HP)

Flood Control (FC)

Fish Hatchery (FH)

DEP Owned Waterbody (DEPWB)

Water Access (WA)

Other (O)

Town Line

Vanasse Hangen Brustlin, Inc.  
54 Tuttle Place  
Middletown, CT 06457







PHOTOSIMULATIONS  
for a PROPOSED NEXTEL COMMUNICATIONS  
TELECOMMUNICATIONS FACILITY:  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422

At the request of Nextel Communications, URS Corporation AES (URS) prepared the following photosimulations for the proposed Nextel twenty-foot tower extension of the existing hundred-foot monopole located at Old Blue Hills Road in the Town of Durham, Connecticut. The Nextel proposal will include a twenty-foot tower extension, removal of existing Nextel whip antennas, the installation of twelve panel antennas on a low profile platform, as well as the relocation of existing town whip antennas.

On December 3<sup>rd</sup>, 2003 URS staff visited the site between 10:00 a.m. and 2:00 p.m. Conditions on this day were bright with moderate winds. URS staff used the existing tower to locate potential areas of visibility and took photos to document the findings. The locations of the photographs range in distance from .96 miles (View No. 1: Route 17 & Higganum Road) to .07 miles (View No. 7: Stephen Woods Drive). More details on the photo locations are included below and on the photo location map following this summary.

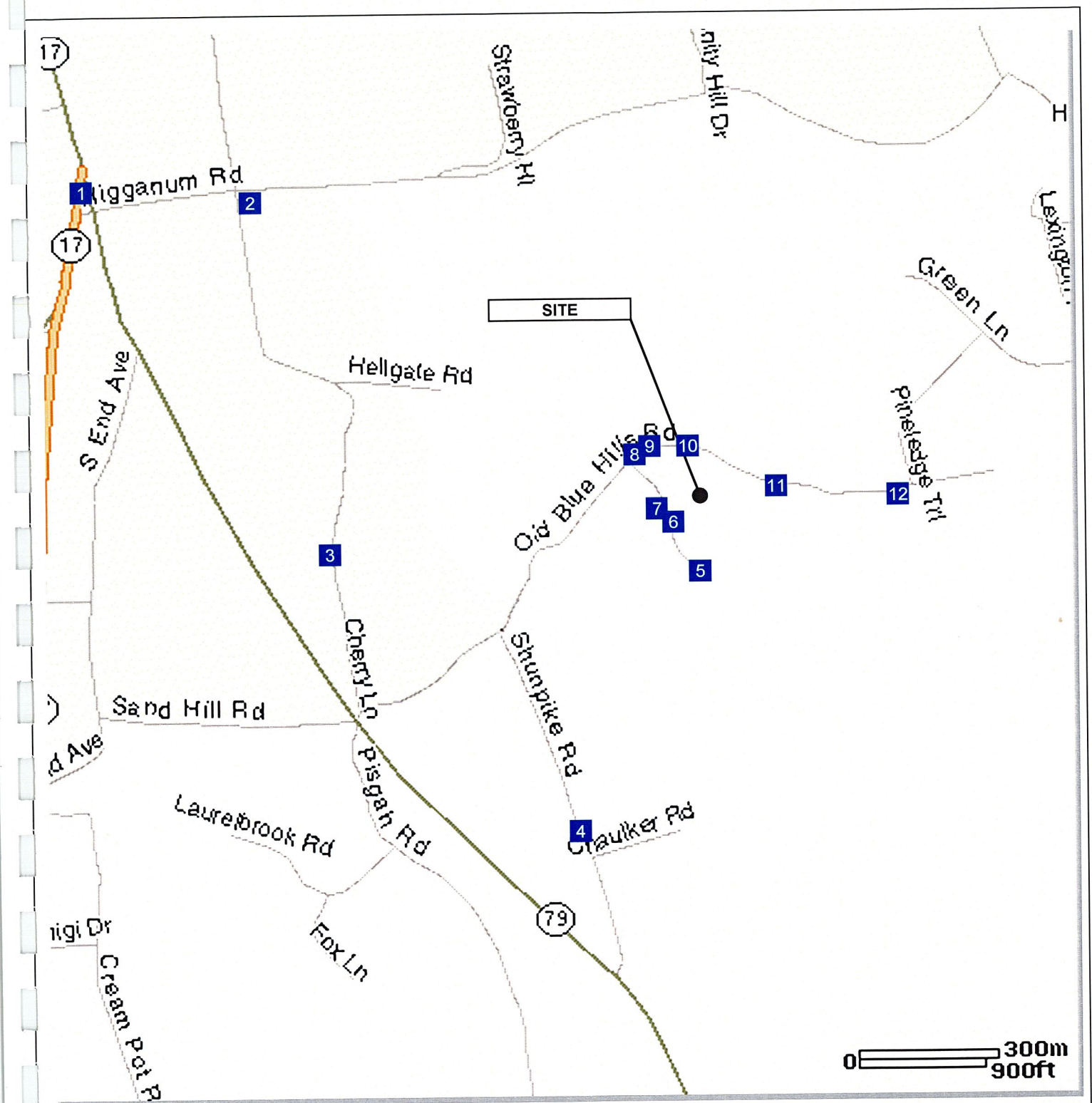
Photo Location Chart		
View No. 1	Route 17 & Higganum Road	.96 Miles Northwest of the site
View No. 2	Cherry Lane & Higganum Road	.79 Miles Northwest of the site
View No. 3	Cherry Lane	.55 Miles West of the site
View No. 4	Shunpike Road	.57 Miles Southwest of the site
View No. 5	Stephen Woods Drive	.10 Miles South of the site
View No. 6	Stephen Woods Drive	.07 Miles Southwest of the site
View No. 7	Stephen Woods Drive	.07 Miles Southwest of the site
View No. 8	Old Blue Hills Road & Stephen Woods Drive	.10 Miles Northwest of the site
View No. 9	Old Blue Hills Road	.10 Miles Northwest of the site
View No. 10	Old Blue Hills Road	.08 Miles North of the site
View No. 11	Old Blue Hills Road	.26 Miles East of the site
View No. 12	Old Blue Hills Road	.10 Miles East of the site

Included in this report are twelve photosimulations of the proposed tower extension. These views were selected to represent visibility in the immediate vicinity of the proposed site. All photos were taken in December with leaf off conditions and therefore represent the worst case impact visibility of the tower extension.

All photographs in this package were taken using a Canon Rebel 2000/300 analog camera with a 50mm lens and Kodak Gold Max 200 ISO film. Film was developed by a commercial lab. Analog 4x6" prints were scanned in-house by URS at 600 dpi resolution. Digital images were imported into photo imaging software. URS staff used approved elevation drawings to determine the layout and location of the proposed antennas.

URS maintains a library of photographic and rendered images of antennas and equipment; images of the proposed antennas were imported, scaled and rendered in the imaging software. URS project managers reviewed each photosimulation before final prints were made using a ColorPass-M25 1100 printer.





# PHOTO LOCATION MAP

DATE: 8/31/2004

SCALE: AS SHOWN

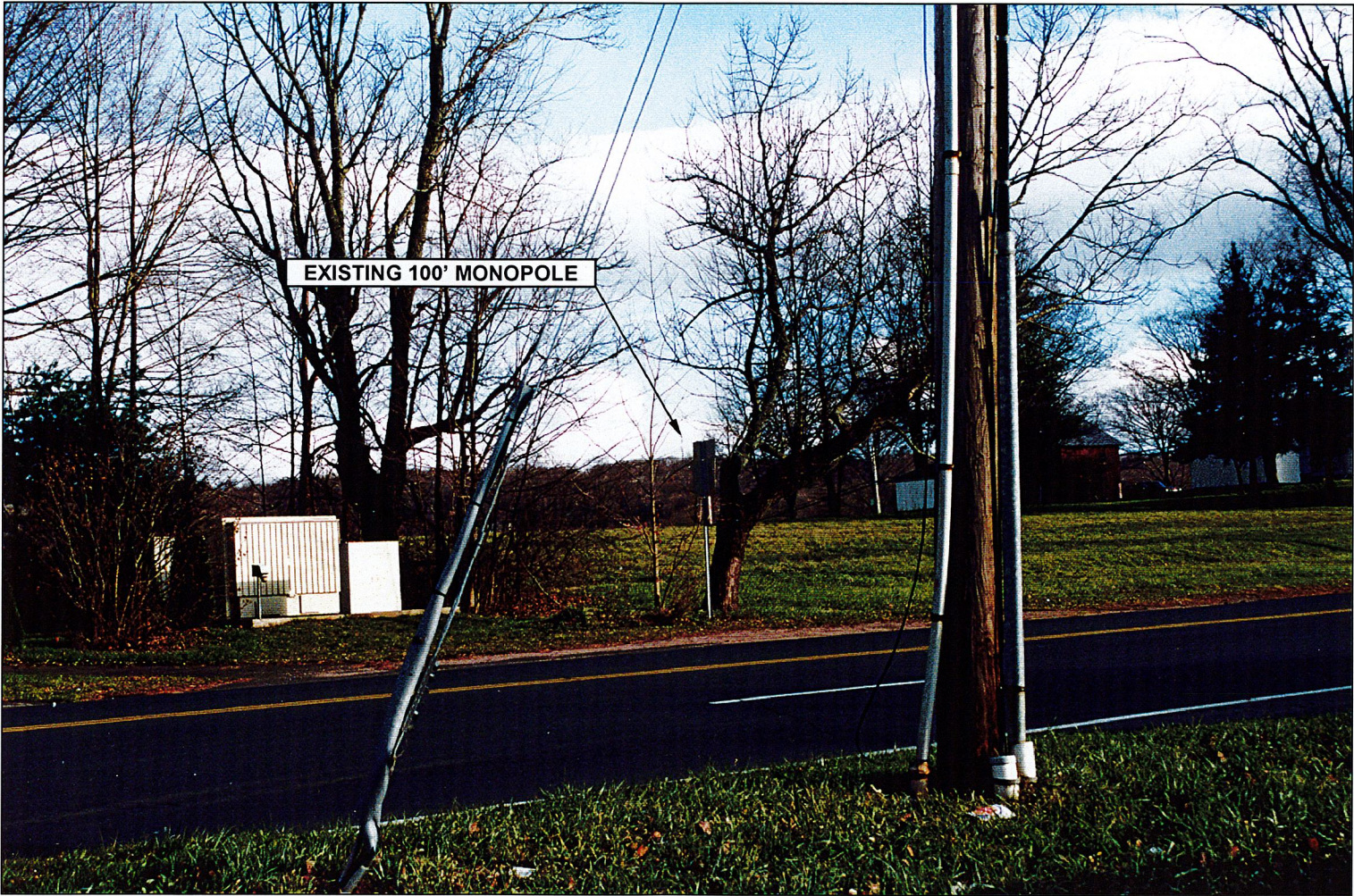
**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566  
PROJECT #: NX1010/36918549.00000

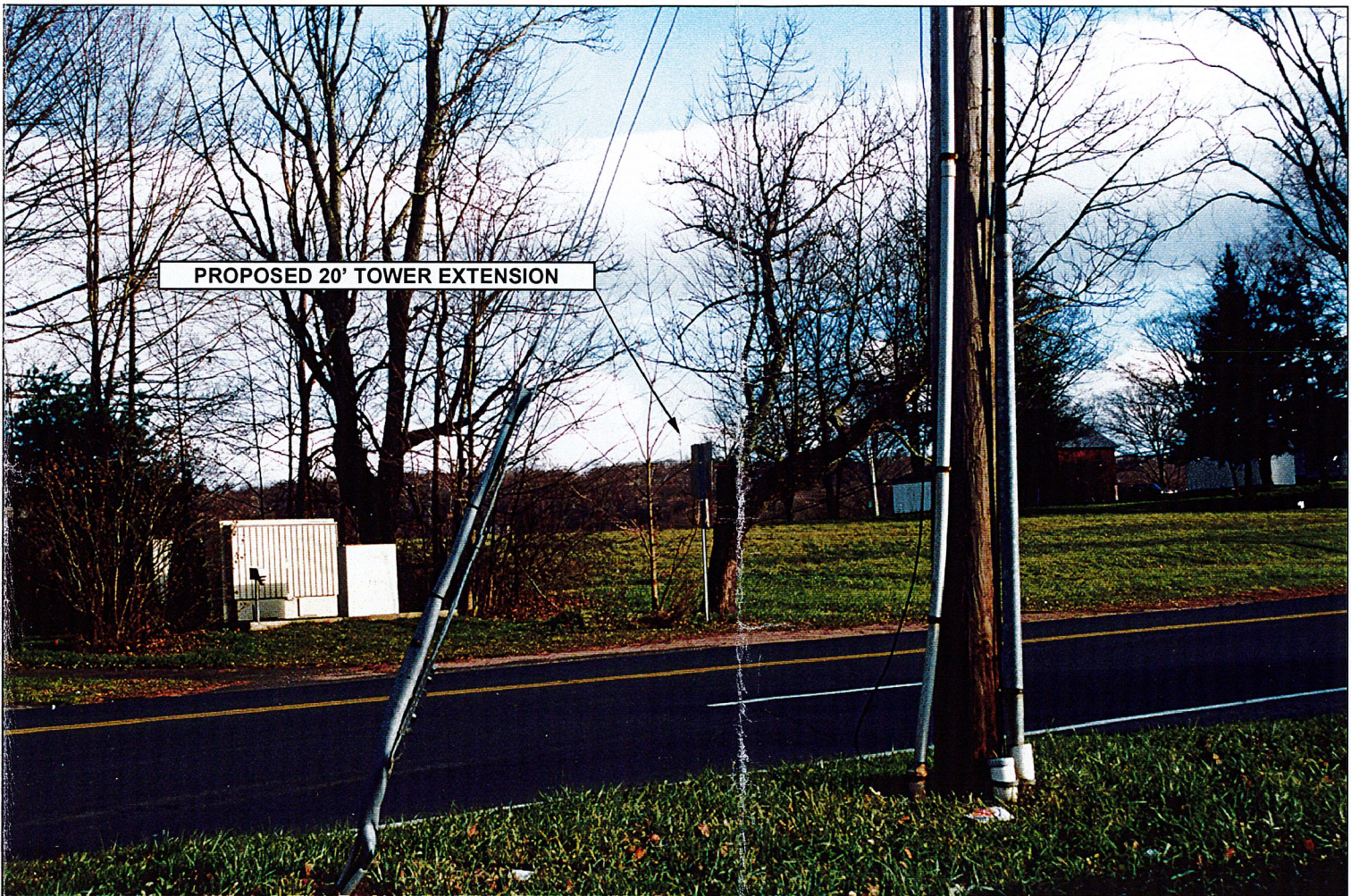
**NEXTEL**  
**CT-0944**  
**OLD BLUE HILLS ROAD**  
**DURHAM, CONNECTICUT 06422**



VIEW No.1: ROUTE 17 & HIGGANUM ROAD, .96 MILES NORTHWEST OF THE SITE



EXISTING VIEW



PHOTOSIMULATION

VIEW No. 1

DATE: 8/31/2004

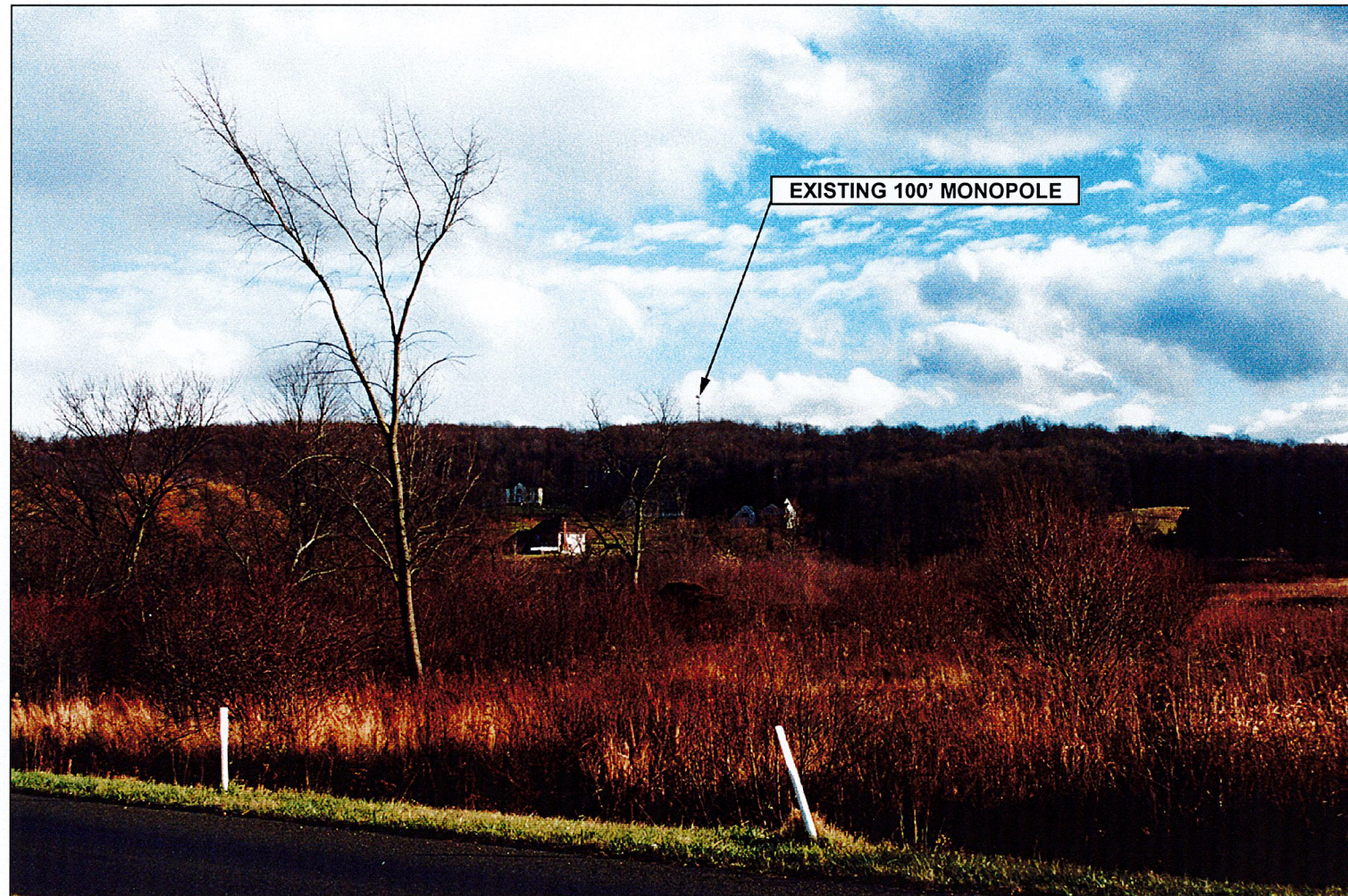
**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566  
PROJECT #: NX1010/36918549.00000

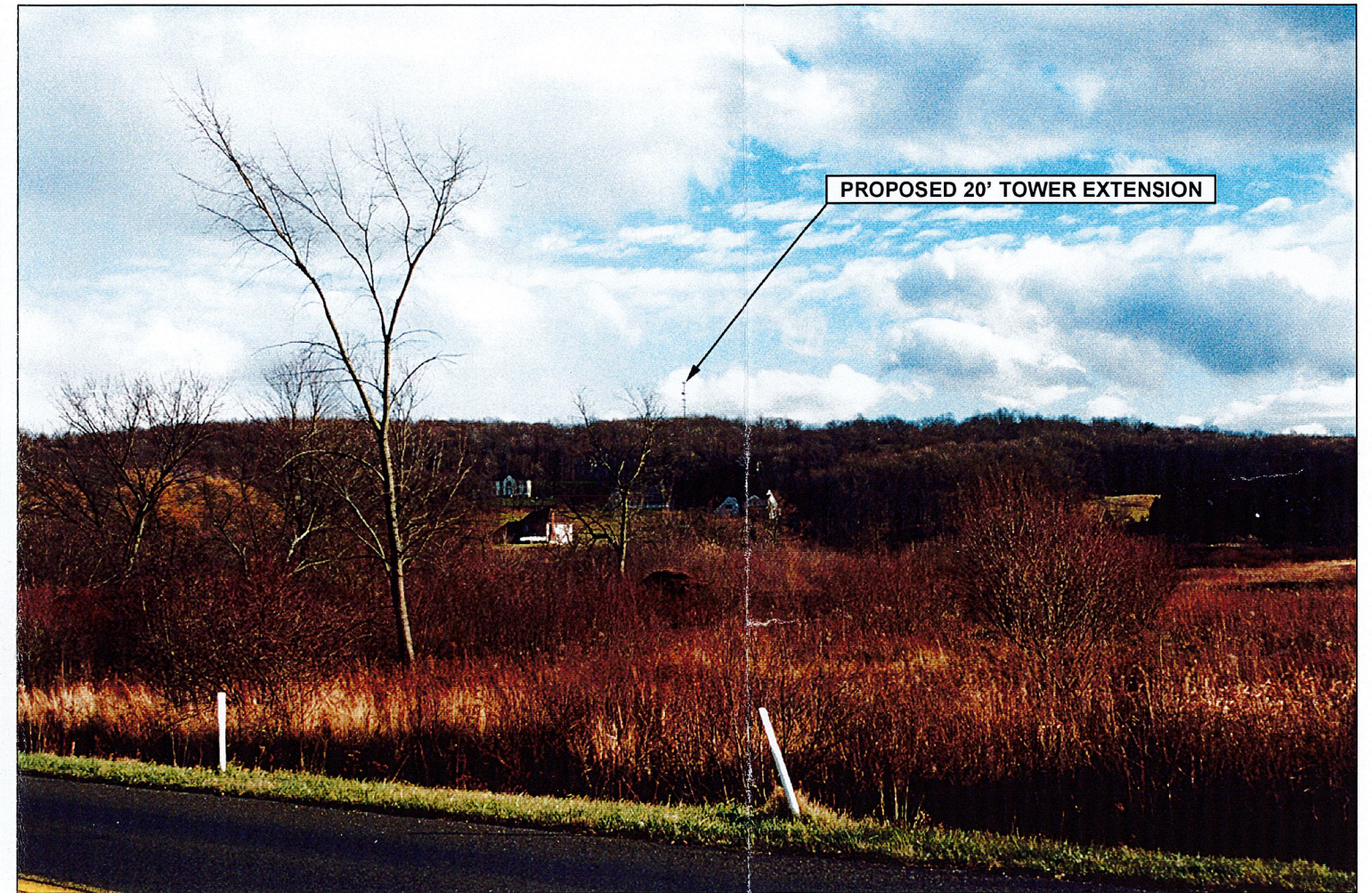
NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422



**VIEW No.2: CHERRY LANE & HIGGANUM ROAD, .79 MILES NORTHWEST OF THE SITE**



**EXISTING VIEW**



**PHOTOSIMULATION**

**VIEW No. 2**

DATE: 8/31/2004

**URS**

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Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

PROJECT #: NX1010/36918549.00000

**NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422**



VIEW No.3: CHERRY LANE, .55 MILES WEST OF THE SITE



EXISTING VIEW



PHOTOSIMULATION

VIEW No. 3

DATE: 8/31/2004

**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

PROJECT #: NX1010/36918549.00000

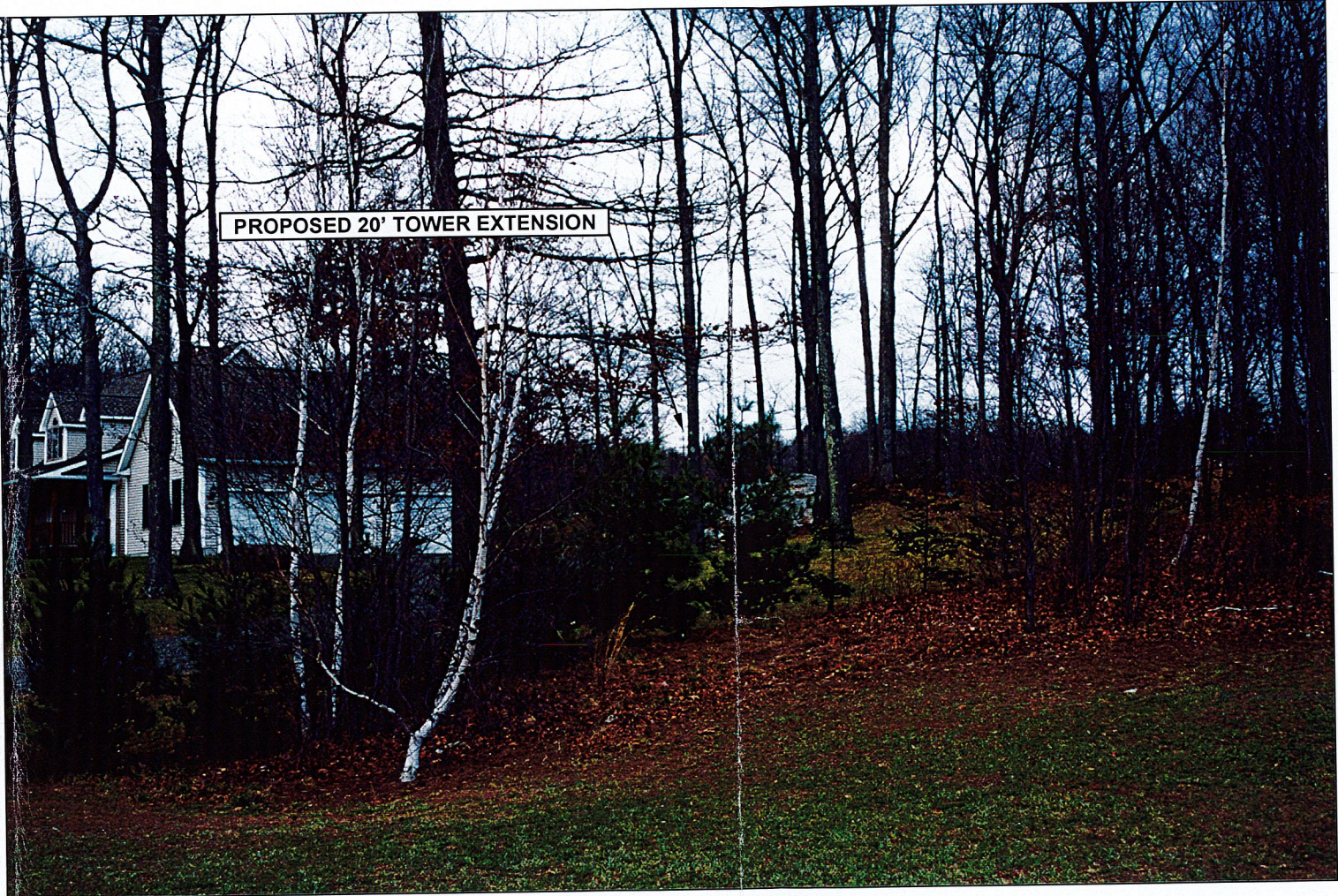
NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422



VIEW No.4: SHUNPIKE ROAD, .57 MILES SOUTHWEST OF THE SITE



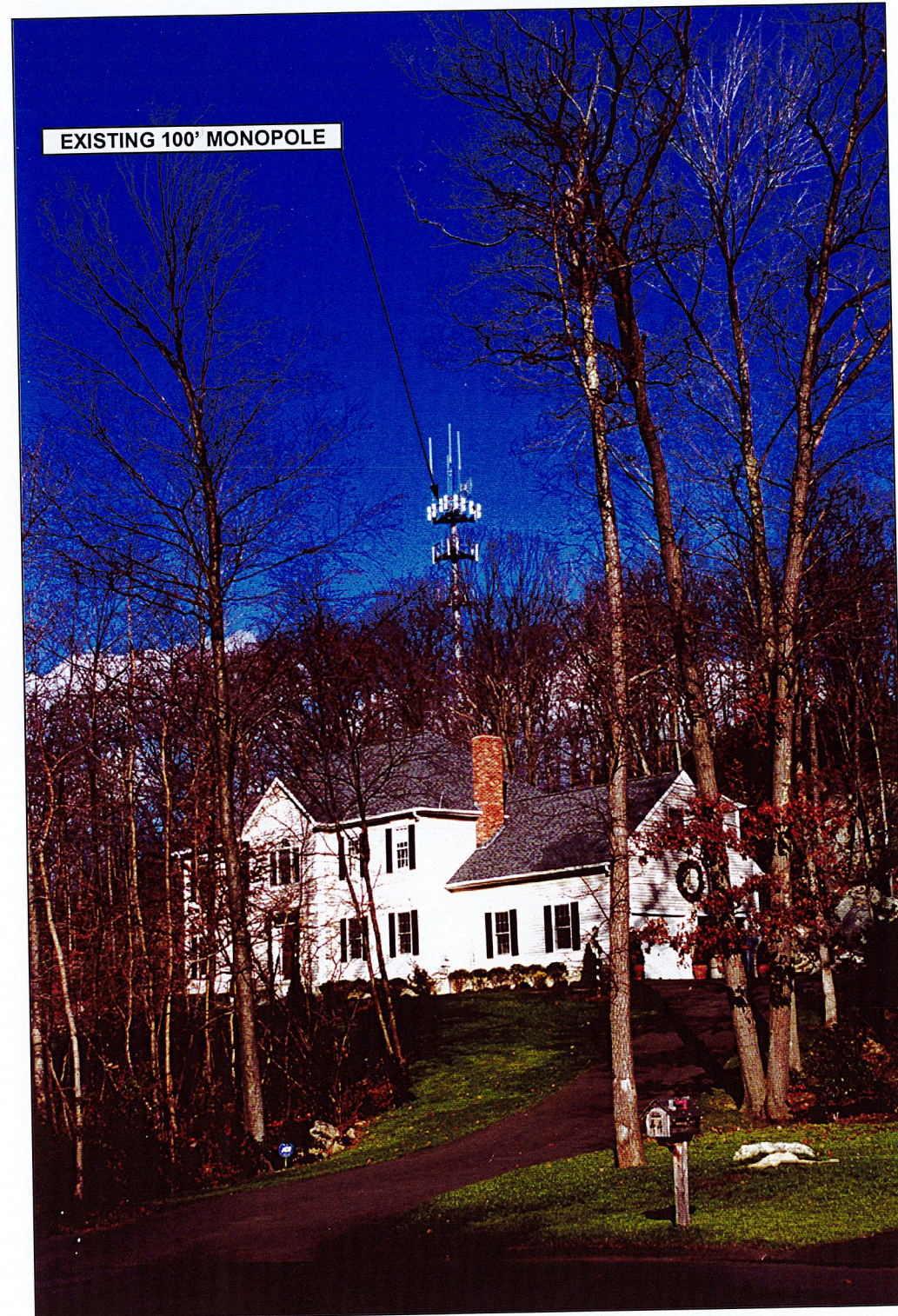
EXISTING VIEW



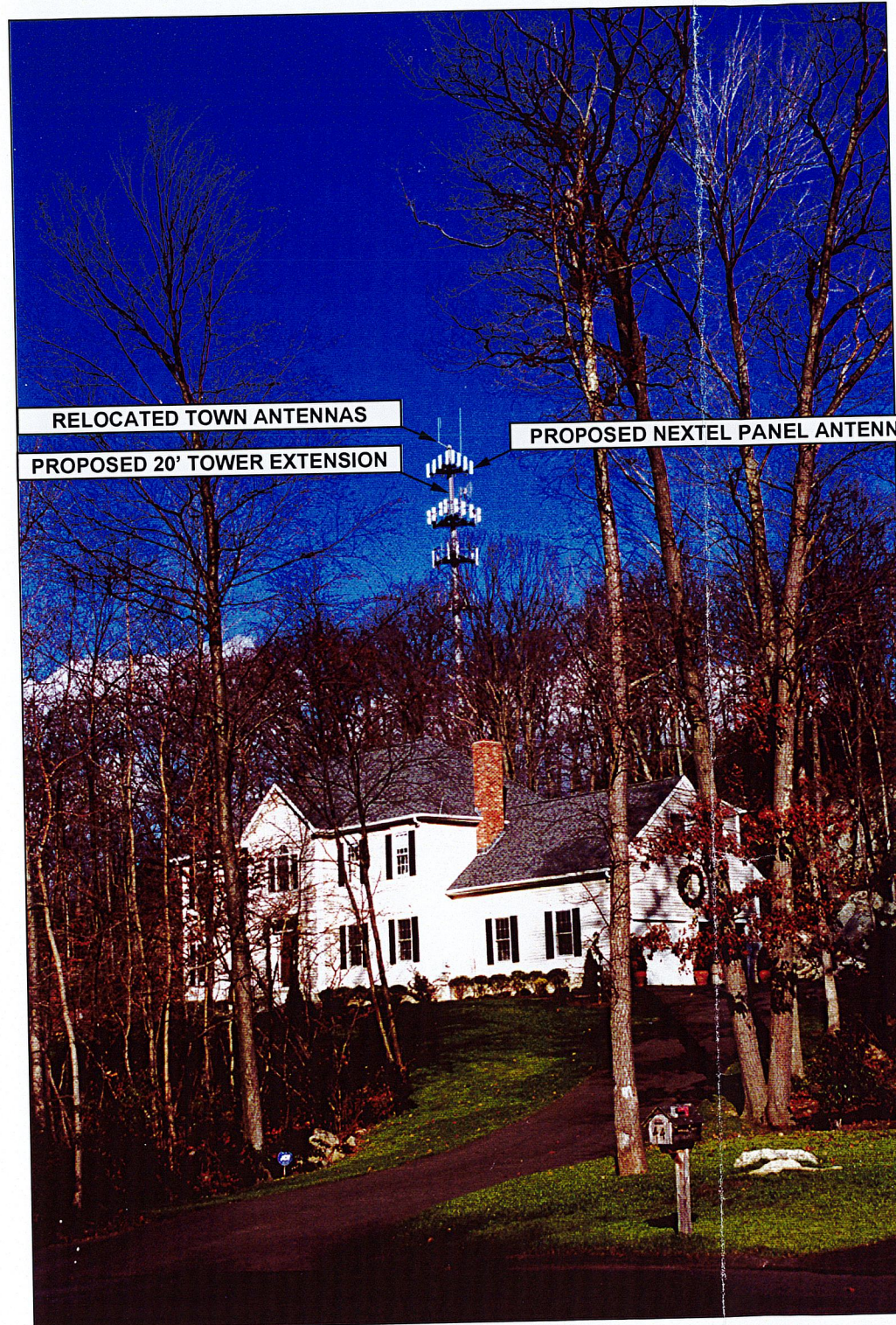
PHOTOSIMULATION



**VIEW No.5: STEPHEN WOODS DRIVE, .10 MILES SOUTH OF THE SITE**



**EXISTING VIEW**



**PHOTOSIMULATION**

**VIEW No. 5**

DATE: 8/31/2004

**URS**

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Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

PROJECT #: NX1010/36918549.00000

**NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422**



**VIEW No.6: STEPHEN WOODS DRIVE, .07 MILES SOUTHWEST OF THE SITE**



**EXISTING VIEW**



**PHOTOSIMULATION**

**VIEW No. 6**

DATE: 8/31/2004

**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

PROJECT #: NX1010/36918549.00000

**NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422**



VIEW No.7: STEPHEN WOODS DRIVE, .07 MILES SOUTHWEST OF THE SITE



EXISTING VIEW



PHOTOSIMULATION

VIEW No. 7

DATE: 8/31/2004

**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566  
PROJECT #: NX1010/36918549.00000

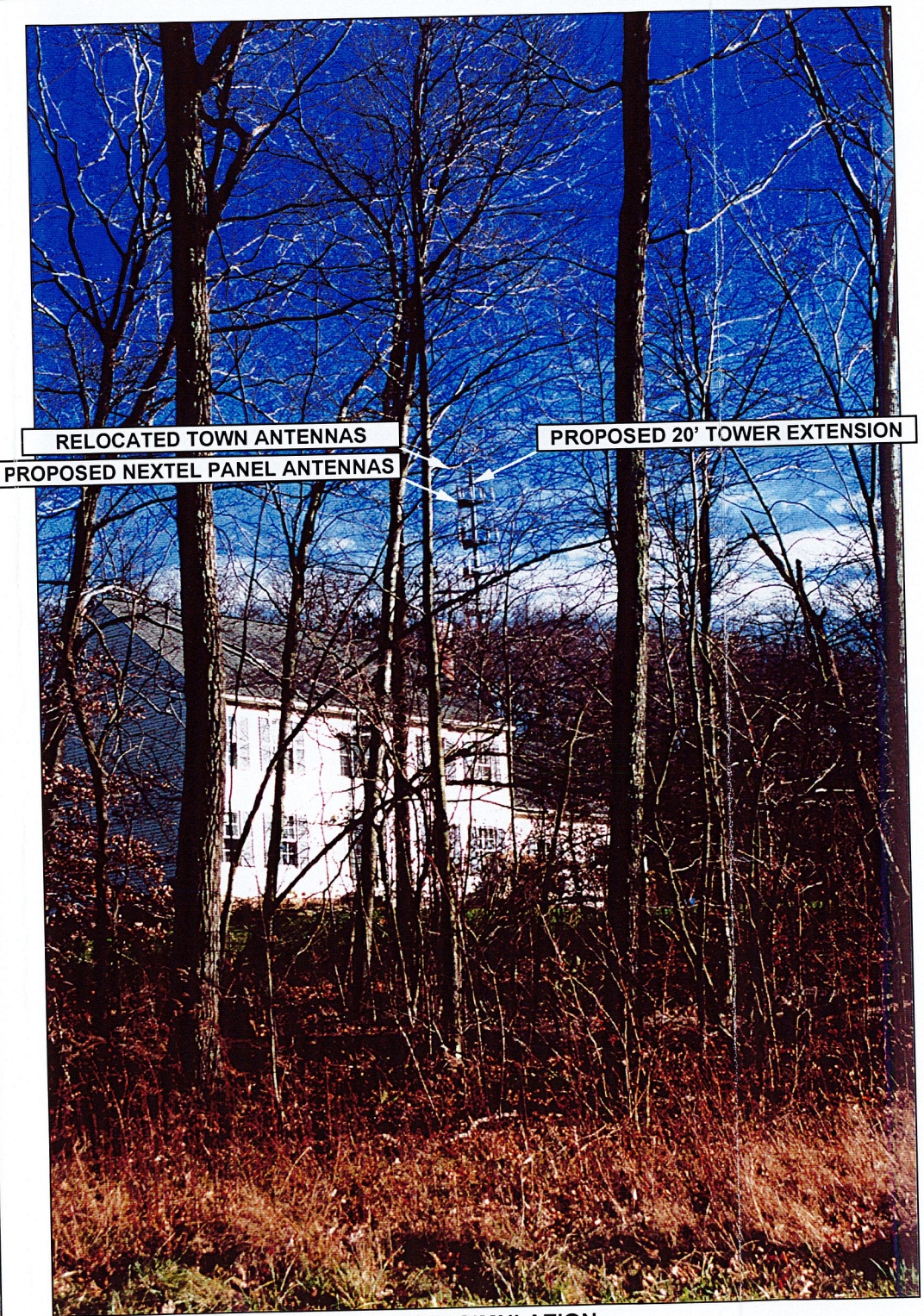
NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422



VIEW No.8: OLD BLUE HILLS ROAD & STEPHEN WOODS DRIVE, .10 MILES NORTHWEST OF THE SITE



EXISTING VIEW



PHOTOSIMULATION

VIEW No. 8

DATE: 8/31/2004

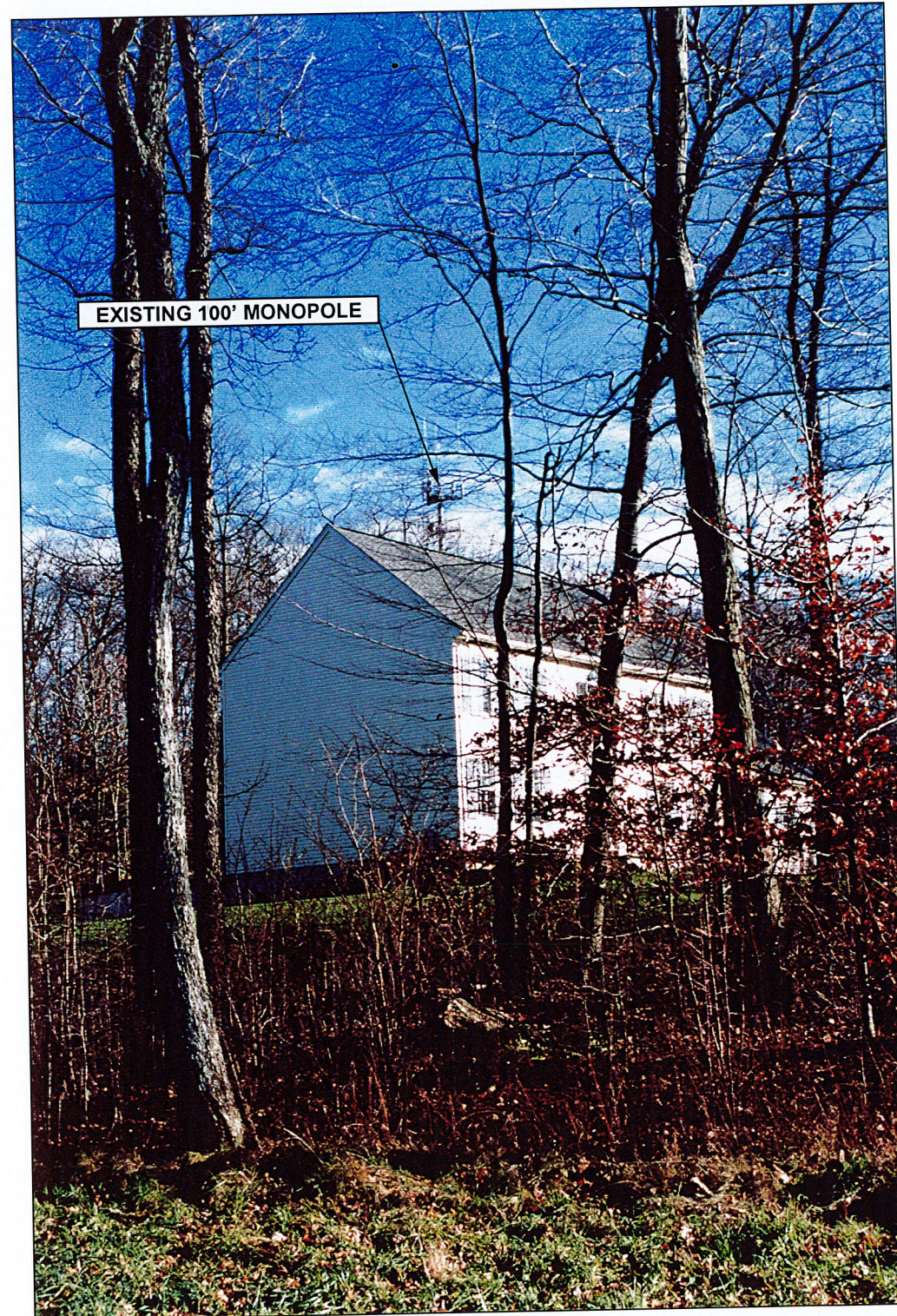
**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566  
PROJECT #: NX1010/369185-49.00000

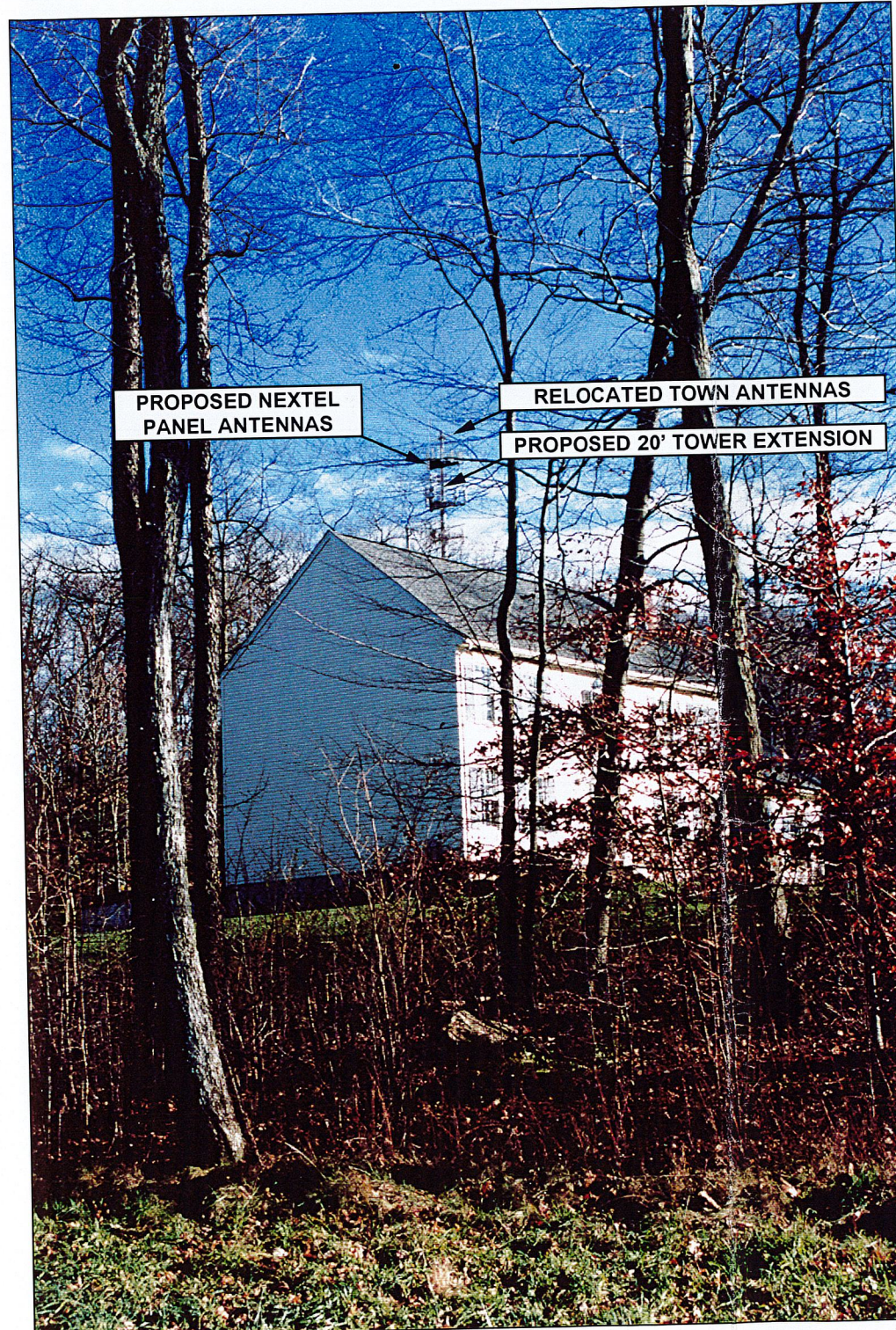
NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422



**VIEW No.9: OLD BLUE HILLS ROAD, .10 MILES NORTHWEST OF THE SITE**



**EXISTING VIEW**



**PHOTOSIMULATION**

**VIEW No. 9**

DATE: 8/31/2004

**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

PROJECT #: NX1010/369185-49.00000

**NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422**



VIEW No.10: OLD BLUE HILLS ROAD, .08 MILES NORTH OF THE SITE



EXISTING 100' MONOPOLE

EXISTING VIEW



PROPOSED 20' TOWER EXTENSION

RELOCATED TOWN ANTENNAS

PROPOSED NEXTEL PANEL ANTENNAS

PHOTOSIMULATION

VIEW No. 10

DATE: 8/31/2004

**URS**

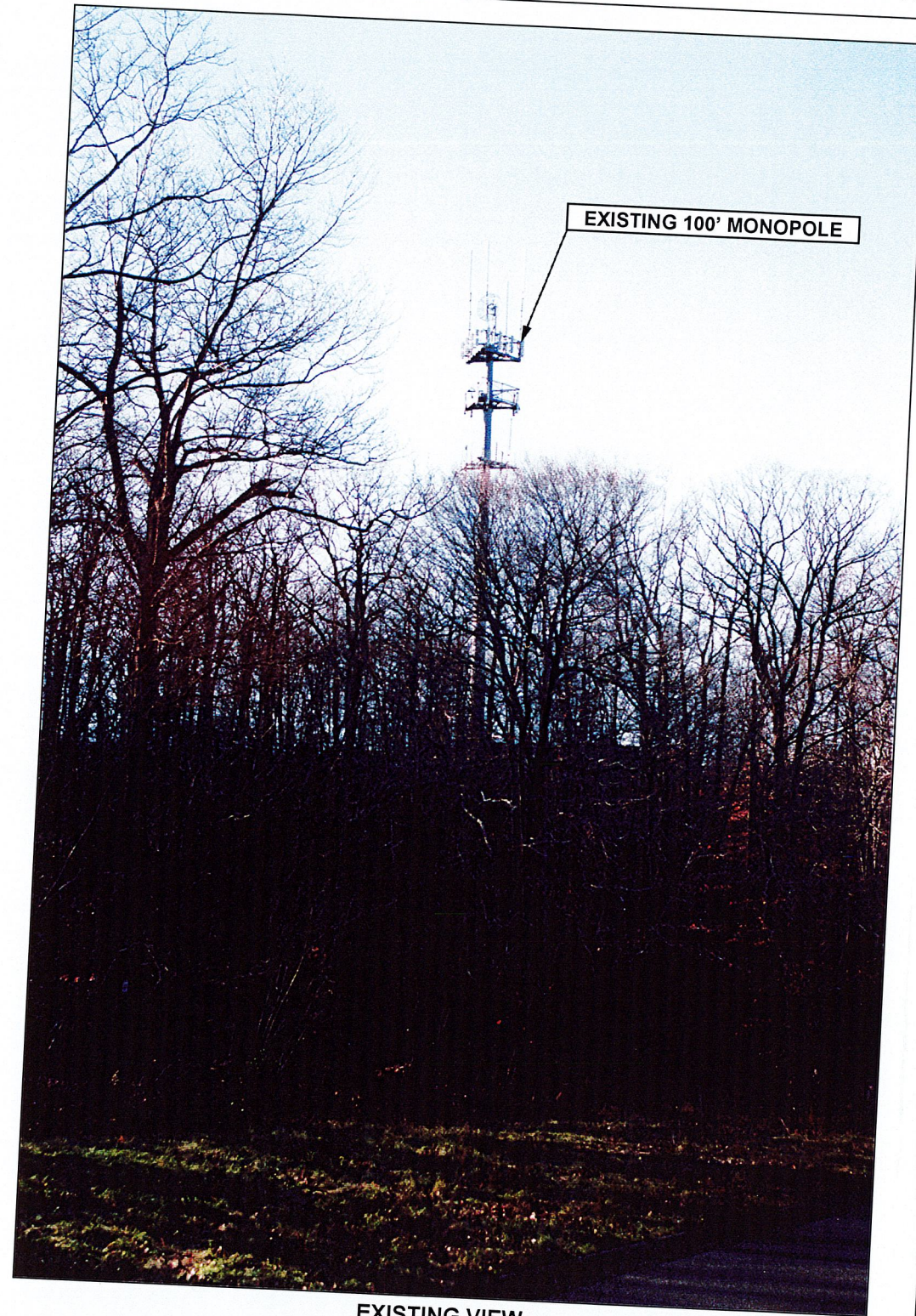
URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

PROJECT #: NX1010/36918549.00000

NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422

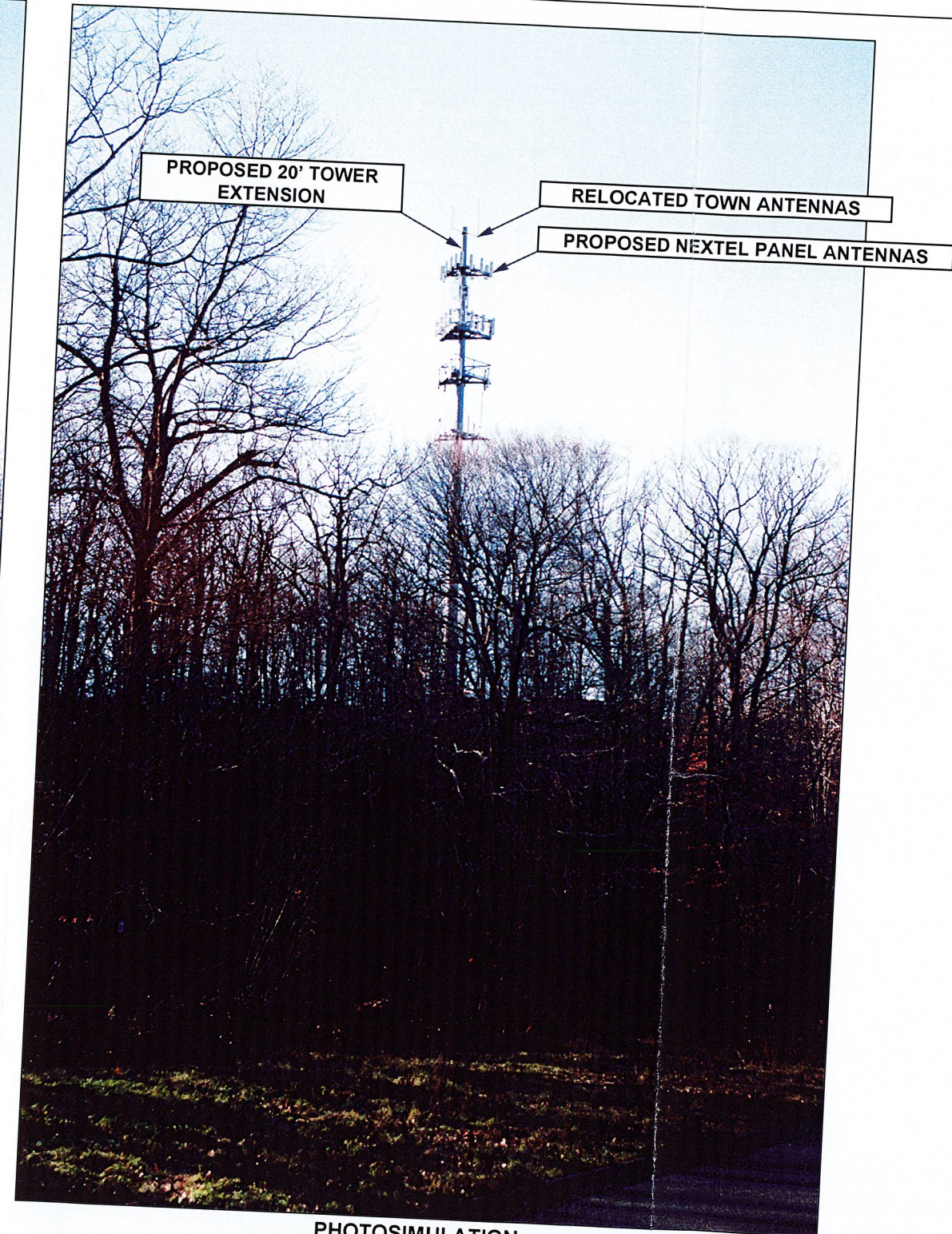


VIEW No.11: OLD BLUE HILLS ROAD, .10 MILES EAST OF THE SITE



EXISTING 100' MONOPOLE

EXISTING VIEW



PROPOSED 20' TOWER  
EXTENSION

RELOCATED TOWN ANTENNAS

PROPOSED NEXTEL PANEL ANTENNAS

PHOTOSIMULATION

VIEW No. 11

DATE: 8/31/2004

**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

PROJECT #: NX1010/36918549.00000

NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422



VIEW No.12: OLD BLUE HILLS ROAD, .26 MILES EAST OF THE SITE



VIEW No. 12

DATE: 8/31/2004

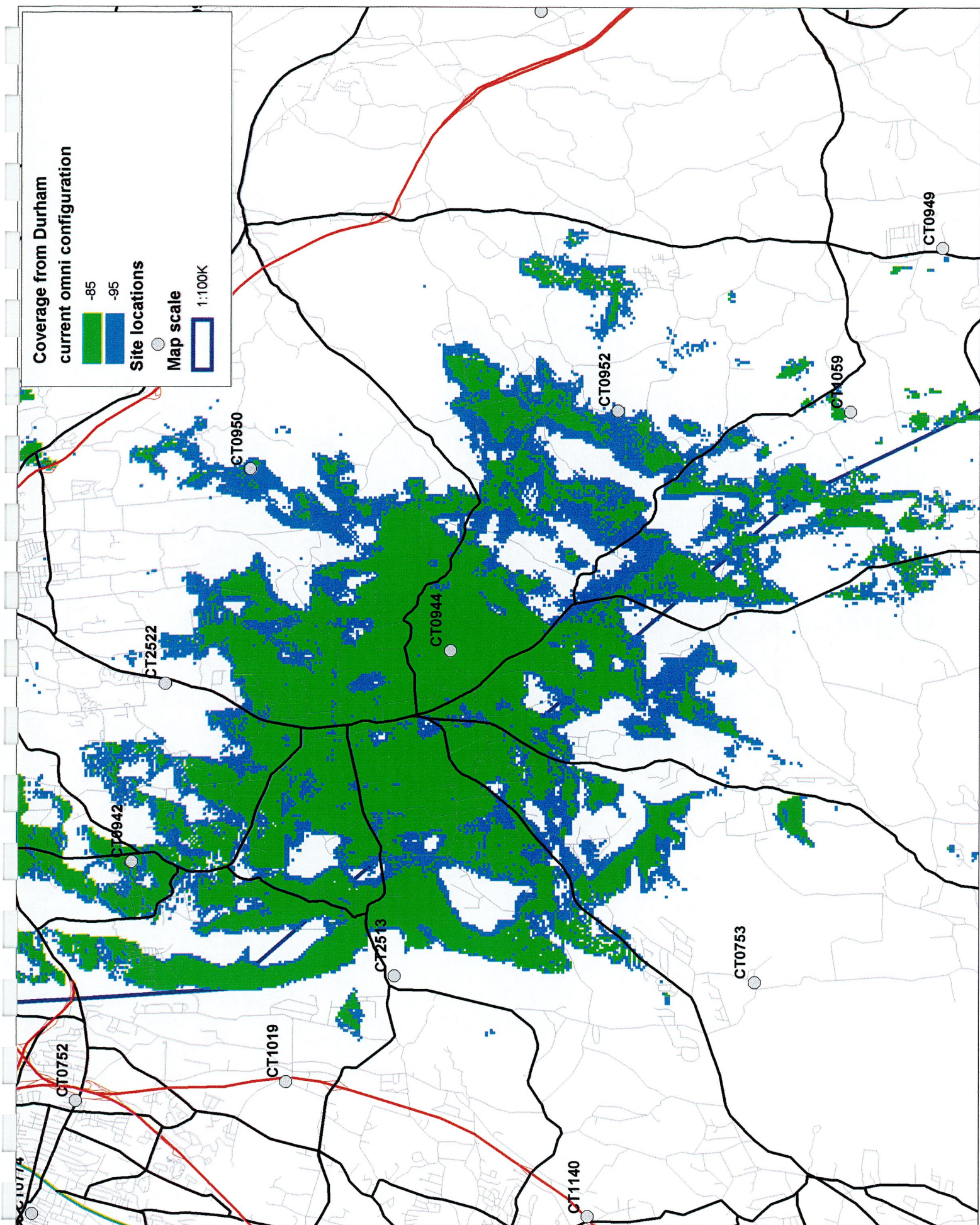
**URS**

URS Corporation AES  
795 Brook St, Bldg 5  
Rocky Hill, CT 06067  
Tel. 860-529-8882  
Fax 860-529-5566

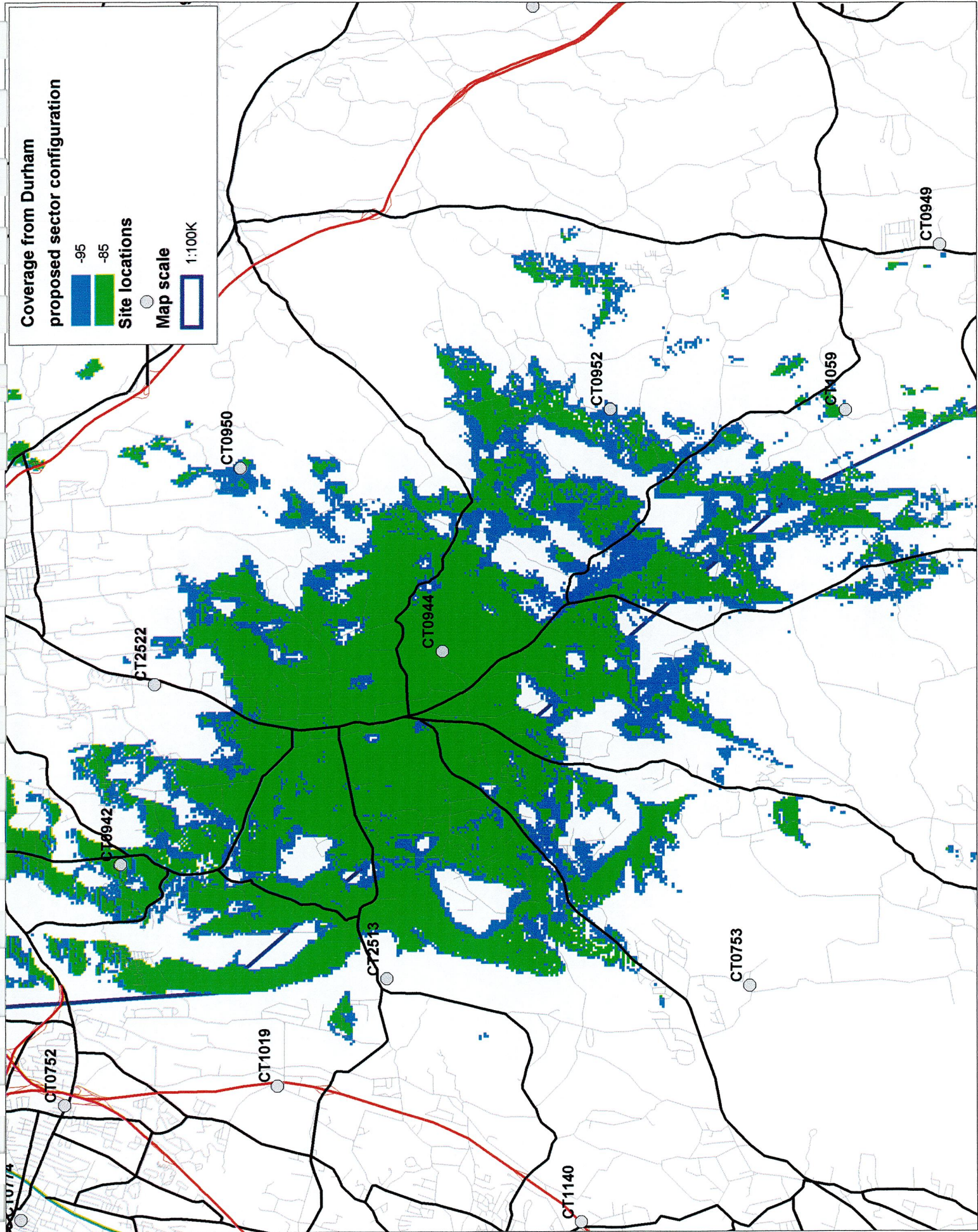
PROJECT #: NX1010/36918549.00000

NEXTEL  
CT-0944  
OLD BLUE HILLS ROAD  
DURHAM, CONNECTICUT 06422

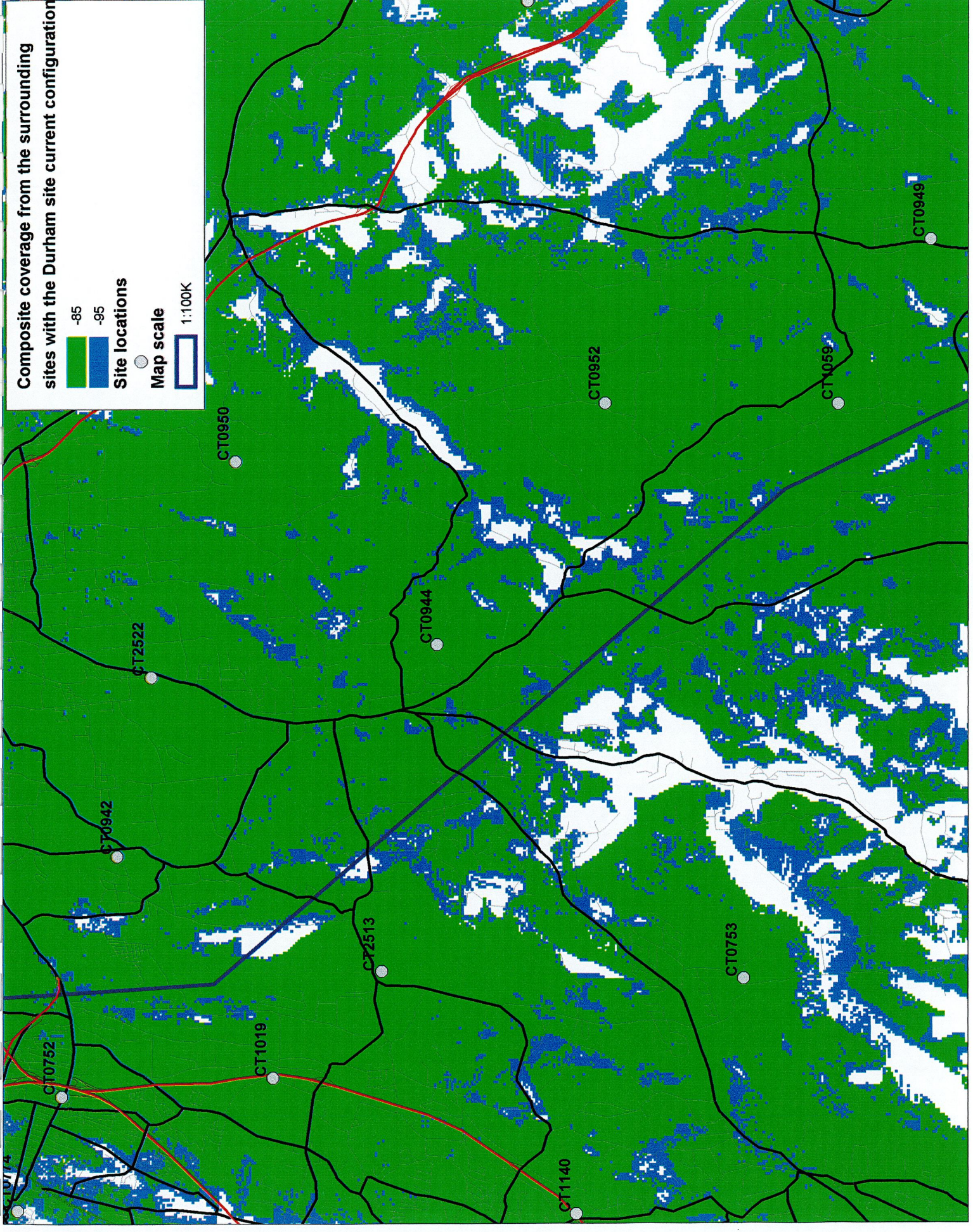














Composite coverage from the surrounding sites with the Durham site proposed configuration

- 95
- 85
- Site locations
- Map scale
- 1:100K

