DOCKET NO. 167 - An application of Springwich Cellular Limited Partnership for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility located approximately 2,000 feet east southeast of the intersection of Old Redding Road and Mountain Road with an alternate site located approximately 2,400 feet east of the intersection of Old Redding Road and Mountain Road, in the Town of Redding, Connecticut.	} Connecticut } Siting } Council } } August 9, 1995	FILE COPY

FINDINGS OF FACT

INTRODUCTION

1. Springwich Cellular Limited Partnership (Springwich), in accordance with provisions of General Statutes §§ 16-50g to 16-50aa, applied to the Connecticut Siting Council (Council) on February 24, 1995, for a Certificate of Environmental Compatibility and Public Need (Certificate) for the construction, operation, and maintenance of a cellular telecommunications facility in the Town of Redding, Connecticut. The proposed facility would provide cellular service within the Fairfield New England County Metropolitan Area (NECMA) and telecommunications service for the Connecticut State Police (CSP) in the Redding area. (Springwich 1, pp. 7-8; Springwich 1, Section I, p. 1)

2. Pursuant to General Statutes § 16-50l (b), notice of the application was published in the Danbury News Times on February 16 and 17, 1995; and the Redding Pilot on February 16 and 23, 1995. (Springwich 1, Section I, pp. 5-8)

3. Pursuant to General Statutes § 16-50m, the Council, after giving due notice thereof, held a public hearing on the application on April 27, 1995, at the Redding Elementary School, Route 107, Redding, Connecticut. The hearing was continued on May 8 and 15, 1995, at the Council's offices, 136 Main Street, New Britain, Connecticut. (April 27, 1995, Afternoon Transcript (Tr. 1 Afternoon), pp. 3-4; April 27, 1995, Evening Transcript (Tr. 1 Evening), p. 2; May 8, 1995, Transcript (Tr. 2), p. 2; May 15, 1995, Transcript (Tr. 3), p. 3)

4. The Council and its staff made a public review of the proposed prime and alternate sites prior to the April 27, 1995, public hearing. During the review, Springwich flew balloons at the proposed prime and alternate sites to simulate the height of each proposed tower. Wind conditions prevented the balloons from reaching their desired heights for the duration of the review. (Council hearing notice; Tr. 1 Evening, pp. 8, 30-31)

5. On March 6, 1985, the Federal Communications Commission (FCC) issued an operating license to the Southern New England Telephone Company (SNET) for the Fairfield NECMA. The operating license is now held by Springwich. (Springwich 1, pp. 3-4)

CELLULAR SYSTEMS

6. The FCC has determined there is a general public need for cellular service and applicants for cellular facilities are not required to demonstrate this need to state regulators. The FCC also has

pre-empted state regulation of cellular telephone service in the areas of technical standards and market structure. (Springwich 1, Section III, pp. 3-4)

7. Cellular service consists of a number of low power transmit/receive stations called cell sites. Cell sites cover a geographic area typically two to ten miles in diameter. The cellular system design requires cell sites to be configured so that the same frequencies can be used at the same time in different cell sites (frequency reuse) and to provide uninterrupted service as a user travels through the service area (hand-off capability). (Springwich 1, Section II, pp. 2-3)

8. The FCC has established a dual licensing market arrangement to provide competition between cellular wireline and non-wireline service providers. Springwich, the wireline carrier, and the non-wireline carrier have each been allocated 25 megahertz (MHz) of frequency spectrum, which provides 416 two-way radio channels for each carrier. (Springwich 1, Section III, p. 3)

CONNECTICUT STATE POLICE TELECOMMUNICATIONS SYSTEM

9. The CSP currently use a low-band, voice only, two-way radio system that was originally placed in service in the 1940s to serve 290 personnel. Although the CSP force has grown to over 1,000 personnel, the basic architecture of the existing radio system has not correspondingly changed. (CSP 5; Council Docket No. 160, Finding of Fact 5)

10. Problems and design faults of the existing low-band, two-way radio system which provides field communications to CSP personnel are as follows:

    - channel capacity varies from radio to radio;
    - co-channel and skip interference;
    - lack of frequency availability;
    - areas of poor or no communication;
    - voice encryption and mobile data terminals are not available; and
    - physical plant is old and cannot support microwave equipment. (CSP 5; Tr. 3, pp. 72-73; Council Docket No. 160, Finding of Fact 6)

11. Existing CSP point-to-point communications to link troop barracks and base stations are provided by leased telephone landlines, which are usually an above-ground, pole-to-pole design, subject to storm damage and human accidents. Specific problems with the existing wireline network include:

    - lack of capacity for system growth;
    - inability for high speed transfer of digital data;
    - inherent noise levels and circuit failures; and
    - incompatibility with computer controlled technologies of a modern 800 MHz radio system. (CSP 5; Tr. 3, p. 56; Council Docket No. 160, Finding of Fact 7)

12. There is no way to modify the current CSP radio system to meet present or future demands. (Tr. 3, p. 72; Council Docket No. 160, Finding of Fact 8)

13. The CSP is in the process of replacing the current wireline, point-to-point, communication system, and low-band radio system with a digital microwave, point-to-point, backbone network supporting and controlling an 800 MHz trunked radio system. This digital microwave network would connect all CSP barracks and base stations providing for point-to-point data transfer, radio control, computer connection, and emergency telephone circuits. (CSP 5; Council Docket No. 160, Finding of Fact 9)

14. The FCC has issued a portion of the 800 MHz frequencies to public safety organizations nationwide. The CSP belong to the Tri-State and New England Committees for Spectrum Utilization which are submitting applications for the necessary FCC licenses. If unused, the CSP 800 MHz license for Fairfield County expires in June 1996. (CSP 5; Tr. 3, p. 172; Council Docket No. 160, Finding of Fact 10)

15. The digital microwave system would enable all base stations, i.e., two-way radio antenna sites, to act as a single base station, otherwise known as SIMULCAST. The 800 MHz trunked radio system would have the ability to assign available channels on a demand basis. Both systems would improve the CSP's ability to use available channels in the most efficient manner possible. (CSP 5; Council Docket No. 160, Finding of Fact 11)

16. The proposed microwave and 800 MHz radio systems would provide for system growth, security, voice encryption, mobile data terminals, computer-aided dispatch, and statewide communications with state and local agencies. The system, named the Connecticut Telecommunications System (CTS), is designed to use digital electronics and redundant processors to provide uninterrupted operation and additional channel capacity, and to eliminate sources of system interference including atmospheric interference. (CSP 5; Council Docket No. 160, Finding of Fact 12)

17. The Bell System Standard design objective for microwave system outages due to propagation failures is one hour per year. For the CTS, the average reliability design for each microwave path would be ten times more stringent than the Bell System Standard for microwave services; thus, the average outage time of each path should not exceed 5.5 minutes per year (99.999 percent reliability). The proposed 800 MHz two-way radio has been designed to provide radio coverage to 95 percent of an area 95 percent of the time for mobile units, and 90 percent coverage 90 percent of the time for portable units. (Council Docket No. 160, Finding of Fact 13)

18. The CSP considered and rejected the following alternatives to its proposed Statewide digital microwave network. The Council has previously approved CSP tower applications based on an analysis of these alternatives and these reasons for rejection.

Alternative	Reason for Rejection
Dedicated Fiber Optic (Landlines)	• susceptible to landline related outages (tree falls, traffic accidents) • cost prohibitive
Dedicated Fiber Optic (Buried)	• extensive rights-of-way • cost prohibitive
Private Leased Fiber Optic Network	• loss of traffic management control • operational restoral of service during outage not controlled by CSP
Satellite Network	• cost prohibitive • susceptible to outages (sunspots, weather) • not yet in operation for CSP needs
Analog Microwave	• would not allow for system expansion • would not provide intelligent networking available with digital microwave option

(CSP 9; Tr. 3, pp. 56-57, 143, 176-177; Council Docket No. 160, Finding of Fact 16; Council Docket No. 160, Decision and Order)

SITE INFORMATION

19. Springwich has proposed a prime and alternate site for the cellular telecommunications facility. Both sites are located within the same 145-acre parcel owned by Robert J. Kaufman. The proposed prime site is approximately 2,000 feet east-southeast of the intersection of Mountain Road and Old Redding Road. The proposed alternate site is approximately 550 feet northeast of the prime site. (Springwich 1, Section VI, pp. 1, 18; Springwich 1, Section VII, pp. 1, 10)

20. The 145-acre Kaufman parcel is zoned R-2 Residential. Minimum lot area for development in this zoning classification is two acres. Uses in an R-2 zone that would require a Special Permit include public utility and public service utilities essential to serve the local community and wind energy conversion systems. As a Height Exception under the Town's zoning ordinance, "broadcast antennas, utility poles and towers ..." can be developed in this zone to, "a maximum height equal to setback distance of the highest point of the feature from side or rear lot lines, or 100 feet, whichever is least." With a Special Permit, wind energy conversion systems (WECS) are allowed with the following restrictions: no WECS may be located within 250 feet of a dwelling; maximum height of supporting tower shall be 160 feet; and the maximum diameter of the rotors shall be 35 feet. The minimum setback of a WECS and its supporting tower (except guy wires), from all lot lines, shall be as follows (in feet) except that setback shall in no case be less than twice (200%) the height of the tower:

Rotor Diameter:	1-5	10	15	20	25	30	35
Required Setback:	100	165	220	270	310	340	365

(Springwich 1, Section VI, p. 18; Springwich 6, Q. 1, Zoning Regulations, pp. 11, 17, 112)

21. At either the proposed prime or alternate site, Springwich would lease a parcel measuring 100 feet by 100 feet. The leased parcel would be surrounded by an eight-foot high, chain-link fence with three strands of barbed wire on top. Entry into the fenced area would be via a 14-foot wide double-leaf gate. A one-story, brickfaced, 17-foot by 56-foot equipment building would house the radio equipment and be located within the fenced-in area. The equipment building would be outfitted with an HVAC system and security and fire alarms. An emergency generator would also be housed within the building. A 1,000 gallon propane fuel tank would be buried adjacent to the building to provide fuel for the emergency generator. (Springwich 1, Section V, pp. 1-2, 5; Springwich 1, Section VI, pp. 1, 20-21; Springwich 6, Q. 10)

22. For the proposed prime site, Springwich has proposed a 180-foot above ground level (AGL) lattice tower to be placed at 687 feet above mean sea level (AMSL). The prime tower would measure 21 feet between the legs at the base of the tower and taper to four and one-half feet at the top. (Springwich 1, Section V, p. 3; Springwich 1, Section VI, pp. 1, 18)

23. For the proposed alternate site, Springwich has proposed a 240-foot AGL lattice tower to be placed at 678 feet AMSL. The alternate tower would measure 23 feet between the legs at the base of the tower and taper to four and one-half feet at the top. (Springwich 1, Section VII, p. 1; Springwich 6, Q. 13)

24. Either tower proposed by Springwich would be designed according to EIA-RS-222-E to withstand 100 mile per hour winds with one-half inch radial ice. The fall zone of each tower would extend beyond Springwich's leased parcel, but would remain within the Kaufman parcel. (Springwich 1, Section V, p. 3; Tr. 1 Afternoon, pp. 84-85)

25. In accordance with federal aviation regulations, the Federal Aviation Administration (FAA) has determined that obstruction marking and lighting are not necessary for the proposed prime 180-foot AGL tower. The FAA has determined that the proposed alternate 240-foot AGL tower should be obstruction marked and lighted. (Springwich 1, Section VI, pp. 31-32; Springwich 1, Section VII, p. 11)

26. The proposed prime access road to the prime and alternate sites would be off of Mountain Road. A steel post and chain gate would deter vehicular access to the sites. The prime access road would be approximately 1,840 feet to the prime site and approximately 2,400 feet to the alternate site. The prime access road right-of-way would be 25 feet wide. Approximately 15 feet of the right-of-way would be cleared, consisting of 12 feet for the gravel drive and three feet for the buried utilities. The maximum grade along the proposed prime access road would be 14.3 percent. (Springwich 1, Section VI, p. 18; Springwich 6, Q. 10; Tr. 1 Afternoon, p. 50)

27. Portions of the proposed prime access road to the prime and alternate sites, totaling approximately 760 and 1,280 feet respectively, would be over an existing ten-foot wide dirt road. (Springwich 6, Q. 10)

28. Approximately 80 feet from the proposed prime access road entrance from Mountain Road, is a culvert that has collapsed. Springwich would replace this culvert. The proposed prime access road would disturb approximately 1,000 square feet of wetlands in this area. The wetland soil in this area is Ridgebury, Leicester, and Whitman, extremely stony, fine sandy loams. This soil consists of poorly drained, moderately coarse textured, glacial till. (Springwich 1, Section VI, pp. 19-20; Springwich 6, Qs. 11-12)

29. Springwich proposed an alternate access road via Mr. Kaufman's driveway off of Old Redding Road. The alternate access road would be approximately 1,800 feet long to the proposed alternate site, with the same right-of-way and clearing widths as the prime access road. The alternate access road to the prime site would be approximately 500 feet longer than to the alternate site. Portions of the alternate access road would be over an existing ten-foot wide dirt road. Although not fully surveyed or analyzed, Springwich believes that approximately 1,000 square feet of wetlands would be lost along the alternate access road. (Tr. 1 Afternoon, pp. 21-23, 44; Tr. 1 Evening, p. 54; Tr. 2, pp. 122-123)

30. The Federal Deposit Insurance Corporation has placed a judgment lien on the 145-acre Kaufman property. Springwich's present leases would not be affected by this judgment lien. (Springwich 7, Q. 5, *FDIC v. R.J. Kaufman*, Count 1, 2, 14)

31. The 145-acre Kaufman parcel has remained undeveloped, except for the Kaufman residence and dirt road, since the Kaufman family purchase of the property in 1932. There are no current plans to develop or subdivide the property. (Springwich 6, Qs. 14, 22)

32. The closest land uses to the proposed prime and alternate sites are as follows:

Land Use	Approximate Distance	Approximate Direction from Sites
Scenic Area (Topstone Road)	1.25 miles	NE
Historic or Architectural Area (Redding Town Ctr.)	1.75 miles	E
Recreation Area (Topstone Park)	0.57 miles	N
Class I and II Watershed	3.50 miles	SE
High Yield Aquifer	800 feet	W
Closest Residence (prime)	650 feet	S
Closest Residence (alternate)	600 feet	SE
Commercial Zone	0.75 miles	W
Industrial Zone	2.00 miles	S
National Park or Forest (Weir Farm National Park)	2.50 miles	SW
Nature Preserve (Rock Trail/Rock Lot-Scott Preserve)	1,700 feet	SE
Redding Land Trust (Windy Hill)	1,000 feet	E
Greenway (Saugatuck West Greenbelt)	Within	

(Springwich 6, Qs. 1, 20; Springwich 8, Q. 10; Tr. 2, pp. 49-50)

33. The 145-acre Kaufman parcel is located within the southwest hills ecoregion typified by coastal uplands, low rolling to locally rugged hills of moderate elevation, broad upland areas, and areas of steep and rugged topography. Either of the proposed towers may be visible from surrounding roads, including Mine Hill Road, Seventy Acres Road, Old Redding Road, and Mountain Road and from high elevations that have unobstructed views, including portions of Topstone Park. (Springwich 1, Section VI, p. 18; Springwich 6, Q. 6)

34. The 145-acre Kaufman parcel is located within an area identified by the State as the Sugar Hollow Greenway, an area recognized by the Town of Redding as the Saugatuck West Greenbelt, and in an area that has been identified as a rural land area in the State Conservation and Development Policies Plan for Connecticut 1992-1997. (Springwich 8, Q. 10 - Redding Open Space Plan, pp. 12-15; NOT 8; Town of Redding 5; Tr. 1 Evening, p. 48; Tr. 2, pp. 201-202)

35. The 145-acre Kaufman parcel has been part of an area designated by the Town of Redding as "Proposed Open Space" for over twenty years. This proposed open space area has not been identified as an area of priority acquisition by the Town of Redding. A town approved 25-home subdivision bounded by Old Redding Road, Seventy Acres Road, and Fire Tower Road, adjacent to the Kaufman property would be located in this proposed open space area. (Springwich 8, Q. 10, Redding Open Space Plan, pp. 12-15, 25; Tr. 2, pp. 52, 64-65, 72, 88-90)

36. The Connecticut Historical Commission stated that the construction of the proposed facility would have no effect on resources under their purview. (Springwich 1, Section VI, p. 24)

37. The Connecticut Department of Environmental Protection stated that the proposed facility would not affect the interests of the State Park and Recreation Program, nor would it affect any extant populations of federal or State Endangered, Threatened, or Special Concern Species. (Springwich 1, Section VI, pp. 23-24)

38. The proposed prime and alternate sites are within a wooded area made up of 60- to 70-foot AGL deciduous trees. The understory is mostly open with abundant birch seedlings. The following is an estimate of the trees that would have to be removed for construction;

Approximate size (in inches)	3-4	5-6	6-10	12-15	16-18	18-24	**TOTAL**
Prime sites	14	1	5	7	3	0	**30**
Access	21	17	23	15	3	3	**82**
Total	**35**	**18**	**28**	**22**	**6**	**3**	**112**
Alternate site	8	5	12	11	0	0	**36**
Access	30	19	25	21	4	3	**102**
Total	**38**	**24**	**37**	**32**	**4**	**3**	**138**

No tree removal estimated were made for the proposed alternate access road. (Springwich 6, Q. 24; Tr. 2, p. 11; April 17, 1995, DEP Commissioner Holbrook letter)

39. Using FCC Guidelines, OST Bulletin No. 65, the electromagnetic radio frequency power density at the proposed prime and alternate tower bases, with the proposed Springwich, CSP, Connecticut Department of Motor Vehicles (DMV), and Northwest Connecticut Public Safety Communications Center (CMED) antennas, would be approximately 40 percent and 34 percent respectively of the maximum permissible exposure for uncontrolled environments as adopted by the State of Connecticut in General Statutes § 22a-162. The calculations used to obtain these percentages assume 100 percent ground reflection which results in a four fold increase in far field power density, and that the facility is operating at maximum output with the main beams of all of the antennas directed at the tower base and not at the horizon. (Springwich 1, Section VII, pp. 13-14; Springwich 17; Springwich 18; Springwich 19; Council Administrative Notice: OST Bulletin No. 65, Evaluating Compliance with FCC Specified Guidelines for Human Exposure to Radio Frequency Radiation, FCC, Office of Science and Technology, October 1985; IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, IEEE C95.1-1991, November 18, 1992)

PROPOSED COVERAGE

40. The proposed cellular telecommunications facility would provide additional call handling capacity and improved cellular service in the Redding, Ridgefield, and Georgetown areas, including Routes 7, 35, 53, 102, and 107. (Springwich 1, p. 5; Springwich 1, Section VI, p. 1)

41. Springwich would attach nine directional antennas (six receive and three transmit) measuring approximately four feet by one-foot on the 180-foot level at the proposed prime tower and on the 210-foot level at the proposed alternate tower. (Springwich 1, Section V, p. 4; Springwich 1, Section VI, p. 27; Springwich 1, Section VII, p. 13)

42. The proposed cellular telecommunications facility would provide coverage within coverage holes along Routes 7, 35, 53, 102, and 107 as follows:

Location	Approximate Total Existing Coverage Hole (in feet)	Approximate Total Hole Remaining (in feet)(prime site @ 140 feet AGL)	Approximate Total Hole Remaining (in feet)(prime site)	Approximate Total Hole Remaining (in feet)(alternate site)
Route 7	16,000	4,000	2,000	0
Route 35	4,000	0	0	0
Route 53	16,000	8,000	8,000	6,000
Route 102	10,000	0	0	1,000
Route 107	32,000	20,000	12,000	12,000

(Springwich 6, Q. 6; Springwich 8, Q. 3)

43. The coverage modeled by Springwich was based upon a -85 dbm signal threshold and assumed that coverage below -85 dbm would be "unacceptable". Although Springwich did not model coverage below -85 dbm and does not know the signal strength in remaining holes, existing and remaining coverage holes could have signal strengths of -86 dbm to -95 dbm where a cellular call could be made but could have reduced quality, including static and a weaker signal. (Springwich 9, Q. 21; Tr. 1 Afternoon, pp. 26, 32; Tr. 2, pp. 195-196)

44. Prior to 1992, Springwich used -90 dbm as their threshold for unacceptable coverage. The proliferation of hand-held cellular phones operating at less power with less range prompted the threshold change. Bell Labs recommends that new cellular system construction be designed to a -75 dbm standard. (Springwich 1, Section II, p. 7; Tr. 1 Afternoon, pp. 25-27)

45. The sectors of the cells surrounding the proposed facility are currently operating at the following levels:

Site	Hourly Capacity (calls)	Busy Hour Usage (calls)	Percent of Capacity
Fairfield	55	30	55
Ridgefield	166	67	40
Newtown	96	54	56
Newtown-East	119	46	39
Danbury-South	191	150	79
	347	346	99
Wilton-North	119	62	52
Monroe	96	62	65

The proposed facility's three sectors would add 76, 119, and 119 hourly call capacity to supplement the existing facilities. (Springwich 6, Q. 16; Springwich 7, Q. 3; Tr. 1 Afternoon, pp. 32-33)

46. Other users of the proposed facility would mount antennas on the tower as follows:

User	Number and Antenna Type	Antenna Location on Prime/Alternate tower (in feet)
CSP	1, 6-foot solid dish with radome	130/236
	1, 6-foot solid dish with radome	130/126
	2, 13-foot multiple whip array	130/130
	1, 13-foot whip with reflector	130/130
DMV	1, 20-foot omnidirectional	103/103
CMED	1, 22-foot omnidirectional	104/104

(Springwich 1, Section VI, p. 27; Springwich 1, Section VII, p. 13; Springwich 18; Springwich 19; Tr. 1 Afternoon p. 21; Tr. 3, pp. 101, 170)

47. If the DMV and CMED antennas were located on the proposed facility, the DMV would remove their tower located on Fire Tower Road in Redding. The existing DMV tower is approximately 3,000 feet northeast of the proposed prime and alternate sites. (Springwich 6, Q. 5; Tr. 1 Afternoon, p. 21)

48. As part of the lease agreement for either the proposed prime or alternate site, Springwich would permit Mr. Kaufman to install radio equipment at the site and on the tower to provide communications services to entities owned and/or operated by Mr. Kaufman. (Springwich 11A-Lease p. 8; Springwich 11B-Lease, p. 8)

49. By sharing the proposed facility, the CSP would link their Brookfield and Wilton sites. The link would complete a "loop" or "ring" in the CSP microwave system, which would provide a redundant link to Troop G in Westport (to be moved to Bridgeport) and Troop A in Southbury. Additionally, the shared facility would allow the CSP to improve their 800 MHz coverage in the Redding and Ridgefield area. Estimated 800 MHz coverages in Redding and Ridgefield are as follows:

	Without facility	With facility
Redding coverage	57%	95%
Ridgefield coverage	38%	89%

(Springwich 6, Q. 9; Tr. 3, pp. 52, 72, 145)

ALTERNATIVE SITES

50. Springwich investigated and rejected over 17 sites, including some with existing towers, in the Redding area. Reasons for rejection included proposed adjacent residential development, reluctance of owners to lease, coverage limitations, excessive tower heights up to 300 feet AGL or higher to provide coverage that would be less than the proposed facility, location too far outside search area, and location within a Town park. (Springwich 1, Section VI, pp. 3-6; Springwich 6, Q. 6; Springwich 8, Q. 2)

51. One of the sites investigated by Springwich was the existing DMV tower on Fire Tower Road in Redding, approximately 3,000 feet northeast of the proposed prime and alternate sites. Springwich had proposed a 150-foot tower and associated equipment at this site in Council Docket No. 102. The Council rejected this proposal in 1989 without prejudice for the following reasons: visibility on a ridgeline that would potentially effect several recreation areas; zoning concerns; fall zone onto adjacent property; and inadequate consideration of alternatives. The Council also found that there was a proposed 25-home subdivision planned to be placed on an adjacent parcel. The closest residence in this subdivision would be approximately 250 feet from the DMV tower site. (Springwich 1, Section VI, p. 3; Council Docket No. 102, Findings of Fact, Nos. 26, 27; Council Docket No. 102, Opinion; Council Docket No. 102, Decision and Order)

52. Springwich investigated placing multiple short (approximately 75 feet AGL) towers at the Marconi Construction site in Ridgefield and the Redding Oil Company site in Redding along Route 7. This multiple tower approach would fill all coverage holes along Route 7 and portions of Routes 35 and 102, but would

not cover any holes along Routes 53 and 107. The estimated cost per 75-foot AGL tower site would be approximately $695,000. In addition, the CSP would not be able to establish a microwave link between its Brookfield and Wilton facilities with 75-foot towers in these locations. The CSP would only be able to establish microwave links using these sites with a tower of 450 feet AGL at the Marconi Construction site or 420 feet AGL at the Redding Oil Company site. (Springwich 8, Q. 2; Springwich 12; CSP 6; CSP 7)

53. A site owned by Robert Paradise with an existing 80-foot AGL tower would fill cellular coverage holes along Route 58, but is approximately two miles outside the search area and would leave approximately 4,000 to 5,000 feet of holes along Route 107 and 53. It would fill approximately 1,000 feet of the hole along Route 7. The existing tower height would have to be increased to 100 feet AGL in order to provide the identified level of service. The CSP would need a 180-foot AGL tower to provide a microwave link between their Brookfield and Wilton sites. The Robert Paradise site is within 2,000 feet of the Putnam Memorial State Park and the Limekiln Natural Area. (Springwich 1, Section VI, pp. 7-9; Springwich 6, Q. 6; Springwich 8, Qs. 2, 10; CSP 6)

54. An existing 60-foot AGL tower at the West Redding Fire Department would fill cellular coverage holes along Route 53 and a small portion (approximately 2,000 feet) of Route 107. It is approximately one mile outside the search area and would not improve coverage along Routes 7, 102, or 58. The CSP would need a tower of 660 feet AGL to provide a microwave link between their Brookfield and Wilton sites. This site is adjacent to the Saugatuck West Greenbelt and approximately 3,000 feet from Topstone Park and the Saugatuck Falls Natural Area. (Springwich 1, Section VI, pp. 7-8; Springwich 6, Q. 6; Springwich 8, Qs. 2, 10; CSP 6; CSP 7)

55. An existing 80-foot AGL tower at the Redding Police Department would fill cellular coverage holes along Route 107 and a portion of Route 53 (approximately 7,000 feet). It is approximately two miles outside the search area and would not improve coverage along Routes 7, 102, or 58. The CSP would need a tower of 296 feet AGL to provide a microwave link between their Brookfield and Wilton sites. This site is within the Saugatuck Central Greenbelt and a proposed historic district, and within a few hundred feet of Town Open Space known as "Stormfield". (Springwich 1, Section VI, pp.7-8; Springwich 6, Q. 6; Springwich 8, Qs. 2, 10; CSP 6; CSP 7)

56. In 1990, SNET Cellular, Inc. proposed to the Town of Redding to remove and replace the existing 80-foot AGL telecommunications tower at the Redding Police Department with a 120-foot AGL tower. All costs concerning the removal of the existing tower and the construction, installation, and maintenance of the replacement tower would have been borne by SNET Cellular, Inc. The Town rejected this offer at least in part due to the site being in a proposed historic district. In 1991, SNET Cellular, Inc. proposed to construct a tower on Town-owned property located near the Redding Police Department along Route 107, but not in the proposed historic district. SNET Cellular, Inc., proposed to fund the engineering study to determine the tower height and all construction, operation, and maintenance costs associated with the proposed project. SNET Cellular, Inc. and the Town did not come to an agreement on this proposal. (CSP 8, Q. 18)

57. Without the proposed facility, the CSP would have to either find another tower to share or construct a new facility in order to complete a loop or ring in the microwave system and provide 800 MHz coverage

in the Redding and Ridgefield areas. The CSP has investigated the following locations for suitability to provide microwave linkage:

Site	Existing Tower Height (in feet)	Required Tower Height (in feet)
SNET Moses Mountain	65	180
Redding Ridge Fire Dept.	80	330
Bell Atlantic-Ridgefield	120	190
Robert Paradise Property	80	180
West Redding Fire Dept.	60	660
DMV Fire Tower Road	49	180
Redding Police Dept.	80	296
Georgetown Fire Dept.	95	744
Bell Atlantic	180	680
SNET - Ridgefield	65	180
Ridgefield Police Dept.	130	190
Bob Sharp Motors (Rt. 7)	N/A	580
Redding Oil Co. (Rt. 7)	N/A	420
William Silk Property (Rt. 7)	N/A	280
Perkin Elmer Water Tower (Rt. 7)	N/A	420
Marconi Construction (Rt. 7)	N/A	450

The CSP have been unable to identify an existing tower to share that would not require a modification to increase the height. (CSP 5; CPS 6; CSP 7; Tr. 3, p. 136; Council Docket No. 102, Finding of Fact 18)

COST

58. Springwich's estimated cost including first year lease costs to construct the proposed facility would be as follows:

	Prime	Alternate
Radio equipment	$225,000	$ 225,000
Antennae and tower	125,000	165,000
Power & common equipment	250,000	250,000
Land, building	310,000	310,000
Miscellaneous	75,000	75,000
TOTAL	**$985,000**	**$1,025,000**

(Springwich 1, Section VI, p. 29; Springwich 1, Section VII, p. 15)

59. A monopole tower at either the proposed prime or alternate site would measure 64 inches in diameter at the bottom and taper to 38 inches in diameter at the top. If Springwich were to construct a monopole type tower at either the proposed prime or alternate sites, the tower would have less capacity for sharing

and would add approximately $8,000 to the total cost of the facility. (Springwich 7, Q. 4; Tr. 1 Evening, p. 53)

60. Access road maintenance, i.e., snow removal and stone maintenance, would be approximately $500 to $600 per pear. (Springwich 8, Q. 16)