DOCKET NO. 448 – Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a telecommunications facility located at Orange Tax Assessor Map 77, Block 3, Lot 1, 831 Derby Milford Road, Orange, Connecticut.	Connecticut Siting Council December 4, 2014

DRAFT Findings of Fact

Introduction

1. Cellco Partnership d/b/a Verizon Wireless (Cellco), in accordance with provisions of Connecticut General Statutes (C.G.S.) § 16-50g, et seq, applied to the Connecticut Siting Council (Council) on May 13, 2014 for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, maintenance, and operation of a 100-foot wireless telecommunications facility at 831 Derby Milford Road in Orange, Connecticut (refer to Figure 1). (Cellco 1 pp. 1, 2)

2. Cellco is a Delaware limited liability company with an office at 99 East River Drive, East Hartford, Connecticut. Cellco is licensed by the Federal Communications Commission (FCC) to construct and operate a personal wireless services system in Connecticut. The company does not conduct any business in the State of Connecticut other than the provision of wireless services under FCC rules and regulations. (Cellco 1, p. 4)

3. The party in this proceeding is Cellco. The intervenors in this proceeding are Albert Subbloie, Jacqueline Barbara, Glenn MacInnes, Jill MacInnes, Gayle Slossberg, Senator 14th District, James Maroney, State Representative 119th District, Themis Klarides, State Representative 114th District, and Paul Davis, State Representative 117th District, grouped as intervenors with the same interests in accordance with C.G.S. § 16-50n(c), and herein after referred to as the Intervenors. (Record -Evidentiary hearing continuation memo dated July 18, 2014; Evidentiary hearing continuation memo dated July 30, 2014)

4. The purpose of the proposed facility is to provide wireless services to the west-central portion of Orange, eastern Shelton and southeast Derby. (Cellco 1, Tab 6)

5. Pursuant to C.G.S. § 16-50*l*(b), public notice of the filing of the application was published in the New Haven Register on May 8 and May 9, 2014. (Cellco 1, p. 5; Cellco 6)

6. Pursuant to C.G.S. § 16-50*l*(b), notice of the application was provided to all abutting property owners by certified mail. Confirmation of delivery was received from all notices sent to abutting property owners. (Applicant 1, pp. 5-6, Tab 4; Cellco 3, response 1)

7. On May 13, 2014, Cellco provided notice to all federal, state and local officials and agencies listed in C.G.S. § 16-50*l*(b). (Cellco 1, p. 5, Tab 2)

8. Upon receipt of the application, the Council sent a letter to the Town of Orange and the City of Shelton, which is within 2,500 feet of the proposed facility, on May 14, 2014, as notification that the application was received and is being processed, in accordance with C.G.S. §16-50gg. (Record)

9. During a regular Council meeting on June 12, 2014, the application was deemed complete and the public hearing schedule approved by the Council. Due to the unavailability of a hearing venue in the Town of Orange, Shelton City Hall was selected as a suitable alternative since the proposed tower site is within 2,500 feet of the Shelton City line and within three miles of the Shelton the City Hall. (Council Meeting Minutes of June 12,2014; Council's June 24, 2014 response to Slossberg letter of June 17, 2014)

10. Pursuant to C.G.S. §16-50m, the Council published legal notice of the date and time of the public hearing in the New Haven Register on June 17, 2014. (Record)

11. In compliance with the Regulations of Connecticut State Agencies (R.C.S.A.) §16-50j-21, Cellco installed a four-foot by six-foot sign at the entrance of the subject property on July 2, 2014. The sign presented information regarding the project and the Council's public hearing. (Cellco 5)

12. The Council and its staff conducted an inspection of the proposed site on July 17, 2014, beginning at 2:00 p.m. During the field inspection, Cellco flew a red balloon at the proposed site to simulate the height of the proposed tower. The balloon was initially located approximately 47 feet from the proposed tower location. This initial location had no material effect on visibility from locations off-site, as it was four feet higher in ground elevation than the proposed tower site. The balloon was moved to the proposed tower location during the field review. A balloon was aloft from 7:45 a.m. to 6:00 p.m. for the convenience of the public. (Hearing Procedure Memo dated June 24, 2014; Tr. 1, pp. 29-31)

13. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public hearing on July 17, 2014, beginning with the evidentiary portion of the hearing at 3:00 p.m. and continuing with the public comment session at 7:05 p.m. at the Shelton City Hall, 54 Hill Street, Shelton, Connecticut. (Council's Hearing Notice dated June 13, 2014; Transcript 1 July 17 – 3:00 p.m. [Tr. 1], p. 1; Transcript 2 July 17– 7:05 p.m. [Tr. 2], p. 120)

14. The Council continued the public evidentiary hearings on August 12, September 16, and October 23, 2014, at the Council's offices at 10 Franklin Square, New Britain, Connecticut. (Council's Continued Hearing Memos dated July 18, August 13, September 17, 2014; Transcript 3 August 12 – 1:00 p.m. [Tr. 3], p. 165; Transcript 4 September 16 – 11:02 a.m. [Tr. 4], p. 329; Transcript 5 October 23 – 11:05 a.m. [Tr. 5], p. 568)

State Agency Comment

15. Pursuant to C.G.S. § 16-50j (g), on June 13, 2014 and October 23, 2014, the following State agencies were solicited by the Council to submit written comments regarding the proposed facility: Department of Energy and Environmental Protection (DEEP); Department of Public Health (DPH); Council on Environmental Quality (CEQ); Public Utilities Regulatory Authority (PURA); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Agriculture (DOAg); Department of Transportation (DOT); Connecticut Airport Authority (CAA); State Historic Preservation Office (SHPO); and Department of Emergency Services and Public Protection (DESPP). (Record)

16. The Council received a response from the DPH Drinking Water Section stating that the site is not within a public water supply source area. (DPH Comments dated May 28, 2014)

17. The following agencies did not respond to the Council's request for comment on the application: DOT, DEEP, CEQ, PURA, OPM, DECD, DOAg, CAA, SHPO, and DESPP. (Record)

Municipal Consultation

18. Cellco commenced the 90-day pre-application municipal consultation process by meeting with the Orange First Selectman James Zeoli on January 31, 2014. Cellco provided copies of the technical report and discussed the project with First Selectman Zeoli. Cellco also sent copies of the technical report to the City of Shelton on January 31, 2014, as Shelton is within 2,500 feet of the proposed project. (Cellco 1, p. 20)

19. Cellco appeared before the Orange Planning and Zoning Commission on February 18, 2014 to discuss the proposed facility. At the meeting, the Commission requested that Cellco provide photosimulations of a tree tower design in the application, and that plantings be installed to screen views of ground equipment. (Cellco 1, p. 20; Tr. 1, p. 99)

20. Neither the Town of Orange nor the City of Shelton expressed interest in locating emergency service equipment at the site. (Cellco 1, p. 12)

Public Need for Service

21. In 1996, the United States Congress recognized a nationwide need for high quality wireless telecommunications services, including cellular telephone service. Through the Federal Telecommunications Act of 1996, Congress seeks to promote competition, encourage technical innovations, and foster lower prices for telecommunications services. (Council Administrative Notice Item No. 4)

22. In issuing cellular licenses, the Federal government has preempted the determination of public need for cellular service by the states, and has established design standards to ensure technical integrity and nationwide compatibility among all systems. Cellco is licensed by the Federal Communications Commission (FCC) to provide personal wireless communication service to Connecticut wireless markets, including the proposed service area. (Council Administrative Notice Item No. 4; Cellco 1, p. 4, Tab 4)

23. Section 253 of the Telecommunications Act of 1996 prohibits any state or local statute or regulation, or other state or local legal requirement from prohibiting or having the effect of prohibiting the ability of any entity to provide any interstate or intrastate telecommunications service. (Council Administrative Notice Item No. 4)

24. Section 704 of the Telecommunications Act of 1996 prohibits local and state entities from discriminating among providers of functionally equivalent services and from prohibiting or having the effect of prohibiting the provision of personal wireless services. This section also requires state or local governments to act on applications within a reasonable period of time and to make any denial of an application in writing supported by substantial evidence in a written record. (Council Administrative Notice Item No. 4)

25. Section 704 of the Telecommunications Act of 1996 also prohibits any state or local entity from regulating telecommunications towers on the basis of the environmental effects of radio frequency emissions, which include effects on human health and wildlife, to the extent that such towers and equipment comply with FCC's regulations concerning such emissions. (Council Administrative Notice Item No. 4)

26. In February 2009, as part of the American Recovery and Reinvestment Act, Congress directed the FCC to develop a National Broadband Plan to ensure every American has "access to broadband capability." Congress also required that this plan include a detailed strategy for achieving affordability and maximizing use of broadband to advance "consumer welfare, civic participation, public safety and homeland security, community development, health care delivery, energy independence and efficiency, education, employee training, private sector investment, entrepreneurial activity, job creation and economic growth, and other national purposes." (Council Administrative Notice Item No. 18)

27. Section 706 of the Telecommunications Act of 1996 requires each state commission with regulatory jurisdiction over telecommunications services to encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans, including elementary and secondary schools, by utilizing regulating methods that promote competition in the local telecommunications market and remove barriers to infrastructure investment. (Council Administrative Notice Item No. 4)

28. In December 2009, President Barack Obama recognized cell phone towers as critical infrastructure vital to the United States. The Department of Homeland Security, in collaboration with other Federal stakeholders, State, local, and tribal governments, and private sector partners, has developed the National Infrastructure Protection Plan to establish a framework for securing our resources and maintaining their resilience from all hazards during an event or emergency. (Council Administrative Notice Item No. 11)

29. In February 2012, Congress adopted the Middle Class Tax Relief and Job Creation Act to advance wireless broadband service for both public safety and commercial users. The Act established the First Responder Network Authority to oversee the construction and operation of a nationwide public safety wireless broadband network. Section 6409 of the Act contributes to the twin goals of commercial and public safety wireless broadband deployment through several measures that promote rapid deployment of the network facilities needed for the provision of broadband wireless services. (Council Administrative Notice Item No. 8)

30. In June 2012, President Barack Obama issued an Executive Order to accelerate broadband infrastructure deployment declaring that broadband access is a crucial resource essential to the nation's global competitiveness, driving job creation, promoting innovation, expanding markets for American businesses and affording public safety agencies the opportunity for greater levels of effectiveness and interoperability. (Council Administrative Notice Item No. 20)

31. Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, also referred to as the Spectrum Act, a state or local government may not deny and shall approve any request for collocation, removal or replacement of equipment on an existing wireless tower provided that this does not constitute a substantial change in the physical dimensions of the tower. The Federal Communications Commission defines a substantial change in the physical dimensions of a tower as follows:

a) An increase in the existing height of the tower by more than 10% or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater. Changes in height should be measured from the dimensions of the tower, inclusive of originally approved appurtenances and any modifications that were approved prior to the passage of the Spectrum Act.
b) Adding an appurtenance to the body of the tower that would protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater.
c) Installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four, or more than one new equipment shelter.
d) A change that entails any excavation or deployment outside the current site.
e) A change that would defeat the concealment elements of the tower.
f) A change that does not comply with conditions associated with the siting approval of the construction or modification of the tower, provided however that this limitation does not apply to any modification that is non-compliant only in a manner that would exceed the thresholds identified in (a) – (d).

(Council Administrative Notice Item No. 8; Council Administrative Notice Item No. 20)

32. According to state policy, if the Council finds that a request for shared use of a facility by a municipality or other person, firm, corporation or public agency is technically, legally, environmentally and economically feasible, and the Council finds that the request for shared use of a facility meets public safety concerns, the Council shall issue an order approving such shared use to avoid the unnecessary proliferation of towers in the state. (C.G.S. §16-50aa)

Existing and Proposed Wireless Services – Cellco

33. Six existing Cellco facilities located within four miles of the site are currently providing service to portions of the Orange-Shelton-Deby area. The locations of these facilities are listed below:
a) Ogg Meadow Road, Orange – Cellco is located at 160 feet on a 160-foot tower (Orange 2);
b) 700 Grassy Hill Road, Orange – Cellco is located at 120 feet on a 140-foot tower (Orange 3);
c) 528 Wheeler Farm Road, Milford – Cellco is located at 110 feet on a 120-foot tower (Milford NE);
d) 30 Oliver Terrace, Shelton, – Cellco is located at 140 feet on a 140-foot tower (Shelton 2);
e) 123 Minerva Street, Derby – Cellco is located at 68 feet within a church bell tower (Derby); and
f) 71 Pleasant Valley Road, Derby – Cellco is located at 107 feet on a 120-foot tower (Derby North).
(Cellco 1, pp. 2-3)

34. The proposed facility is designed to provide service to the existing wireless service gaps as well as to provide capacity relief to these adjacent Cellco facilities. (Cellco 1, p. 2; Tr. 4, pp. 295-297)

35. Cellco would deploy 700 MHz (long-term evolution - LTE) and 2100 MHz (advanced wireless service) equipment at the site. Both the 700 MHz and 2100 MHz would provide LTE data services. (Cellco 3, response 7)

36. The 700 MHz frequency is the base of the LTE network as it would provide coverage to a larger area than the 2100 MHz network, establishing the service area of a given sector. The 700 MHz frequency also penetrates vegetation better than the 2100 MHz frequency. (Intervenors 6, p. 15; Tr. 3, pp. 357-358)

37. The site would provide 700 MHz services to a 12.7 square mile area (refer to Figure 2) and 2100 MHz services to a 5.0 square mile area (refer to Figure 3). (Cellco 11, responses 21, 22)

38. Within the proposed service area, reliable service would be provided to existing wireless service gaps that total 1.2 square miles at 700 MHz and 2.0 square miles at 2100 MHz (refer to Figures 2 and 3). The service deficient areas include portions of Route 34, Route 110, and Route 121. (Cellco 11, responses 21, 22; Cellco 14, response 9)

39. Cellco intends to deploy 850 MHz and 1900 MHz frequencies at the proposed site to transmit CDMA voice services and data services at a later date. Cellco is still experiencing growth in CDMA data service demand. (Cellco 3, response 7; Tr. 3, pp. 218-219; Tr. 4, p. 511)

40. Similar service gaps exist on Cellco's 850 MHz and 1900 MHz systems. (Cellco 14 response 9)

41. The 850 MHz and 1900 MHz CDMA systems would eventually be phased out as customers are converted to LTE networks, possibly by the year 2021. The 1900 MHz CDMA system at the proposed site would be converted to support LTE services in the future. (Intervenors 6, p. 6; Tr. 1, pp. 62-65; Tr. 4, pp. 414-415, 509-511, 519-520; Tr. 5, p. 595, 681-682)

42. To monitor wireless network performance, Cellco examines various data points that measure network demands using a proprietary analytical tool. (Cellco 14, response 9)

43. One of the data points used to examine capacity that was made available in this proceeding is Forward Data Volume information. FDV measures the amount of data transmitted (in megabytes) from a sector to the data user during the sector's busiest hour. (Cellco 14, response 9; Tr. 1, pp. 185-194)

44. Cellco's data analysis indicates the Milford NE alpha sector has experienced a FDV increase of 108 percent since June 2012. The FDV for Derby beta sector has increased 10.4 percent since December 2013 and the Derby North gamma sector has increased 21.2 percent since January 2014. (Cellco 14, response 9)

45. Another data point examined by Cellco and made available in this proceeding is Average Active Connections (AvgAC) which measures the average number of users accessing the LTE network by connecting to a particular sector. The Milford NE alpha sector and Derby beta sector have experienced an increase in AvgAC of 86 percent and 62 percent, respectively, over the past 13 months. Additionally, the Shelton 2 Beta sector AvgAC has increased 56 percent in 2014. (Cellco 14, response 9; Tr. 1, pp. 185-194; Tr. 4, pp. 452-453)

46. Cellco's analysis determined that capacity issues are occurring on adjacent sites from the exponential growth in customer data usage. Usage would further increase once Voice over LTE services are deployed on the 700 MHz system as it uses data to transmit voice services. Cellco intends to deploy Voice over LTE by the end of 2014 and thus the current FDV and AvgAC measurements do not include data used by this service. (Cellco 3, response 7; Cellco 14, response 9; Tr. 1, pp. 62-68; Tr. 4, pp. 294-296)

47. The proposed site would provide capacity relief to eight sectors on the six surrounding Cellco sites. Four of the eight sectors are trending towards exhaustion, as follows:

Cellco Facility	**700 MHz Sectors with capacity relief from proposed site**	**Projected sector exhaust date**
Orange 2	Gamma	Beyond 3 years
Orange 3	Alpha Gamma	Beyond 3 years Beyond 3 years
Milford NE	Alpha	09/04/14
Shelton 2	Beta	03/22/16
Derby	Beta	09/07/15
Derby North	Beta Gamma	Beyond 3 years 06/13/16

(Cellco 14, response 9; Tr. 4, p. 456)

48. Cellco deployed 2100 MHz equipment at three of the exhausting sectors (Derby beta, Derby North gamma, Shelton 2 beta) to relieve capacity demands. LTE users would be diverted from the 700 MHz network to the 2100 MHz network during busy periods. Even with this deployment, the associated 700 MHz sectors are still trending towards exhaustion because the 2100 MHz network has a much smaller service area than the 700 MHz network. Other factors include the type of device a customer is using as some devices do not have the capability of using the 2100 MHz system. Software within a 2100 MHz capable device could determine the 700 MHz frequency is providing better service than the 2100 MHz frequency even though the two service footprints overlap. (Cellco 1, Tab 6; Cellco 14, response 9; Tr. 4, pp. 457-458; Tr. 5, pp. 689-691)

49. The proposed site would shift service demands to the proposed facility from the four sectors that are exhausting as well as from the four sectors that are not exhausting so that a user has as many options as possible to access the network. Sector capacity relief does not necessarily mean the proposed service area needs to overlap considerably with the service area of an adjacent sector as there could be power users in a small overlapping geographic area with significant service demands. (Tr. 4, pp. 314, 453-456, 464-470)

50. The Intervenors produced a report using sector dominance mapping to assert that the proposed facility is not in the proper location to serve capacity needs because it would primarily relieve the Derby North beta sector, a sector not projected to exhaust within the next 3 years. Cellco's analysis of its sector dominance mapping is generally consistent with the Intervenors', but there are slight differences; for example, some of the sectors serve more of the Derby North beta sector than the Intervenors mapping has indicated, and thus capacity relief would be achieved to those sectors from the proposed facility. (Intervenors 6, p. 15; Tr. 5, pp. 685-686)

Site Selection

51. Cellco established a search ring for its Orange North facility in June 2013. The search ring was located in the general area between Derby Milford Road, Northwood Road, Wildwood Road and Glenbrook Road in Orange. (Cellco 1, Tab 8; Cellco 3, response 9)

52. Cellco investigated nine sites in the northwestern Orange area, one of which was selected as the proposed site: 831 Derby Milford Road. The eight rejected parcels and reasons for their rejection are as follows:
    a) 814 Glenbrook Road, Orange – The property owner was not interested.
    b) 870 Garden Road, Orange – The property owner was not interested.
    c) Beth Israel Cemetery, Derby Milford Road, Orange – There was not enough space to locate a facility.
    d) 414 Cold Spring Lane, Orange – There was not enough space to locate a facility.
    e) 1730 Derby Milford Road, Orange – The site did not meet the requirements of Cellco's radio frequency engineer.
    f) 962 Grassy Hill Road, Orange – Site is an existing 35-foot tall water tank that is too low and to close to existing Cellco sites to meet radio frequency objectives.
    g) 986 Grassy Hill Road, Orange – Site is too close to Cellco's Orange 3 site.
    h) Turkey Hill Preserve, Orange – Site suggested by the Town but is too close to Cellco's Orange 3 site and too far from Cellco's Derby North and Shelton 2 sites.

    (Cellco 1 – Tab 8; Cellco 3, response 11; Cellco 11, responses 17, 59, 61, 63, 65; Tr. 3, p. 175)

53. A small cell facility would not meet radio frequency objectives as these types of facilities, typically 30 to 40 feet in height, only serve an area of several hundred acres. Cellco seeks to provide services to an area measured in square miles. The same service issues also pertain to facilities placed on utility poles (Cellco 11, responses 57, 75)

54. The Intervenors suggested a conservation parcel, the Housatonic Overlook/Tuckers Ravine preserve, on High Ridge Road in Orange as a potential tower site but the parcel is not available as it is preserved open space. The Town also did not suggest this parcel as an alternative during the pre-application municipal consultation process. (Cellco 11, Response 68; Cellco 12, response 69; Intervenors 3; Tr. 3, pp. 282-287)

55. The Intervenors suggested a residentially zoned parcel at 803 Derby Milford Road in Orange as a potential alternative. Cellco determined the 1.35-acre parcel is located in an established residential neighborhood, has limited ground space for a facility and offers no buffer to adjacent parcels. (Cellco 11, response 70)

56. The Intervenors suggested Mount Saint Peter's Cemetery at 219 New Haven Avenue in Derby as an alternative. Cellco conducted a site visit with cemetery officials and the Intervenors on August 20, 2014. Cemetery officials selected two sites within the cemetery as possible locations for a tower facility. Cellco determined the cemetery property itself was not viable due to the Catholic Archdiocese of Hartford's current policy prohibiting telecommunications facilities in its member cemeteries. Additionally, both locations within the cemetery have topographic challenges as they are of low ground elevation and adjacent to a steep hillside; issues that create wireless service deficiencies that could only be overcome by constructing a facility at least 200 feet in height. A tower facility of such height would have a greater visual impact than the proposed facility. (Cellco 11, response 66; Intervenors 3)

57. The property owner of 831 Derby Milford Road, Walter and Maryellen Bespuda Living Trust, is not amenable to relocating the site near the buildings on the property, on the east side of the ridge. Other locations on the property were rejected as they would disrupt active hay fields or would be too visible across open fields. (Cellco 14, response 5; Tr. 4, pp. 472-476)

Facility Description

58. The proposed site is located on a 34.6-acre parcel that is used for agriculture. Several farm related buildings are on the parcel. (Cellco 1, p. 1, Tab 3; Tr. 1, p. 15, 73; Tr. 4, pp. 405-406)

59. The property is zoned residential and is located northeast of Derby Milford Road. (Cellco 1, p. 18)

60. The proposed tower site is located in an old field area, approximately 460 feet from Derby Milford Road. The tower site is at an elevation of 134 feet above mean sea level (amsl). (Cellco 1, Tab 1)

61. Cellco would construct a 100-foot monopole at the site. The tower diameter would be 46 inches at the base, tapering to 26 inches at the top. (Cellco 1, Tab 1)

62. The tower would be designed to support a total of four levels of antennas with a 10-foot center-to-center vertical separation. No other carriers expressed interest in locating on the facility at this time. (Cellco 1, Tab 1; Tr. 1, p. 115)

63. Cellco would install up to 12 antennas and associated remote radio heads on an antenna platform at the 100-foot level of the tower. The antennas would extend to a height of 103 feet agl. (Cellco 1, p. 2, Tab 1)

64. The facility would be connected to Cellco's Windsor and Wallingford mobile telephone switching offices by fiber optic cable. (Cellco 11, response 42)

65. The tower and foundation would be designed to accommodate a 20-foot tower extension to facilitate tower sharing. (Cellco 1, p. 12)

66. Cellco would establish a 50-foot by 50-foot equipment compound within a 100-foot by 100-foot lease area at the base of the tower. A 12-foot by 30-foot equipment shelter would be installed within the fenced compound (refer to Figure 6). (Cellco 1, Tab 1; Cellco 3, response 5)

67. Access to the tower site would be from a new 12-foot wide gravel drive extending from Derby Milford Road across an existing hay field to the site. The first 15 feet of the road would be paved. (Cellco 1, Tab 1; Tr. 1, p. 21)

68. The grade of the access drive is approximately 10 percent. (Tr. 1, pp. 19-21)

69. Construction of the road would require the excavation of a rock ledge embankment that abuts Derby Milford Road. The ledge would be removed by mechanical chipping. The slopes on either side of the embankment would be lowered. (Tr. 1, pp. 19-21)

70. Cellco would install two catch basins at the base of the access drive where it intersects with Derby Milford Road. The basins would tie into an existing catch basin on Derby Milford Road. Cellco would examine techniques to prevent large amounts of sediment from washing into the proposed culverts during construction and once the site is completed. (Cellco 1, Tab 1; Tr. 1, pp. 21-22, 90)

71. Runoff from the proposed accessed drive would be controlled by swales and a level spreader on the northwest side of the driveway. The level spreader would discharge towards the abutting cemetery. Cellco would examine and may relocate the level spreader discharge to a point on the east side of the drive to keep runoff from being directed towards the cemetery property. (Cellco 1, Tab 1; Tr. 1, pp. 23 - 24, 91-93)

72. The north side of the access drive would be stabilized with either riprap or a fortified grass mat. (Cellco 1, Tab 1, Tr. 1, p. 23)

73. Stormwater at the compound would be managed by the installation of a grass line swale and two level spreaders. (Cellco 1, Tab 1; Tr. 1, p. 24)

74. Utilities would be installed underground to the site from existing utilities along Derby Milford Road. The exact tie in point would be determined by the local public utility. (Cellco 1, Tab 1, Tab 10; Tr. 1, pp. 101-103)

75. Land use within a quarter mile of the tower site includes active agricultural lands, residential, woodland, and a cemetery. (Cellco 1, Tab 1, Tab 10)

76. Pursuant to CGS § 16-50p(a)(3)(G), the nearest school is the Turkey Hill School located approximately 0.8 miles southeast of the site at 441 Turkey Hill Road in Orange. The nearest commercial day care center is Little Academy located approximately 0.8 miles west of the site at 250 River Road in Shelton. The tower would not be visible from the Turkey Hill School and may be seasonally visible from the Little Academy. (Cellco 1, Tab 10)

77. There are 27 residentially-zoned parcels and 11 residences within 1,000 feet of the proposed tower site. The nearest residence is 770 feet west of the tower site at 899 Derby Milford Road. The nearest property line is 145 feet to the west (OR Shalmon/B.J.S.G. Cemetery Association). (Cellco 1, p. 15; Cellco 7; Cellco 9, response 3; Tr. 1, p. 13)

78. The proposed site would comply with the Town's Zoning Regulations regarding tower setbacks with the exception of the 225-foot property line setback. (Cellco 1a; Cellco 11, response 55; Tr. 1, p. 116)

79. The site preparation phase of construction is expected to take approximately four weeks. Installation of the tower and shelter would take an additional two weeks. Installation of antennas and related equipment would take approximately two additional weeks, resulting in a total of up to eight weeks of construction. After completion of construction, facility integration and system testing would take an additional approximately two weeks before the site would be operational. (Cellco 1, p. 22)

80. The estimated construction cost of the proposed facility is:

Tower and antennas	$ 130,000.
Equipment building	50,000
Utility Installation	20,000.
Radio equipment	450,000.
Site Preparation and Facility Installation	125,000.
Total Cost	$ 775,000.

(Cellco 1, p. 22)

Backup Power

81. In response to two significant storm events in 2011, Governor Malloy formed a Two Storm Panel (Panel) that was charged with an objective review and evaluation of Connecticut's approach to the prevention, planning and mitigation of impacts associated with emergencies and natural disasters that can reasonably be anticipated to impact the state. Two of the Panel's findings are as follows:
    a) "Wireless telecommunications service providers were not prepared to serve residential and business customers during a power outage. Certain companies had limited backup generator capacity;" and
    b) "The failure of a large portion of Connecticut's telecommunications system during the two storms is a life safety issue."

    (Council Administrative Notice Item No. 42)

82. The Panel made the following recommendations:
    a) "State regulatory bodies should review telecommunications services currently in place to verify that the vendors have sufficient generator and backhaul capacity to meet the emergency needs of consumers and businesses:" and
    b) The Connecticut Siting Council should require continuity of service plans for any cellular tower to be erected. In addition, where possible, the Siting Council should issue clear and uniform standards for issues including, but not limited to, generators, battery backups, backhaul capacity, response times for existing cellular towers."

    (Council Administrative Notice Item No. 42)

83. In response to the findings and recommendations of the Panel, Public Act 12-148, An Act Enhancing Emergency Preparedness and Response, codified at C.G.S. §16-50ll, required the Council, in consultation and coordination with the Department of Energy and Environmental Protection, the Department of Emergency Services and Public Protection and the Public Utilities Regulatory Authority (PURA), to study the feasibility of requiring backup power for telecommunications towers and antennas as the reliability of such telecommunications service is considered to be in the public interest and necessary for the public health and safety. The study was completed on January 24, 2013. (Council Administrative Notice Item No. 24)

84. The Council's study included consideration of the following matters:
    a) Federal, state and local jurisdictional issues of such backup power requirements, including, but not limited to, siting issues;
    b) Similar laws or initiatives in other states;
    c) The technical and legal feasibility of such backup power requirements;
    d) The environmental issues concerning such backup power; and
    e) Any other issue concerning backup power that PURA deems relevant to such study.
    (Council Administrative Notice Item No. 24)

85. The Council reached the following conclusions in the study:
    a) "Sharing a backup source is feasible for CMRS providers, within certain limits. Going forward, the Council will explore this option in applications for new tower facilities;" and
    b) "The Council will continue to urge reassessment and implementation of new technologies to improve network operations overall, including improvements in backup power."
    (Council Administrative Notice Item No. 24)

86. For backup power, Cellco would install a 50 kW diesel generator with a 210 gallon diesel fuel tank located within its equipment shelter. It could run for 4 days before refueling, assuming normal cell site operating conditions. (Cellco 3, response 3)

87. Although it is possible multiple carriers could share a single generator, AT&T and T-Mobile did not express interest in co-locating on the proposed tower at this time. (Cellco 3, response 4)

88. Noise created as a result of, or relating to, an emergency, such as an emergency backup generator, is exempt from the State Noise Control Regulations. (R.C.S.A. §22a-69-1.8)

Public Safety

89. The Wireless Communications and Public Safety Act of 1999 (911 Act) was enacted by Congress to promote and enhance public safety by making 9-1-1 the universal emergency assistance number, by furthering deployment of wireless 9-1-1 capabilities, and by encouraging construction and operation of seamless ubiquitous and reliable networks for wireless services. (Council Administrative Notice Item No. 6)

90. The proposed facility would be in compliance with the requirements of the 911 Act and would provide Enhanced 911 services. (Cellco 1, pp. 7- 8)

91. Cellco could support text-to-911 services in areas where municipal Public Safety Answering Points (PSAP) support text-to-911 technology exists. A PSAP has not been established in the Orange area to date. Text-to-911 will extend emergency services to those who are deaf, hard of hearing, have a speech disability, or are in situations where a voice call to 911 may be dangerous or impossible. Even with carrier upgrades to its telecommunications system, the ability to text to 911 is limited by the ability of the local 911 call center to accept a text message. The FCC does not have the authority to regulate 911 centers; therefore, it cannot require 911 centers to accept text messages. (Council Administrative Notice No. 19; Cellco 3, response 14, response 15)

92. Pursuant to the Warning, Alert and Response Network Act of 2006, the FCC has established a Personal Localized Alerting Network (PLAN) that requires wireless communication providers to issue text message alerts from Federal bodies including the President of the United States. PLAN would allow the public to receive e-mails and text messages on mobile devices based on geographic location. The proposed facility would enable the public to receive e-mails and text messages from the CT Alert ENS system. (Council Administrative Notice No. 5)

93. The tower would be constructed in accordance with the Electronic Industries Association Standard TIA/EIA-222-F "Structural Standards for Steel Antenna Towers and Antenna Support Structures". (Cellco 1, Tab 1)

94. The proposed equipment compound would be surrounded by a six-foot high chain-link fence with barbed wire. (Cellco 1, p. 13)

95. Cellco's equipment shelter would be equipped with a remotely monitored intrusion alarm. (Cellco 1, p. 13)

Environmental Considerations

96. The site is located in an old field area, northeast of a maintained hay field. A narrow ridge top rises to the east of the site, to a height of 150 feet amsl. A second hayfield and outbuildings are located to the east and below the ridge. (Cellco 1, Tab 11; Tr. 1, pp. 72-73)

97. Development of the site would require the removal of five trees with a diameter of six inches at breast height. Two large trees adjacent to the southeast side of the access road would be protected during construction. (Cellco 1, Tab 10; Cellco 9, Item 5; Tr. 1, p. 14)

98. The nearest wetland to the proposed site is a perennial stream system located across Derby Milford Road from the proposed access drive entrance, identified as Wetland 1. The significantly incised stream system has little or no bordering wetlands. (Cellco 1, Tab 11)

99. A second wetland, identified as Wetland 2, is located approximately 108 feet to the northeast and downgradient of the compound. This wetland is a forested hillside seep wetland system with an interior perennial stream that extends through woodlands north and west of the site, eventually draining to the southwest along Derby Milford Road. (Cellco 1, Tab 11; Cellco 14, response 2; Tr. 1, p. 97)

100. A third wetland is located approximately 260 feet east of the site, on the other side of the narrow ridge, identified as Wetland 3. The wetland is located in a hay field and is characterized as an isolated digressional emergent wet meadow. The wetland is drained by a culvert outlet on the southeast side, preventing the long term storage of standing water. No vernal pool characteristics were observed in this wetland. (Cellco 1, Tab 11; Tr. 1, pp. 80-81, 97-98)

101. Wood frogs, a vernal pool obligate species, were observed during the field review on July 17, 2014. At the request of the Council, a vernal pool assessment was performed on August 4, 2014. During the assessment, two vernal pools were identified in Wetland 2, one of which is a manmade farm pond and the likely location for breeding wood frogs. The other vernal pool is a small depressed area at a woods road culvert crossing. This pool is likely to have a short hydroperiod but may be suitable for wood frog breeding. (Cellco 10, response 1)

102. The proposed site is not within 100 feet from the edges of either vernal pool (refer to Figure 7). Development should be avoided within 100 feet of vernal pools (Vernal Pool Envelope) to maintain water quality, provide shade, and leaf litter for the vernal pool ecosystem. (Council Administrative Notice Item No. 4; Cellco 14, response 2)

103. The proposed site is within vernal pool Critical Terrestrial Habitat (CTH), an area located 100 feet to 750 feet from the edge of a vernal pool. In order to maintain populations of vernal pool obligate amphibian species, development within the CTH should not exceed 25 percent. The development of the proposed site would not increase the developed area of the CTH for either pool beyond 25 percent. (Council Administrative Notice Item No. 4; Cellco 14, response 2)

104. To increase the buffer to the wetland to the northwest (Wetland 2) and to disturb less of the wetland/old field interface area, Cellco and the lessor would be amenable to relocating the facility approximately 90 feet to the south, referred to as the Alternate Site (Figure 4). The prosed compound ground elevation at the alternate site is 132 feet amsl, two feet lower than the original proposed site. (Cellco 14, response 4)

105. Cellco would consider the implementation of a wetland/vernal pool protection plan that includes a wildlife and wetland contractor awareness program, a construction isolation zone, and work zone inspections for sensitive species. (Tr. 1, pp. 79-80, 82-83)

106. Development of the compound area would not affect natural drainage patterns. The compound is surfaced with gravel, minimizing impervious surfaces. Any runoff from the compound area would be directed to and dispersed by two level spreaders. Existing undisturbed vegetation is located between the wetland area and the level spreaders, allowing water to resume natural drainage patterns. (Cellco 1, Tab 11; Tr. 1, pp. 27-29)

107. There is no federally designated critical habitat or any federal endangered, threatened, or candidate species in the area of the proposed site. (Cellco 2)

108. The immediate area surrounding the site contains woodlands, wetlands, old field habitat and maintained hay fields. This diversity of habitats and relatively undeveloped nature of the parcel provides wildlife connectivity to the various habitats, especially along the narrow ridge that extends in a north-south direction between the old field where the site is proposed and the wetland in the hayfield east of the ridge. (Cellco 1, tab 11; Tr. 1, pp. 73-79)

109. The proposed site is not located within an area identified within the DEEP Natural Diversity Database as containing records of State-listed endangered, threatened, or special concern species. Cellco did not perform site specific wildlife surveys given that the development of the site would occur in a small area and that a portion of the development would occur within an active hay field. (Cellco 2; Tr. 1, pp. 76-78)

110. The area around the proposed site contains suitable habitat for the Eastern Box Turtle, a State Species of Special Concern. The proposed site is located at the interface of box turtle hibernation and foraging habitat. (Cellco 14, response 3)

111. Although no turtles were identified on site, Cellco would incorporate an Eastern Box Turtle Protection Program as part of the construction practices to be employed should the proposed facility be approved. The program incorporates DEEP recommended construction practices to reduce impact to turtle populations. (Tr. 1, pp. 84-85)

112. The Alternate Site is more protective of box turtle habitat. (Cellco 14, response 4)

113. The diesel tank/generator unit would have a double walled fuel tank to prevent leaks. In addition, the tank would be within a room in the equipment shelter with a floor designed to hold the capacity of the tank to ensure no fuel leaks out of the shelter in the event of fuel tank failure. (Tr. 4, pp. 449-450)

114. Operation of the diesel generator would not require an air permit from the DEEP. (Cellco 9, Item 6; Tr. 1 pp. 87-88)

115. Throughout the construction period of the proposed facility, Cellco would establish and maintain appropriate soil erosion and sedimentation control measures, in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*, established by the Connecticut Council for Soil and Water Conservation, in cooperation with the DEEP. (Cellco 1, p. 19)

116. The proposed tower at this site would not constitute an obstruction or hazard to air navigation and would not require any obstruction marking or lighting. (Tr. 1, p. 15)

117. The proposed facility is not located near an Important Bird Area (IBA), as designated by the National Audubon Society. The nearest IBAs to the proposed tower site are Silver Sands State Park in Milford, approximately six miles to the south and Sandy Point in West Haven, approximately seven miles southeast. Due to the distance from the proposed site to the IBAs, there would be no adverse impact to these IBAs. (Council Administrative Notice No. 59; Cellco 9, Item 5)

118. A designated Critical Bird Habitat area, Turkey Hill Marsh, is located approximately 2.25 miles south of the site along the Housatonic River in Milford. The proposed site would have no effect on this resource. (Cellco 9, Item 5)

119. Although the property contains field areas, the site may not be conducive to successful grassland bird nesting due to the mowing of the fields for hay. If grassland birds were nesting, the proposed site would have no impact on grassland birds as the access drive extends along the edge of field habitat. (Tr. 1, pp. 108-110)

120. The proposed facility would comply with the United States Fish and Wildlife Service guidelines for minimizing the potential for telecommunications tower to impact bird species, except for the guideline recommending that towers should not be sited "near wetlands". The guidelines however, do not indicate a recommended distance between a tower and a wetland. (Council Administrative Notice No. 14; Cellco 9, Item 5; Tr. 4, pp. 228-229)

121. The site is not located with a 100-year or 500-year flood zone. (Cellco 1, pp. 19-20)

122. The host property is not part of the state program for the preservation of agricultural land established in C.G.S. § 22-26aa, where development rights to a parcel are acquired by the State. (Cellco 9, response 2)

123. No properties on or eligible for listing in the national Register of Historic Places is within 0.5 mile of the proposed site. Development of the site would have no impact on archeological resources. (Cellco 1, p. 16; Tr. 1, pp. 31-33)

124. The cumulative worst-case maximum power density from the radio frequency emissions from the operation of Cellco's proposed antennas is 37.8 percent of the standard for the General Public/Uncontrolled Maximum Permissible Exposure, as adopted by the FCC, at the base of the proposed tower. This calculation was based on methodology prescribed by the FCC Office of Engineering and Technology Bulletin No. 65E, Edition 97-01 (August 1997) that assumes all antennas would be pointed at the base of the tower and all channels would be operating simultaneously, which creates the highest possible power density levels. Under normal operation, the antennas would be oriented outward, directing radio frequency emissions away from the tower, thus resulting in significantly lower power density levels in areas around the tower. (Council Administrative Notice Item No. 2; Cellco 1, p. 17)

Visibility

125. The proposed 100-foot tower would be visible year-round from approximately 46-acres, mostly within one mile of the site (refer to Figure 8). Most of this visibility would be from open field areas, wooded areas and along Derby Milford Road and Garden Road within 1,000 feet of the site. (Cellco 1, Tab 9 – Viewshed Map)

126. Portions of approximately 14 residentially zoned parcels within 1,000 feet of the site that are not owned by the lessor, could have year-round views of the proposed facility. (Cellco 7; Cellco 9, response 3)

127. Approximately 23 residences within a two-mile radius of the site may have year-round views of portions of the tower. An additional three residences may have seasonal views. (Cellco 3, response 2)

128. When the leaves are off the trees, the tower would be visible from approximately 300 acres, most of which is within one mile of the site. (Cellco 1, Tab 9 – Viewshed Map)

129. There are six residential parcels at the southwest end of Rainbow Trail that would have seasonal views of the tower. (Cellco 9, response 3)

130. The MacInnes residence at 905 Rainbow Trail would have a limited year-round view of the tower through the trees as the topography between the MacInnes property and the site includes a small valley, allowing for a direct view of the tower through the trees (refer to Figure 14). (Intervenors 11; Tr. 4, pp. 418-421)

131. The proposed tower would not be visible above the trees when viewed from the roadway of Rainbow Trail. (Cellco 1, Tab 9; Cellco 16)

132. If the tower was extended in height by 20 feet, it would not be visible above the trees when viewed from the roadway of Rainbow Trail. (Tr. 3, p. 206)

133. Visibility of the proposed 100-foot tower from specific locations within a two-mile radius of the site is presented in the table below:

Specific Location	**Photo location on Map***	**Approx. Portion of Facility Visible**	**Approx. Distance - Direction to Tower**
Belmont Ave at Coram Road, Shelton	1	Undetermined, hillside is backdrop	1.1 miles east
Laurel Heights at Coram Road, Shelton	2	40 feet, hillside as backdrop	1.1 miles northeast
Colony Street at Belmont Ave, Shelton	3+	40 feet, hillside as backdrop	0.8 mile east
Riverview Cemetery	4	15 feet above trees	0.7 miles east
Temple Emanuel Cemetery	5	25 feet through trees	0.6 miles east
Rainbow Trail, 305 driveway entrance	6+	30 feet through trees	0.2 mile southeast
Garden Road	7	30 feet above trees	0.3 miles southwest
Garden Road at Cold Spring Road	8	60 feet above trees	0.3 mile west
Brookside Drive, near #834	9+	50 feet through trees	0.2 mile northwest
834 Brookside Drive, backyard	10	40 feet above trees	0.2 mile northwest
Glenbrook Road	11	35 feet above trees	0.2 mile north
East Slope Drive	12	20 feet through trees	0.3 mile north
Derby Milford Road	13	30 feet through trees	0.22 mile north
Derby Milford Road, lessors property	14	10 feet, above house and through tress	0.18 mile north
High Ridge Road at Quarter Mile Road	15	10 feet through trees	0.3 mile northeast
Quarter Mile Road	16+	45 feet through trees	0.2 mile northeast
Derby Milford Road, lessors property	17+	45 feet across field	0.1 mile northeast
Derby Milford Road, lessors property	18	50 feet across field at access road entrance	0.1 mile northeast
Derby Milford Road, cemetery entrance	19	50 feet through trees	0.1 mile northeast
Beth El of Ansonia Cemetery	20	45 feet through trees	0.06 mile east
905 Rainbow Trail, back window	N/A	Limited year-round view	0.2 mile southeast

*Map is attached as Figure 8.
+ Photo simulations of proposed facility from these visibility map locations are attached as Figures 9, 10, 11, 12, 13.
(Cellco 1, Tab 9; Cellco 3, response 13; Intervenors 11)

134. The site's location uses the ridge to the southeast to provide some screening when viewed from Derby Milford Road. The site is also screened by woodlands extending from the northeast to northwest. Although open fields exist to the east and southeast, a row of trees along Garden Road provide some screening of views from that area. (Cellco 9, Viewshed map; Tr. 5, pp. 488-489)

135. There are no hiking trails maintained by the Connecticut Forest and Parks Association in the area of the site. (Council Administrative Notice 57; Cellco 1, Tab 9)

136. There are no scenic roads within two-miles of the site. (Cellco 1, Tab 9)

137. Cellco would paint the tower brown in order to blend it into the surroundings when viewed through trees. (Cellco 1, Tab 9; Tr. 1, pp. 40-41)

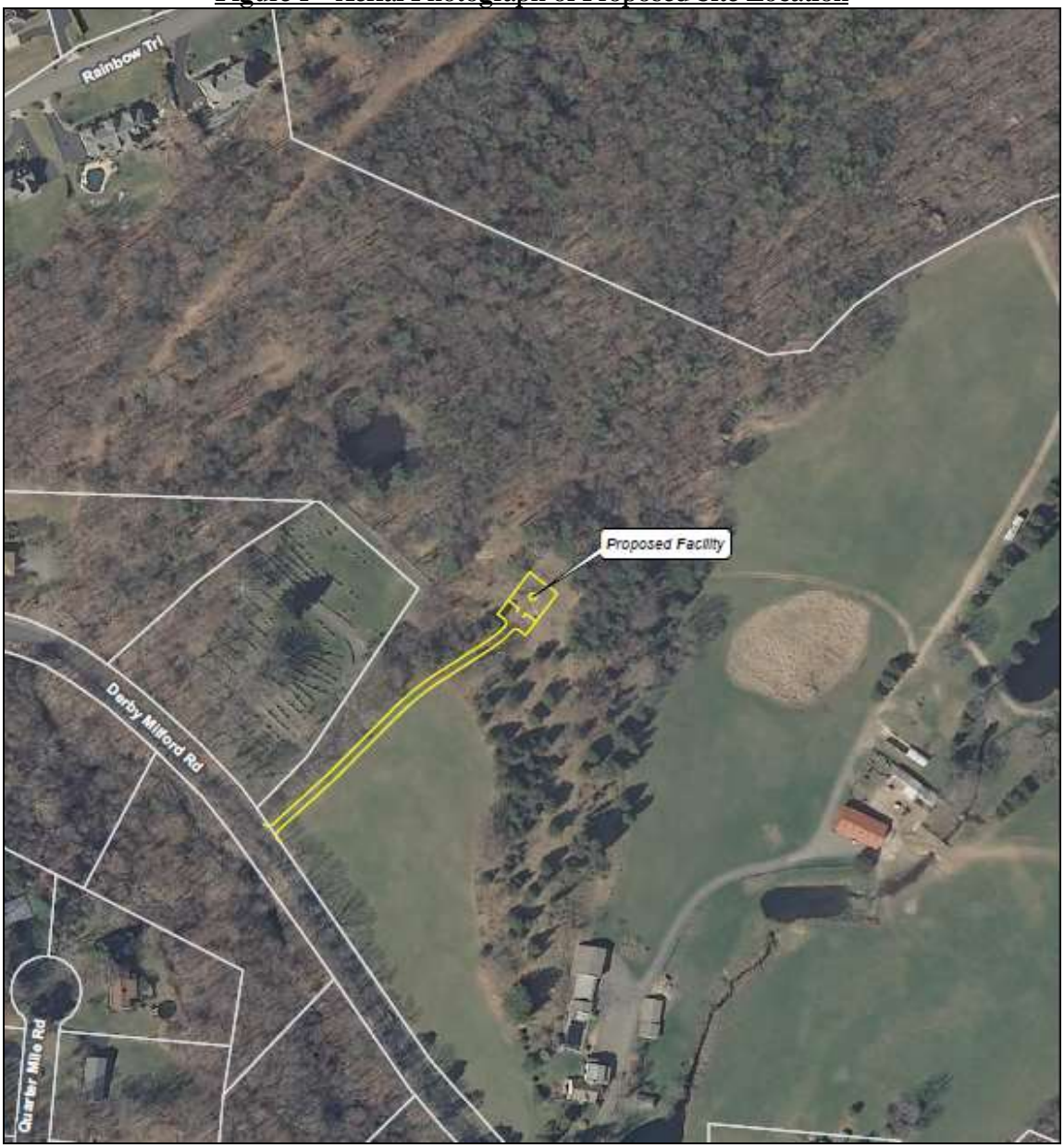
138. Cellco would install white spruce plantings on the western side of the compound to screen the compound area from the adjacent cemetery. (Cellco 1, Tab 1; Tr. 1, pp. 34, 93-94)

139. Cellco would not consider using a silo at the proposed site because it would require a height of 105-110 feet and a diameter of 20 feet creating a larger, more obtrusive structure. (Tr. 4, pp. 48-485)

140. A faux-tree tower design would be generally beneficial for views of the tower above the treeline, such as the open field areas (refer to Figure 15), or when viewed through a sparse stand of trees such as the adjacent cemetery (refer to figure 16). (Tr. 1, pp. 41-43, 49)

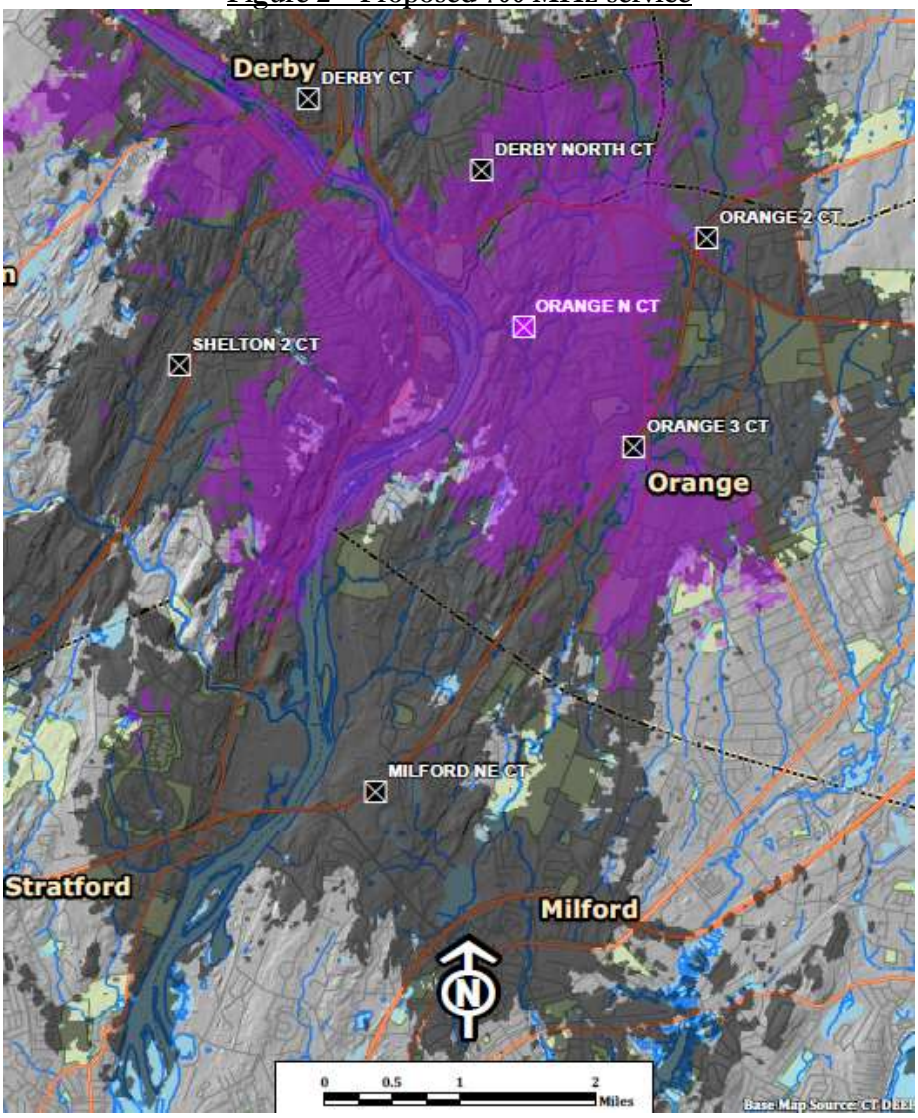
141. The Alternate Site would have no effect on visibility from areas northeast and south of the site. The alternate tower would be more prominent when viewed from Derby Milford Road southeast of the site. (Cellco 16; Tr. 4, pp. 473-475)

Figure 1 – Aerial Photograph of Proposed Site Location



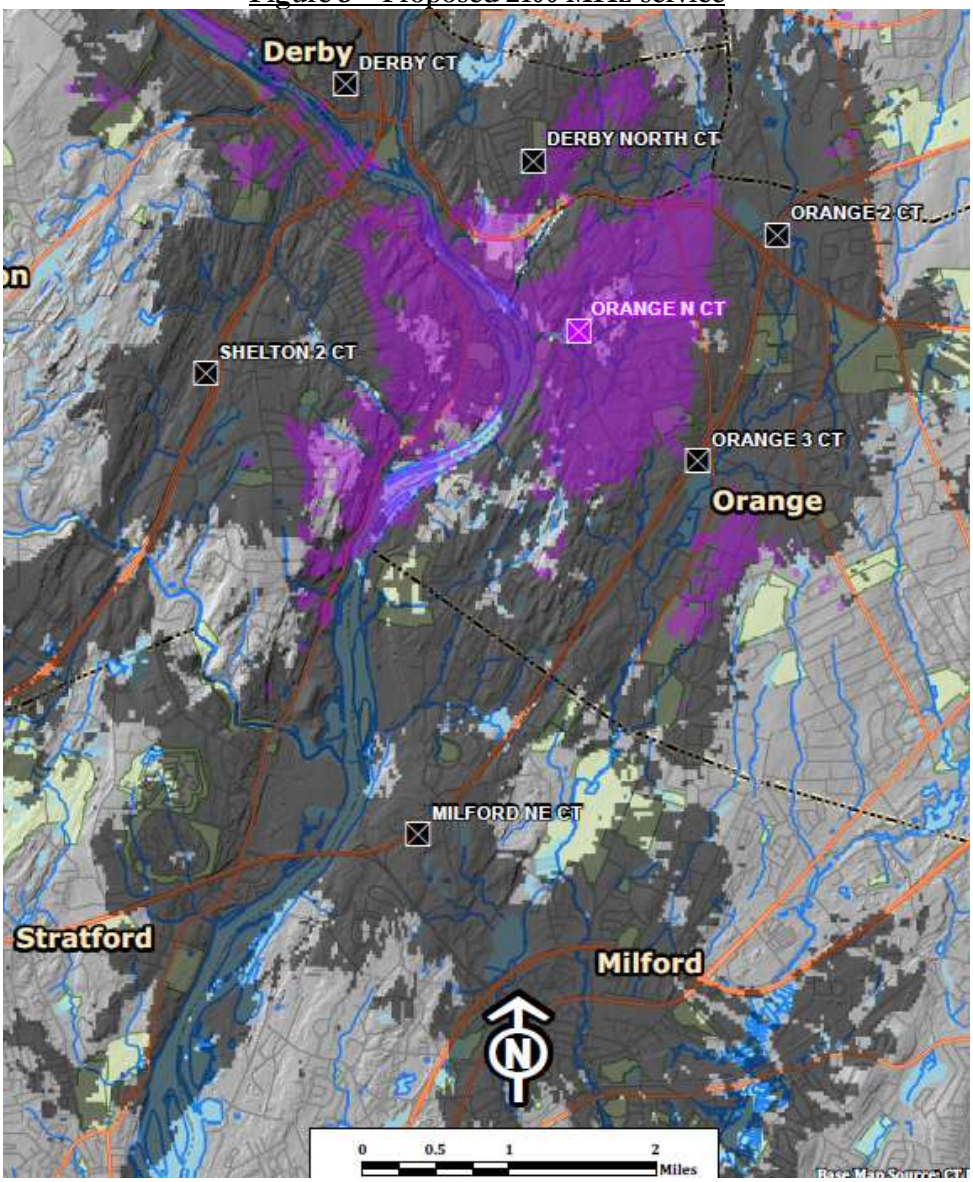
(Cellco 1, p.iii – Site Aerial Map)

Figure 2 – Proposed 700 MHz service



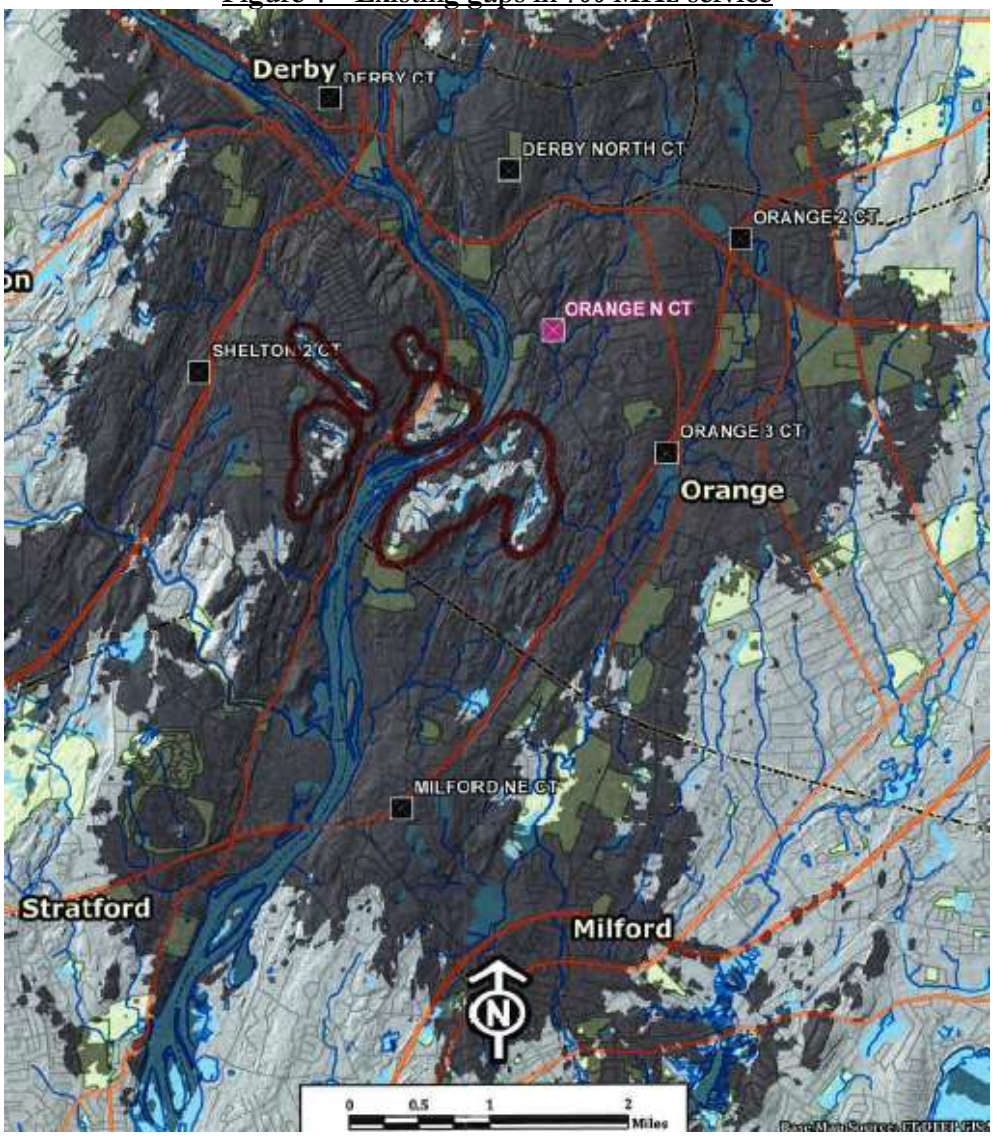
Gray shading indicates exsiting service. Purpule shading indicates new service footprint.
Service threshold - 120 dB Reverse Link Operational Path Loss
(Cellco 1, Tab 6; Tr. 4, pp. 460- 464)

Figure 3 – Proposed 2100 MHz service



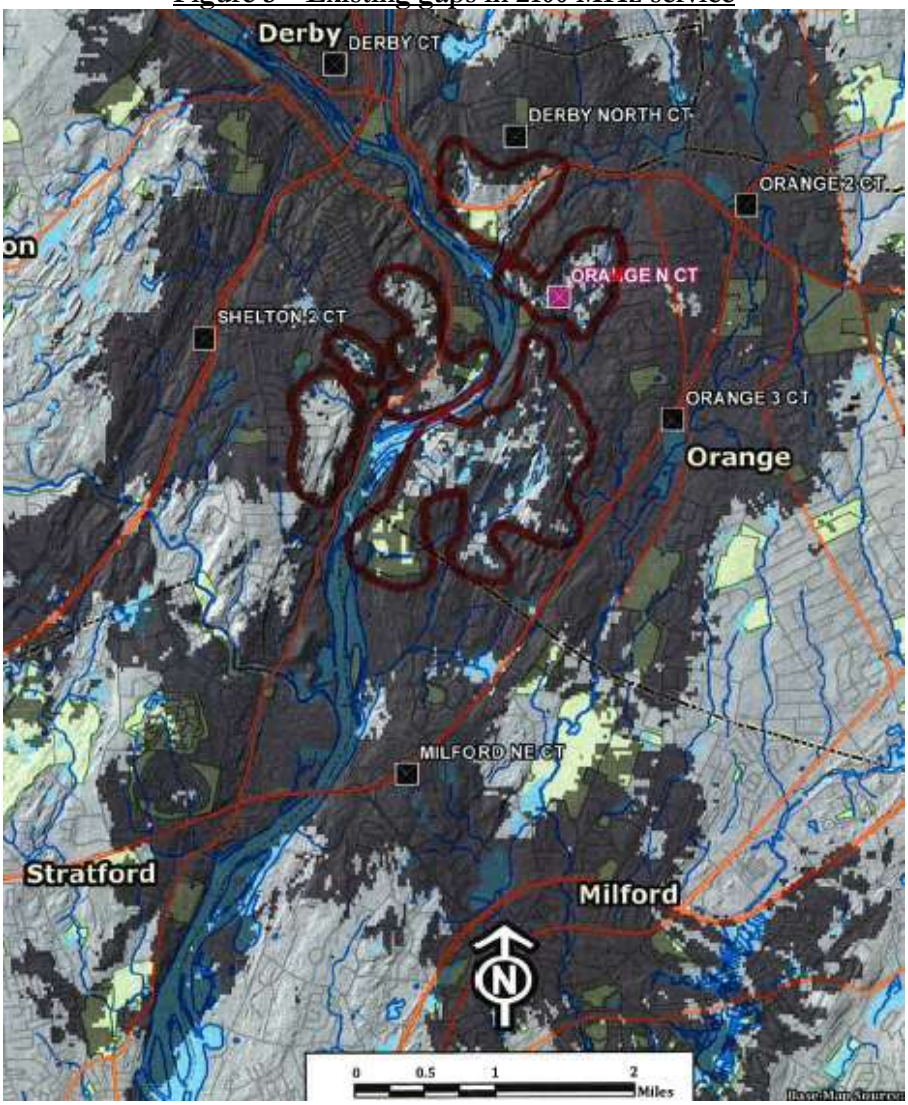
Gray shading indicates exsiting service. Purpule shading indicates new service footprint.
Service threshold - 120 dB Reverse Link Operational Path Loss
(Cellco 1, Tab 6; Tr. 4, pp. 460- 464)

Figure 4 – Existing gaps in 700 MHz service



Gray shading indicates exsiting service. Service gaps are outlined in brown.
Service threshold - 120 dB Reverse Link Operational Path Loss
(Cellco 11, response 18; Tr. 4, pp. 460- 464)

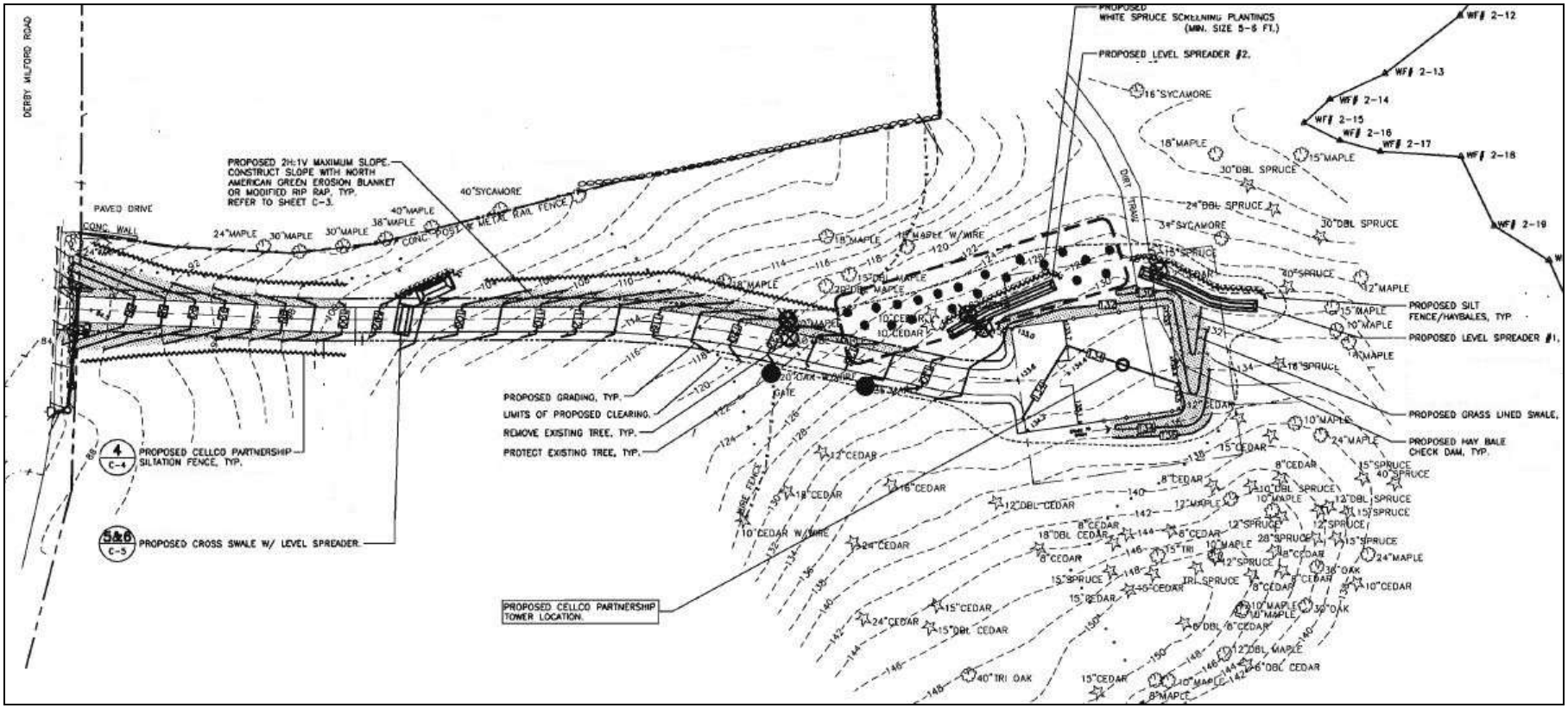
Figure 5 – Existing gaps in 2100 MHz service



Gray shading indicates exsiting service. Service gaps are outlined in brown.
Service threshold - 120 dB Reverse Link Operational Path Loss

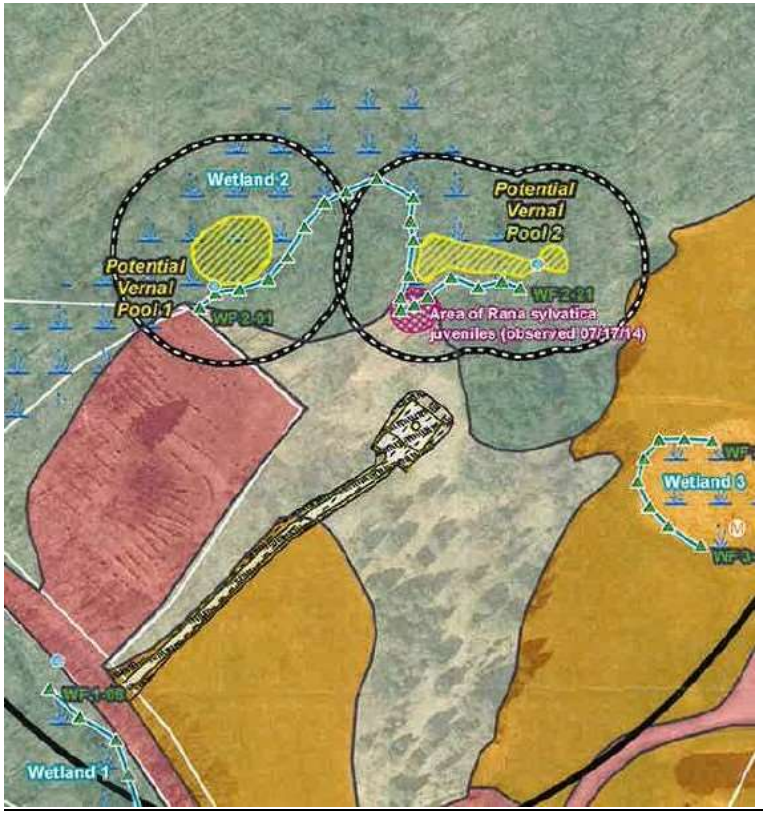
(Cellco 11, response 18; Tr. 4, Tr. 4, pp. 460- 464)

Figure 6 – Proposed Site Plan

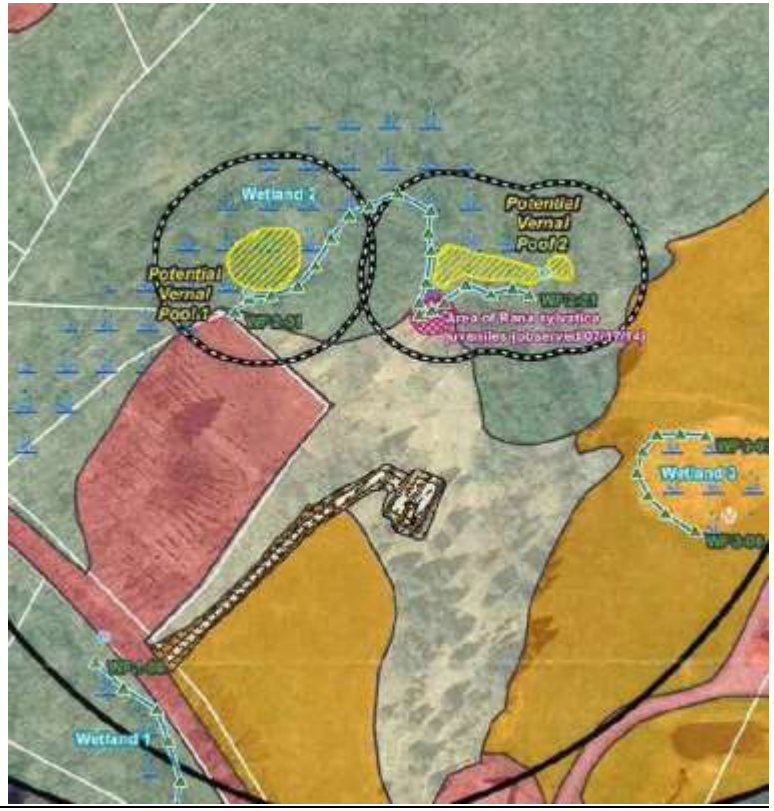


(Cellco 1, Tab 1 – Sheet C-1A)

Figure 7 – Location of Wetland Resources



Proposed site



Alternate Site

LEGEND

- Vernal Pool
- 100' Vernal Pool Envelope
- 100'-750' Critical Terrestrial Habitat Area

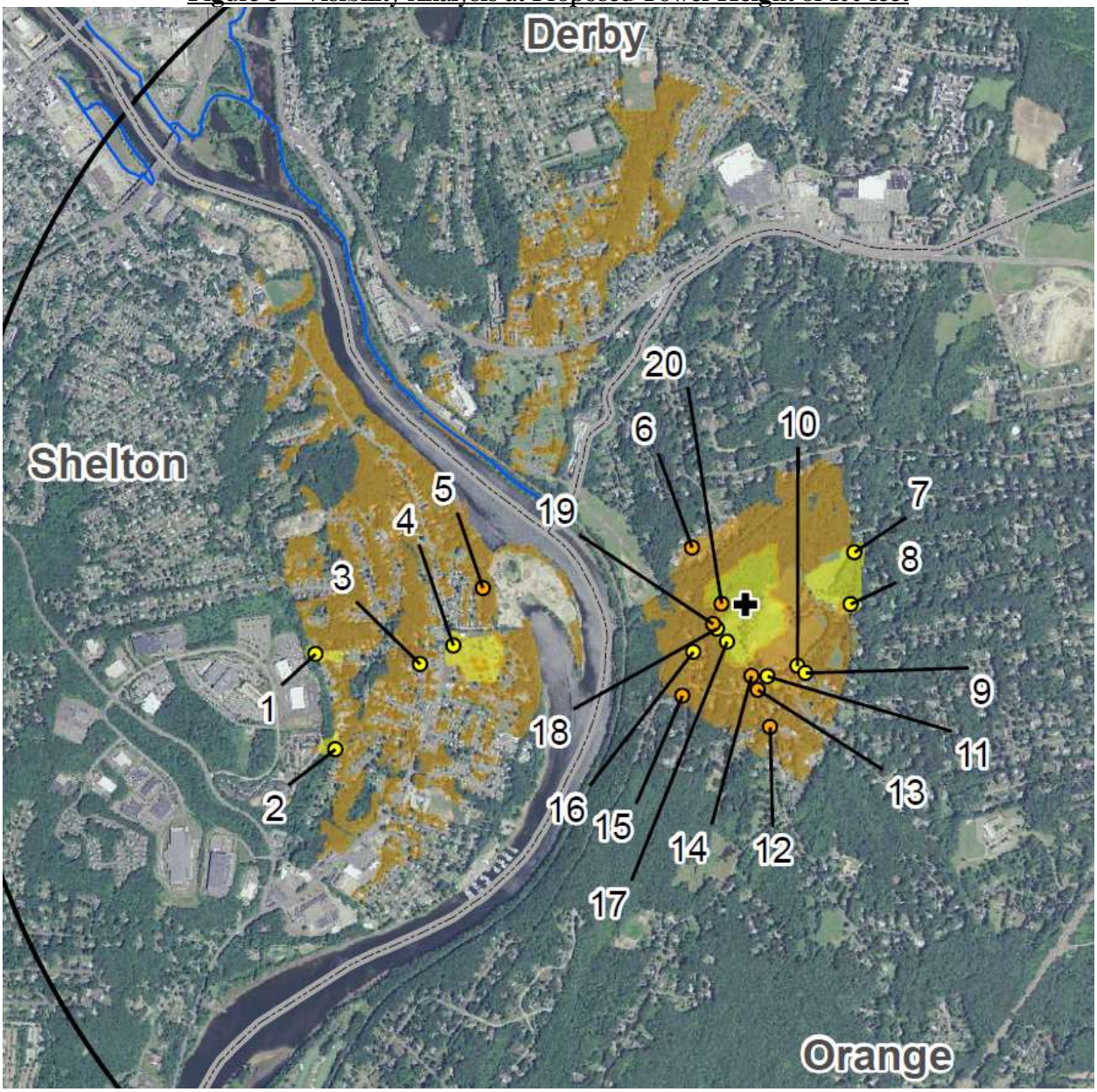
Critical Terrestrial Habitat Type

- Developed
- Forested
- Hayfield / Mowed
- Pasture / Old Field

- Delineated Wetland Boundary
- Wetland Area
- Proposed Cellco Gravel Access Road and Compound Area
- Proposed Limits of Grading

(Cellco 14, Attachment 1)

Figure 8 – Visibility Analysis at Proposed Tower Height of 100 feet



(Cellco 1, Tab 9 – Viewshed Map)

Figure 9 – Proposed Tower Photo-simulation – Location 9

(Cellco 1, Tab 9)

Figure 10 – Proposed Tower Photo-simulation – Location 17

(Cellco 1, Tab 9)

Figure 11 – View of balloon fly indicating top of proposed tower – Location 17

(Cellco 1, Tab 9)

Figure 12 - Proposed Tower Photo-simulation – Location 16

(Cellco 1, Tab 9)

Figure 13 – View of balloon fly indicating top of proposed tower – Location 6

(Cellco 9)

Figure 14 – View of balloon fly indicating top of proposed tower – 905 Rainbow Trail rear window

(Intervenors 11)

Figure 15 – Photo-simulation of a proposed tree tower design from Glenbrook Road – Location 10

(Cellco 1, Tab 9

Figure 16 – Photo-simulation of a proposed tree tower design from cemetery – Location 20

(Cellco 1, Tab 9)