

ATTACHMENT 1

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Statement of Public Need

The proposed tower facility along Black Rock Turnpike will provide reliable wireless communications services to a large portion of the Redding Ridge area in the Town of Redding. The facility is needed by AT&T in conjunction with other existing and proposed facilities to provide reliable services to the public that is not currently provided in this part of Redding. Attached are Radio Frequency Engineering coverage plots depicting the "Current Coverage" provided by AT&T's existing facilities in this area of the state and "Proposed Coverage" as predicted from the proposed tower site.

Radio Frequency Analysis Report

S2033

186 Black Rock Turnpike, Redding, CT



March 25, 2014



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1. Overview

C Squared Systems was retained by New Cingular Wireless PCS, LLC (“AT&T”) to investigate the extent of coverage that could be potentially obtained by constructing the proposed wireless communications facility at 186 Black Rock Turnpike, Redding, CT at 150 feet AGL.

AT&T is licensed by the FCC to provide wireless communications services throughout the State of Connecticut including the Town of Redding where the proposed facility would be located.

This report addresses AT&T’s need for the proposed wireless facility and confirms that there are no other suitable existing structures that could address the coverage gaps in their wireless communications network. The coverage analysis completed by C Squared Systems confirms: AT&T has a gap in reliable service in Redding, and that the Proposed Facility provides AT&T with coverage in that service gap. Included as attachments in this report are coverage maps detailing the existing network and expected coverage from the proposed facility, pertinent site information, terrain and network layout maps.

2. Coverage Objective

There is a significant coverage deficiency in the existing AT&T wireless communications network along Black Rock Turnpike, Cross Highway and the surrounding residential areas in Redding, CT. A deficiency in coverage is evidenced by the inability to adequately and reliably transmit/receive quality calls and/or utilize data services offered by the network. Seamless reliable coverage provides users with the ability to successfully originate, receive, and maintain quality calls and/or utilize data applications throughout a service area. Overlapping coverage is required for users to be able to move throughout the service area and reliably “hand-off” between cells to maintain uninterrupted connections.

Due to terrain characteristics and the distance between the targeted coverage area and the existing sites, AT&T’s options to provide services in this area are quite limited (maps of the terrain in this area and the distance to neighboring AT&T sites from the proposed site are included as Attachments 1 & 2, respectively.) AT&T’s network requires a deployment of antennas throughout the area to be covered. These antennas are connected to receivers and transmitters that operate in a limited geographic area known as a “cell.” AT&T’s wireless network, including their wireless handsets and devices, operate by transmitting and receiving low power radio frequency signals to and from these cell sites. The signals are transferred to and from the landline telephone network and routed to their destinations by sophisticated electronic equipment. The size of the area served by each cell site is dependent on several factors, including the number of antennas used, the height at which the antennas are deployed, the topography of the land, vegetative cover and natural or man-made obstructions in the area. As customers move throughout the service area, the transmission from the portable devices is automatically transferred to the AT&T facility with the best connection to the device, without interruption in service provided that there is overlapping coverage from the cells.

In order to define the extent of the coverage gap to be filled, both propagation modeling and real-world drive testing has been conducted in the area of Redding around the subject areas. Propagation modeling uses PC software to determine the network coverage based on the specific technical parameters of each site including, but not limited to, location, ground elevation, antenna models, antenna heights, and also databases of terrain and ground cover in the area. Drive testing consists of traveling along area roadways in a vehicle equipped with a sophisticated setup of test devices

and receivers that collect a variety of network performance metrics. The data are then processed and mapped in conjunction with the propagation modeling to determine the coverage gaps.

Analysis of the propagation modeling and drive testing in and around Redding reveal that AT&T's network is unreliable throughout much of the area due to gaps in coverage, and that there is a service deficiency as a result. In order to fill in these coverage gaps and improve the network reliability to Redding, a new facility is needed in the area.

Table 1 below approximates the current coverage gap of AT&T's 850 MHz UMTS technology in the vicinity of the proposed site.

	Existing 850 MHz UMTS Coverage Gap	
Population:¹	(\geq -74 dBm)	4515
	(\geq -82 dBm)	5696
Area (mi²):	(\geq -74 dBm)	17.14
	(\geq -82 dBm)	21.53
Roadway (mi):	Main:	11.14
	Secondary:	54.77
	Total:	65.91

Table 1: Estimated Existing Coverage Gap Statistics

¹ Population figures are based upon 2010 US Census Block Data

Included with this report are Attachments 1-6, which are explained below to help describe AT&T's network in and around Redding, and the need for the proposed facility.

- Attachment 1: *3D Terrain Map* details the terrain features around the area of deficient service being targeted by the proposed site in Redding. These terrain features play a key role in determining site designs and dictating the unique coverage achieved from a given location. This map is included to provide a visual representation of the ridges and valleys that must be considered when siting a wireless facility. The darker green and blue shades correspond to lower elevations, whereas the yellow, orange, and red shades indicate higher elevations.
- Attachment 2: *Map of Distance to Neighbor Sites – Redding* provides an overview of AT&T's network of sites in the area, with distances shown from the proposed Redding site to the existing sites in the surrounding area.
- Attachment 3: *Neighbor Site Data and Distance to Proposed Site* provides site specific information of existing neighboring sites used to perform the coverage analysis provided in Attachments 4 and 5.
- Attachment 4: *“Existing 850 MHz UMTS Coverage” for the Current AT&T Network* depicts 850 MHz UMTS coverage from existing sites and demonstrates that there are currently gaps in 850 MHz UMTS coverage effecting service on Black Rock Turnpike, Cross Highway and the surrounding residential neighborhoods in Redding. The coverage shown is where the signal strengths are: > -74 dBm (minimum level required for reliable in-building service at 850 MHz) and, > -82 dBm (minimum required for reliable in-vehicle service at 850 MHz). In an effort to provide the required levels of coverage to these areas, AT&T is proposing to install a wireless facility at the 186 Black Rock Turnpike location.
- Attachment 5: *“Existing & Proposed 850 MHz UMTS Coverage” with Redding Site for the AT&T Network* shows how this proposed site would fill in the existing coverage gaps and improve AT&T's 850 MHz UMTS network within the targeted areas, as detailed in Table 2.
- Attachment 6: *Connecticut DOT Average Annual Daily Traffic Data - Redding* shows the available vehicular traffic volume data for the subject area from the Connecticut Department of Transportation. This data shows as many as 7,700 vehicles per day passing through the subject area on Black Rock Turnpike.

Table 2 below lists the coverage statistics that were compiled for each frequency band of the proposed site:

	Incremental Coverage from Proposed Site (850 MHz)	
Population Coverage:²	(\geq -74 dBm)	1761
	(\geq -82 dBm)	2245
Area Covered (mi²):	(\geq -74 dBm)	7.39
	(\geq -82 dBm)	9.81
Roadway Coverage (mi):	Main:	5.04
	Secondary:	27.39
	Total:	32.43

Table 2: Coverage Statistics

² Population figures are based upon 2010 US Census Block Data

3. Conclusion

AT&T has identified an area of deficient coverage affecting a significant portion of Redding, CT, including key traffic corridors through the residential areas of the town. The proposed Redding facility will bring the needed fill-in coverage to significant portions of Black Rock Turnpike, Cross Highway and the residential neighborhoods in the vicinity of these roads, all of which are currently within this coverage gap of AT&T's network.

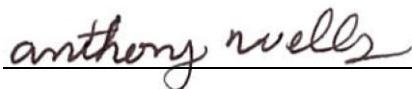
No existing structures were identified and available that would be able to satisfy the coverage requirements needed for this area. The location and the minimum height selected were chosen to achieve an optimal balance between meeting coverage objectives, overcoming the tree line for signal propagation, minimizing the aesthetic impact to the community, and future collocation.

As discussed in this report and depicted in the attached plots, the proposed AT&T site will provide the public need for service in this area, by providing an appropriate coverage footprint for the Redding community along with effective connectivity to the rest of AT&T's existing network.

Without a site in this area, at the height requested, significant gaps in service will exist within the Town of Redding, and the identified public need for reliable wireless services in this area will not be met.

4. Statement of Certification

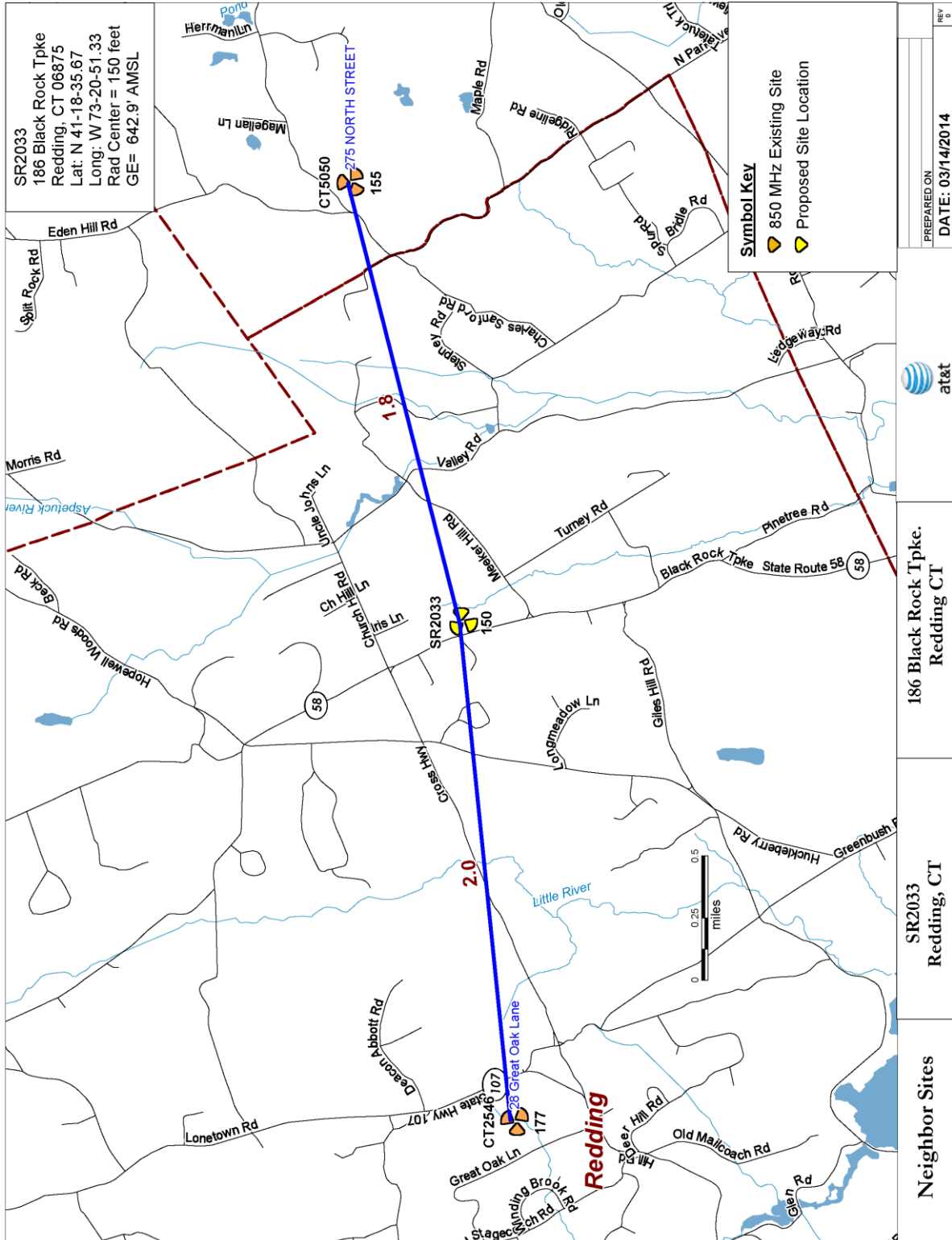
I certify to the best of my knowledge that the statements in this report are true and accurate.



Anthony Wells
C Squared Systems, LLC

March 25, 2014

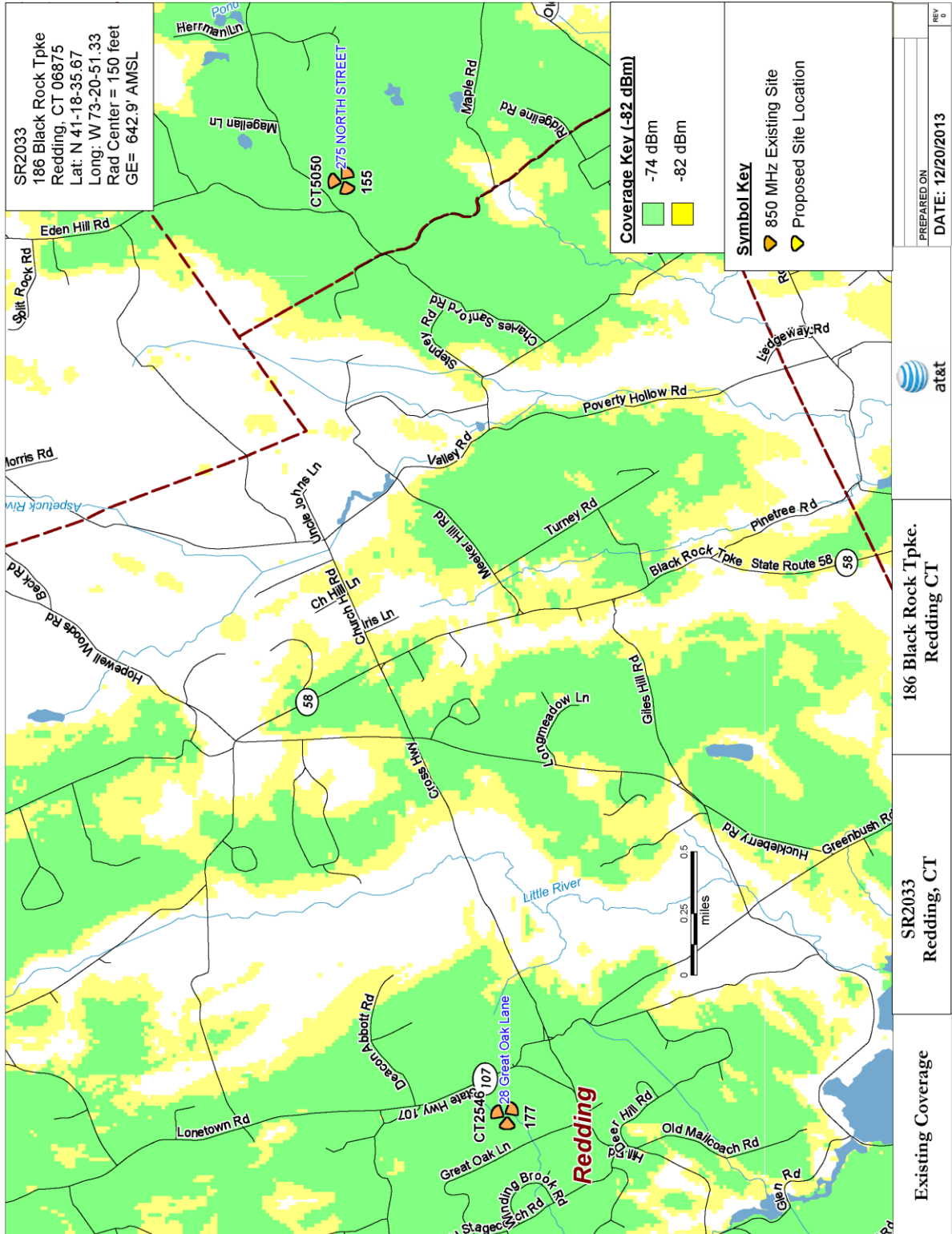
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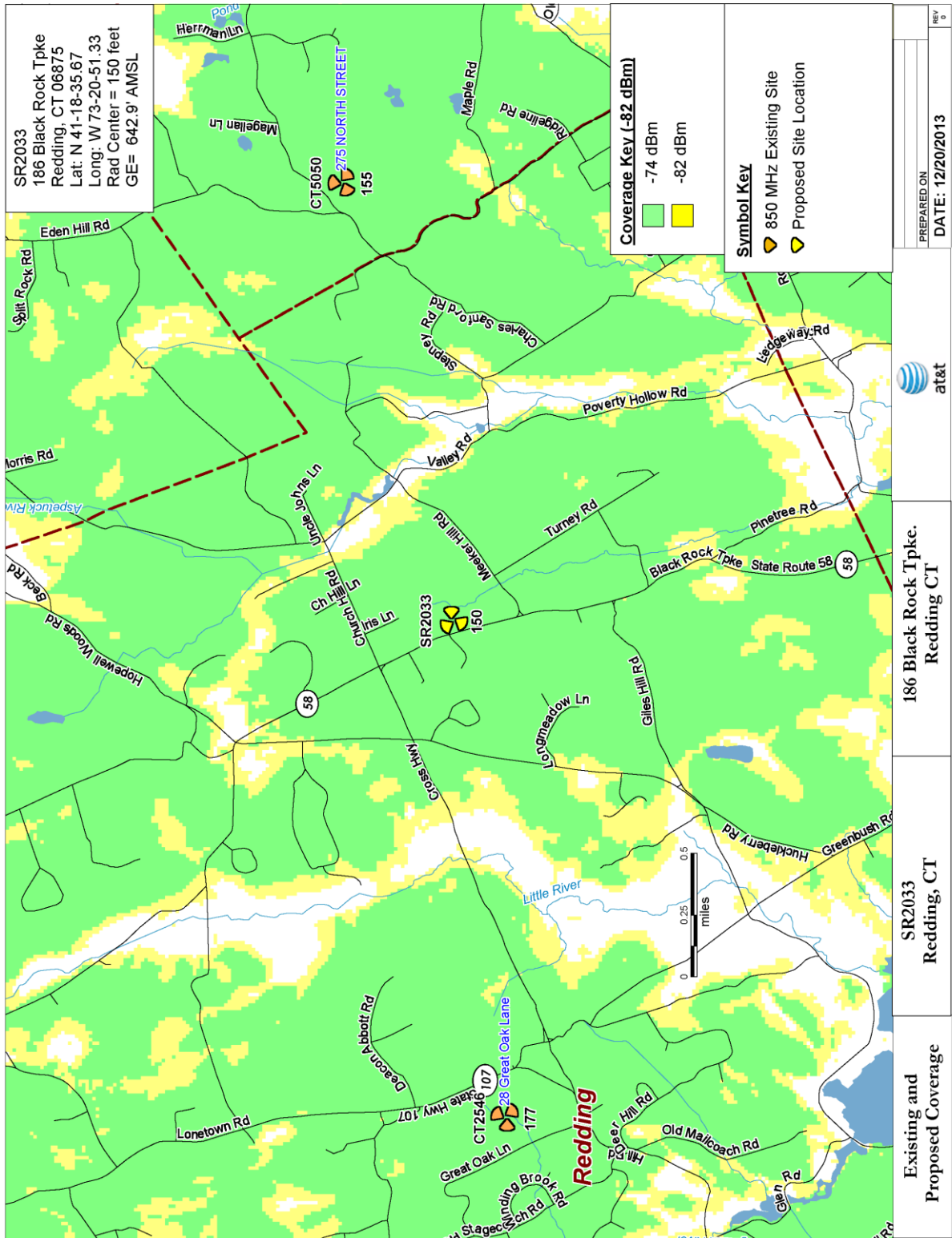
Attachment 2: Map of Distance to Neighbor Sites – Redding

Site Name	Address	Town	Latitude	Longitude	Antenna Centerline (feet)	Distance to Proposed Site (miles)	Structure Type	Ground Elevation (feet)
CT2144	230 GUINEA ROAD	MONROE	41.342	-73.2745	236	4.4	Lattice Tower	583
CT2152	Old Redding Road	Redding	41.287	-73.4382	180	5.0	Lattice Tower	687
CT2320	Wayside Lane	Redding	41.282	-73.4074	105	3.7	Unipole	573
CT5050	275 NORTH STREET	Easton	41.316	-73.3136	155	1.8	Monopole	550
CT5446	206 EVERETT ROAD	EASTON	41.29	-73.2827	118	3.6	Monopole	443
CT5515	4 DITTMAR ROAD	REDDING	41.34	-73.392	98	3.1	Monopole	810
CT2546	28 GREAT OAK LANE	REDDING	41.307	-73.3863	167	2.0	Unipole	605
CT5186	474 MAIN STREET	MONROE	41.326	-73.2664	140	4.4	Monopole	450

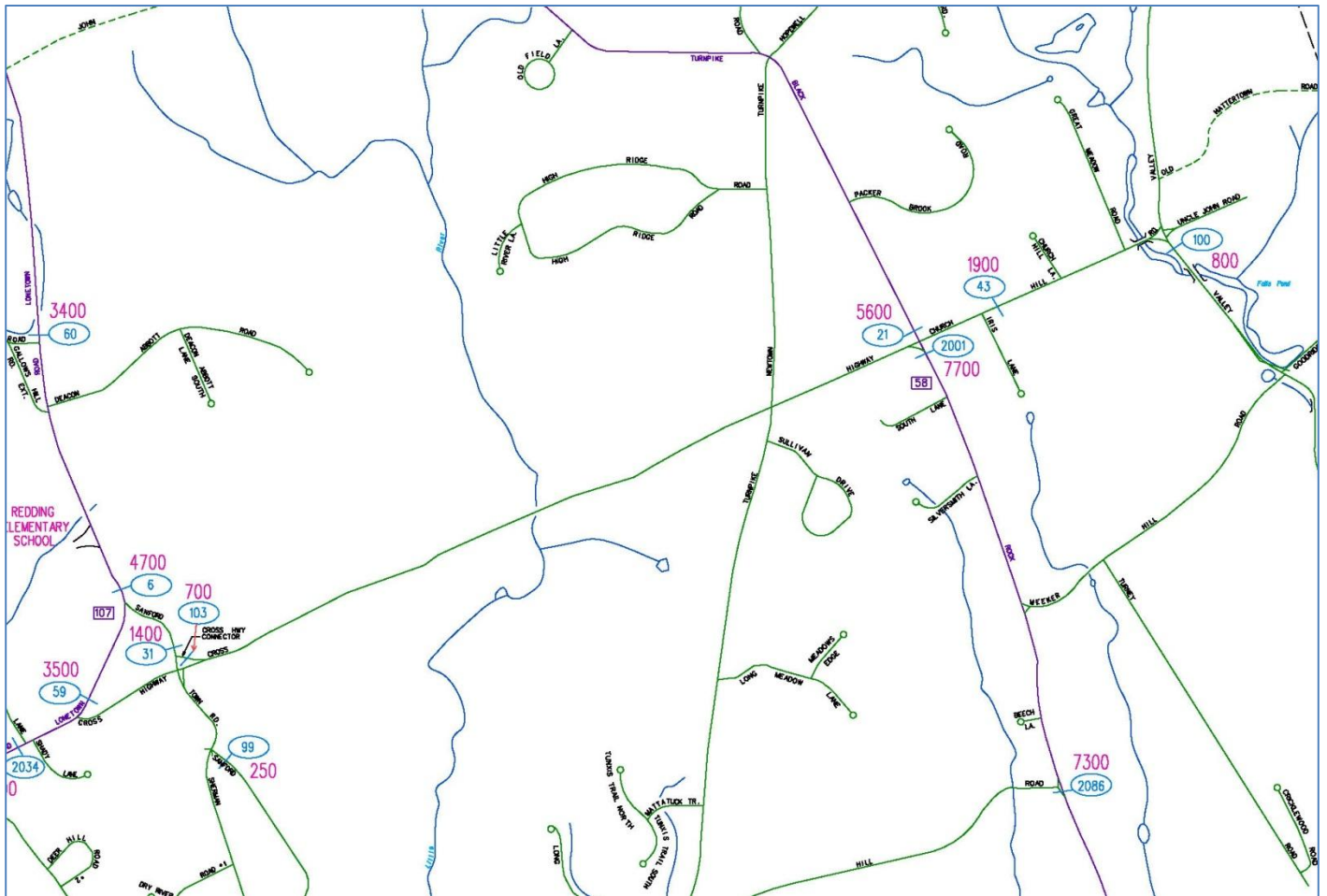
Attachment 3: Neighbor Site Data and Distance to Proposed Site



Attachment 4: "Existing 850 MHz UMTS Coverage" for the Current AT&T Network



Attachment 5: “Existing & Proposed 850 MHz UMTS Coverage” with Redding Site for the AT&T Network



Attachment 6: Connecticut DOT Average Annual Daily Traffic Data – Redding