EXHIBIT F

BUILDING PERMIT

ORIGINAL

PERMIT 25243

DEPARTMENT OF BUILDINGS

TOWN OF YORKTOWN

TOWN HALL — UNDERHILL ROAD
(NOT NEGOTIABLE)

YORKTOWN HEIGHTS, NY May 21, 2000

PERMISSION IS HEREBY GRANTED TO Sprint PCS (Cn Edison of N.Y. Inc)

WHOSE ADDRESS IS 1 International Blvd Suite 800 Mahwah, NJ

TO Construct Telecommunications Facility

LOCATION OF PROJECT 10 Dian Hill Rd. CR Ed Tower K-221

IN BUILDING ZONE DISTRICT R1-160 SECTION 24 PARCEL 13 LOT —

NUMBER OF STORIES IN HEIGHT _____ TYPE OF OCCUPANCY _____

ESTIMATED COST OF PROJECT $ 200,000 CUBICAL CONTENTS OF BUILDING _____

REMARKS _____

BEFORE THIS PERMIT SHALL BECOME EFFECTIVE, THE APPLICANT MUST REMIT THE SUM OF $ 332.10 DOLLARS

TO THE BUILDING INSPECTOR WHO WILL SIGN THE RECEIPT BELOW.

RECEIPT ACKNOWLEDGED May 21 2000 William D Regan
Building Inspector, Town of Yorktown, NY

NOTE:—All provisions of the Building Code, Zoning Ordinance, Plumbing Code Electrical Code and all other laws pertaining to same must be complied with in the erection, addition, alteration, repair, etc. of said building or structure, whether or not shown on plans or specified in the specifications or application. Before the building is occupied a certificate of occupancy shall be obtained from the Building Inspector.

LAW OFFICES OF
SNYDER & SNYDER
730 FIFTH AVENUE. NINTH FLOOR
NEW YORK. NEW YORK 10019-4105
(212) 749-1448
FAX (212) 932-2693
WRITER'S DIRECT DIAL NUMBER
e mail to RGAUDIOSO@SNYDERLAW.NET

WESTCHESTER OFFICE
94 WHITE PLAINS ROAD
TARRYTOWN, NY 10591
(914) 333-0700
FAX (914) 333-0743

DAVID L. SNYDER*
LESLIE J. SNYDER
*ADMITTED NY, NJ AND DC

NEW JERSEY OFFICE
5 MOUNTAIN BLVD., SUITE 12
WARREN, NEW JERSEY 07060
(908) 756-4555
FAX (908) 757-4724

REPLY TO:
westchester office

February 8, 2000

CONFIDENTIAL
ATTORNEY CLIENT PRIVILEGED

Mr. Joseph DiPiazza
Sprint Spectrum, L.P.
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Re: Phase I Environmental Assessment
Con Edison Tower K-221, Indian Hill Road, Yorktown
SAR No. 488E

Dear Joe:

With respect to the proposed antennas to be attached to the existing Con Edison Tower K-221, and related equipment at the base thereof (collectively, the "Site"), which is located at Indian Hill Road, Yorktown, New York (the "Property"), I have enclosed two copies of the Phase I Environmental Site Assessment (the "Phase I Report"), prepared by Tectonic Engineering Consultants P.C. ("Tectonic").

The Phase I Report revealed no evidence of significant environmental concern evident during the site reconnaissance and no evidence of underground storage tanks, land filling, monitoring wells, soil staining or other conditions that would generally present an environmental concern on the Property.

Tectonic recommends, however, that surficial soils be tested for pesticides and herbicides at the Site due to possible spraying of herbicides for vegetation control at the base of the tower. Tectonic also recommends soil testing for metals due to the possible use of lead based paint on the tower.

If you should you have any questions or comments regarding the Phase I Report, please do not hesitate to call me.

Sincerely yours,

Robert D. Gaudioso

Enclosures
RDG/dac
cc: Mr. James Mast ✓

TECTONIC *ENGINEERING CONSULTANTS P.C.*

REGIONAL OFFICES
Albany, New York 518-783-1630
Northborough, Massachusetts 508-393-7411
Cincinnati, Ohio 513-759-9500
Richmond, Virginia 804-697-6310

P.O. Box 447, 615 Route 32
Highland Mills, New York 10930 914-928-6531

Fax No. 914-928-9211
www.tectonicengineering.com

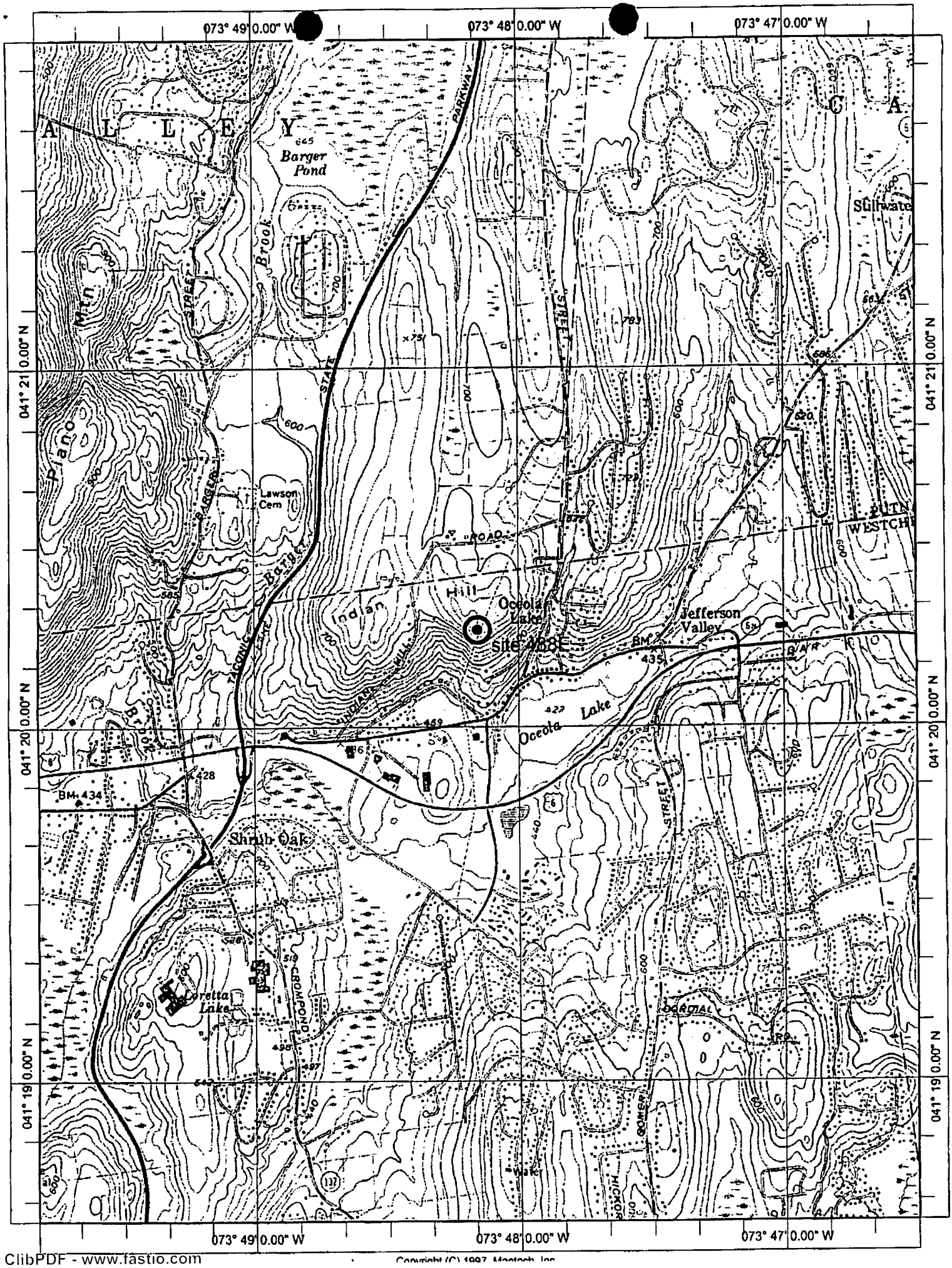
SPRINT PCS
NEPA
SITE EVALUATION

Site Name:Sprint-Indian Hill Road
Site I.D. No.:NY06XC488E

Date: 09-Feb-00
Tectonic W.O. #:2080.488E

CATEGORY	DATABASE(S)	COMMENTS	YES	NO
1. WILDERNESS AREAS	NPS,NFS,BLM, NYSDEC			x
2. WILDLIFE PRESERVES	US FISH & WILDLIFE SERVICE & NYSDEC			x
3. ENDANGERED SPECIES	NYSDEC			x
4. HISTORIC PLACES	NATIONAL REGISTER OF HIST. PLACES AND LANDMARKS			x
5. INDIAN RELIGIOUS SITES	DEPT OF INTERIOR BUREAU OF INDIAN AFFAIRS			x
6. FLOODPLAIN	FEMA			x
7. SURFACE FEATURES	US ARMY CORPS OF ENGINEERS AND NYSDEC			x

YES response indicates an area within 1/8 mile of the site which will require further determination by the appropriate agency



2-03-488E

HAUDENOSAUNEE

MOHAWK - ONEIDA - ONONDAGA - CAYUGA - SENECA - TUSCARORA

ONONDAGA NATION - VIA BOX 319-B NEDROW NEW YORK 13120

January 3, 2000

Tectonic Engineering Consultants P.C.
P.O. Box 447, 615 Route 32
Highland Mills, New York 10930

RE: W.O. #2275.488E
Indian Hill Road
Yorktown, Westchester County, New York
Indian Religious Sites Inquiry

Greetings:

The Onondaga Nation is in receipt of your letter of December 9, 1999 whereas you inform us that you company in involved with the installation of cellular communications antennae off Indian Hill Road in the Town of Yorktown, Westchester County, New York.

We have issued a policy statement to the media that we will no longer tolerate the digging up of our ancestors graves and the removal of their remains to be displayed in some museum.

Therefore be advised that in the event that you encounter any remains during the installation of the cellular antennae you will stop work immediately and notify the Onondaga Nation at the above address. We are concerned with any impact on our ancestors religious and cultural sites.

We thank you for the notification of your proposed work site and your effort to protect the graves of our ancestors.

Dawnaytoh,

Chief Irving Powless Jr.
Secretary Onondaga Nation

OFFICE OF PARKS, RECREATION, HISTORIC PRESERVATION
NEW YORK STATE
Bernadette Castro
Commissioner

New York State Office of Parks, Recreation and Historic Preservation
Historic Preservation Field Services Bureau
Peebles Island, PO Box 189, Waterford, New York 12188-0189
518-237-8643

February 1, 2000

Romanna M. Balan
Staff Engineer
Tectonic Engineering Consultants, P.C.
2 Northway Lane
Latham, New York 12110

Dear Ms. Balan:

Re: FCC
Con-Ed K-221 Tower/
Indian Hill Rd
Yorktown, Westchester County
00PR0243

Thank you for requesting the comments of the State Historic Preservation Office (SHPO). We have reviewed the project in accordance with Section 106 of the National Historic Preservation Act of 1966.

Based upon our review, it is the SHPO's opinion that your project will have No Effect upon cultural resources in or eligible for inclusion in the National Register of Historic Places.

If further correspondence is required regarding this project, please be sure to refer to the OPRHP Project Review (PR) number noted above.

Sincerely,

Ruth L. Pierpont
Director
Field Services Bureau

RLP:dmj

TECTONIC *ENGINEERING CONSULTANTS P.C.*

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(800) 829-6531 FAX: (914) 534-5999
www.tectonicengineering.com

Sprint PCS
Crossroads Corporate Center
1 International Blvd., Suite 800
Mahwah, New Jersey 07495
Attn: Joe DiPiazza

April 13, 2000

Re: W.O. 2080.488
Indian Hill Road Tower
Phase I - Addendum Letter

Dear Mr.DiPiazza:

Pursuant to my conversation with Mr. Ron Charlton of Consolidated Edison, Tectonic Engineering Consultants P.C. hereby withdraws the recommendation for soil testing at the referenced site. Being directly involved with tower maintenance, Mr. Charlton was able to alleviate many of our concerns regarding chemical use at the base of their towers.

Con Edison is required to do all chemical spraying under requirements of a New York State Department of Environmental Conservation permit. As such, Con Edison is in effect under NYSDEC supervision. Con Edison has not been cited by the DEC for any violations nor is there a record of any environmental problems at the base of any tower.

With regard to the accumulation of lead paint at the base of the towers, tarps are typically placed at the base of the towers during any repainting projects. In addition, according to Mr. Charlton, Con Edison is currently in a remedial process of removing lead paint for their towers. Hence, in our opinion, the need to examine soil for metals concentration is minimized.

Thank you for you attention and assistance in this matter. If you have any questions or need additional information, please contact me at this office.

Sincerely,

Bill Fetter
Chief Engineering Geologist

Cc: Robert Gaudioso, Esq. – Snyder & Snyder

G:\Enviro\2080.488\PhaseIAddendum

An Analysis of the Radiofrequency Environment in the Vicinity of a Proposed Personal Communications Services Base Station Site NY06XC488F: Consolidated Edison Tower - K221 Indian Hill Road, Yorktown, New York

Prepared by
the

Wireless & Optical Technologies Safety Department
Bell Laboratories
Murray Hill, New Jersey 07974-0636

Prepared for

Mike Hughes
Sprint Spectrum L.P.
Crossroads Corporate Center
1 International Boulevard
Mahwah, New Jersey 07495

December 16, 1999

Table of Contents

An Analysis of the Radiofrequency Environment in the Vicinity of a Proposed Personal Communications Services Base Station Site NY06XC488F: Consolidated Edison Tower - K221 Indian Hill Road, Yorktown, New York

Summary

This report is an analysis of the radiofrequency (RF) environment surrounding the Sprint Spectrum personal communications services (PCS) base-station antennas proposed for installation in Yorktown, NY. The analysis utilizes engineering data provided by Sprint together with well-established analytical techniques for calculating the RF fields associated with PCS transmitting antennas. Worst-case assumptions were used to ensure safe-side estimates, i.e., the actual values will be significantly lower than the corresponding analytical values.

The results of this analysis indicate that the maximum level of RF energy to which the public may be exposed is below all applicable health and safety limits. Specifically, in all normally accessible areas surrounding the installation, the maximum level of RF energy associated with *simultaneous and continuous operation of all proposed transmitters* will be less than 0.05% of the safety criteria adopted by the Federal Communications Commission as mandated by the Telecommunications Act of 1996. The Telecommunications Act of 1996 is the applicable Federal law with respect to consideration of environmental effects of RF emissions in the siting of personal wireless facilities. The maximum level of RF energy will also be less than 0.05% of the exposure limits of ANSI, IEEE, NCRP, the limits used by the State of New York Department of Health and the limits used by all states that regulate RF exposure.

1. Introduction

This report was prepared in response to a request from Sprint Spectrum for an analysis of the radiofrequency (RF) environment associated with the proposed personal communications services (PCS) facility, and an opinion regarding the concern for public health associated with long-term exposure in this environment.

The Telecommunications Act of 1996[1] is the applicable Federal law with respect to consideration of environmental effects of RF emissions in the siting of wireless facilities. With respect to personal communication services, e.g., PCS, Section 704 of the Telecommunications Act of 1996 states the following:

> "No State or local government or instrumentality thereof may regulate the placement, construction, and modification of personal wireless service facilities on the basis of the environmental effects of radio frequency emissions to the extent that such facilities comply with the Commission's regulations concerning such emissions."

Therefore, the purpose of this report is to ensure that the RF environment associated with this facility complies with the Federal Communications Commission (FCC) guidelines as required by the Telecommunications Act of 1996, which is also the same as the safety criteria used by the State of New York Department of Health (NYS DOH).

2. Technical Data

The proposed PCS antennas are to be mounted on the Consolidated Edison Tower - K221 located off Indian Hill Road in Yorktown, NY. The PCS antennas transmit at frequencies between 1930 and 1990 million hertz (MHz).

The actual RF power propagated from PCS antennas is usually less than 10 watts per transmitter (channel) and the actual *total* RF power is usually less than 200 watts per sector (assuming the maximum number of transmitters are installed and operate *simultaneously and continuously*). This is an extremely low power system when compared with other familiar radio systems, such as AM, FM, and television broadcast, which operate upwards of 50,000 watts. The attached figure, which depicts the electromagnetic spectrum, lists familiar uses of RF energy. Table 1 lists engineering specifications for the proposed system.

3. Environmental Levels of RF Energy

The antennas used for PCS propagate most of the RF energy in a relatively narrow beam (in the vertical plane) directed toward the horizon. The small amount of energy that is directed along radials below the horizon results in a RF environment directly under the antennas that is not remarkably different from the environment at points more distant.

The methodology used to calculate the exposure levels follows that outlined by the FCC in their OET Bulletin No. 65[1]. For the case at hand, the maximal potential exposure levels associated with *simultaneous and continuous operation of* Sprint's transmitters can be readily calculated at any point in a plane at any height above grade. Based on the information shown in Table 1, the maximum power density associated with these antennas, at any point in a horizontal plane 6 ft

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1. *OET Bulletin 65*, Edition 97-01, August 1997. Federal Communications Commission, Office of Engineering and Technology, Washington, DC

above grade will be less than 0.420 millionths of a watt per centimeter squared (0.420 $\mu W/cm^2$) and will be less than 0.526 $\mu W/cm^2$ at any point in a corresponding plane 16 ft above grade. The latter would be representative of the maximum power density immediately outside the upper floor of nearby private homes (assuming level terrain). These levels are also shown in Table 2 expressed as a percentage of the FCC's maximum permissible exposure (MPE) values found in the Telecommunications Act of 1996 (specifically, in the FCC *Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation* [2]).

The above values are the theoretical maxima that could occur and are not typical values. For example, the calculations include the effect of 100% field reinforcement from in-phase reflections. The assumption was also made that each transmitter operates continuously at maximum power. Because of variability in the number of calls being handled, the *average* power of the PCS system will be less than maximum and, hence, the time-weighted power densities will be lower than the values above. Experience has shown that the analytical technique used is extremely conservative. That is, actual power density levels have always been found to be smaller than the corresponding calculated levels even when extrapolated to maximum use conditions (all transmitters operating simultaneously) [3]. Also, levels inside nearby homes and buildings will be lower than those immediately outside because of the high attenuation of common building materials at these frequencies and, hence, will not be significantly different from typical ambient levels.

4. Comparison of Environmental Levels with RF Safety Criteria

Table 2 shows the calculated maximal RF power density levels in the vicinity of the proposed installation; Table 3 shows federal, state and consensus exposure limits for human exposure to RF energy at the frequencies of interest. The FCC MPE limits for PCS range from 1000 $\mu W/cm^2$ (public exposure) to 5000 $\mu W/cm^2$ (occupational exposure), while the corresponding calculated maximal power density levels in the environment around the proposed installation are 0.420 $\mu W/cm^2$ (at 6 ft above grade) and 0.526 $\mu W/cm^2$ (at 16 ft above grade).

5. Discussion of Safety Criteria

Publicity given to speculation about possible associations between health effects and exposure to magnetic fields from electric-power distribution lines, electric shavers and from the use of hand-held cellular telephones has heightened concern among some members of the public about the possibility that health effects may be associated with any exposure to electromagnetic energy. Many people feel uneasy about new or unfamiliar technology and often want absolute proof that something is safe. Such absolute guarantees are not possible since it is virtually impossible to prove that something does not exist. However, sound judgments can be made as to the safety of a physical agent based on the weight of the pertinent scientific evidence. This is exactly how safety guidelines are developed.

The overwhelming weight of scientific evidence unequivocally indicates that biological effects associated with exposure to RF energy are threshold effects, i.e., unless the exposure level is sufficiently high the effect will not occur regardless of exposure duration. (Unlike ionizing radiation, e.g., X-rays and nuclear radiation, repeated exposures to low level RF radiation, or nonionizing radiation, are not cumulative.) Thus, it is relatively straightforward to derive safety limits. By adding safety factors to the threshold level at which the most sensitive effect occurs, conservative exposure guidelines have been developed to ensure safety.

At present, there are more than 10,000 reports in the scientific literature which address the subject of RF bioeffects. These reports, most of which describe the results of epidemiology studies,

animal and cell-culture studies, have been critically reviewed by leading researchers in the field and all new studies are continuously being reviewed by various groups and organizations whose interest is developing health standards. These include the U.S. Environmental Protection Agency, the National Institute for Occupational Safety and Health, the National Council on Radiation Protection and Measurements, the standards committees sponsored by the Institute of Electrical and Electronics Engineers, the International Radiation Protection Association under the sponsorship of the World Health Organization, and the National Radiological Protection Board of the UK. All of these groups have recently either reaffirmed existing health standards, developed and adopted new health standards, or proposed health standards for exposure to RF energy.

For example, in 1986, the National Council on Radiation Protection and Measurements (NCRP) published recommended limits for occupational and public exposure[4]. These recommendations were based on the results of an extensive critical review of the scientific literature by a committee of the leading researchers in the field of bioelectromagnetics. The literature selected included many controversial studies reporting effects at low levels. The results of all studies were weighed, analyzed and a consensus obtained establishing a conservative threshold upon which safety guidelines should be based. This threshold corresponds to the level at which the most sensitive, reproducible effects that could be related to human health were reported in the scientific literature. Safety factors were incorporated to ensure that the resulting guidelines would be at least ten to fifty times lower than the established threshold, even under worst-case exposure conditions. The NCRP recommendations for both continuous occupational and public exposure to RF energy at the frequencies of interest are shown in Table 3. Although the State of New York does not have a regulatory program for the RF portion of the electromagnetic spectrum, the NYS DOH compares potential exposure levels with the recommendations of the NCRP to assess public safety. (Table 3 also includes a summary of the corresponding safety criteria recommended by various organizations throughout the world.)

In July of 1986, the Environmental Protection Agency published a notice in the Federal Register, calling for public comment on recommended guidance for exposure of the public[5]. Three different limits, ranging from approximately 500 to 5000 $\mu W/cm^2$ at PCS frequencies, were proposed. In 1987 the EPA abandoned its efforts and failed to adopt official federal exposure guidelines. However, 1993 and 1996 the EPA, in its comments on the FCC's Notice of Proposed Rule Making to adopt safety guidelines[6], recommended adoption of the 1986 NCRP limits[4].

In September 1991, the RF safety standard developed by Subcommittee 4 of the Institute of Electrical and Electronics Engineers (IEEE) Standards Coordinating Committee SCC-28 was approved by the IEEE Standards Board[7]. (Until 1988 IEEE SCC-28 was known as the American National Standards Institute (ANSI) C95 Committee—established in 1959). In November 1992, the ANSI Board of Standards Review approved the IEEE standard for use as an American National Standard. The limits of this standard are essentially identical to the 1982 ANSI RFPGs[8] for occupational exposure and are one-fifth of these values for exposure of the general public (uncontrolled environments). Like those of the NCRP, these limits resulted from an extensive critical review of the scientific literature by a large committee of preeminently qualified scientists, most of whom were from academia and from research laboratories of federal public health agencies.

The panels of scientists from the World Health Organization's International Commission on Non-Ionizing Radiation Protection (ICNIRP)[9] and the National Radiological Protection Board in the United Kingdom[10] independently developed and in 1993 published guidelines similar to those of ANSI/IEEE. In 1997, after another critical review of the latest scientific evidence, ICNIRP

reaffirmed the limits published in 1993[11]. Also, what was formerly the USSR, which traditionally had the lowest exposure guides, twice has revised upward its limits for public exposure. Thus, there is a converging consensus of the world's scientific community as to what constitutes safe levels of exposure.

Finally, in implementing the National Environmental Policy Act regarding potentially hazardous RF radiation from radio services regulated by the FCC, the Commission's Rules require that licensees filing applications after January 1, 1997[2] ensure that their facilities will comply with the 1996 FCC MPE limits outlined in 47 CFR §1.1310[3][3] (which are the same as the 1986 NCRP limits and the NYS DOH limits at PCS frequencies). (Under the terms of the Telecommunications Act of 1996, no local government may regulate the placement of wireless facilities based on RF emissions to the extent that these emissions comply with the FCC regulations [1].)

With respect to the proposed PCS antennas, be assured that the actual exposure levels in the vicinity of the Yorktown, NY installation will be below any health standard used anywhere in the world and literally thousands of times below any level reported to be associated with any verifiable functional change in humans or laboratory animals. This holds true even when all transmitters operate *simultaneously and continuously at their highest power.* Power density levels of this magnitude are not even a subject of speculation with regard to an association with adverse health effects.

6. For Further Information

Anyone interested can obtain additional information about the environmental impact of PCS communications from:

Dr. Robert Cleveland, Jr.
Federal Communications Commission
Office of Engineering and Technology
Room 7002
2000 M Street NW
Washington, DC 20554
(202) 418-2422

and

William J. Condon, CHP
Chief, Bureau of Environmental Radiation Protection
State of New York, Department of Health
2 University Place
Albany, NY 12203
(518) 458-6495

2. The FCC extended the transition period to October 15, 1997. Second Memorandum Opinion and Order and Notice of Proposed Rulemaking, ET Docket 93-62, FCC 97-303, adopted August 25, 1997. Prior to this date, the FCC required PCS licensees to comply with the 1992 ANSI/IEEE C95.1 limits and all other licensees (since 1987) to comply with the 1982 ANSI C95.1 limits.

3. Although all FCC licensees will be required to comply with 47 CFR §1.1310 limits, the FCC will continue to exclude certain land mobile services from proving compliance with these limits 47 CFR §1.1307. In the past, although licensees had to comply with the 1982 ANSI C95.1 limits, the FCC categorically excluded land mobile services, including paging, cellular, SMR and two-way radio, from hazard analyses because "individually or cumulatively they do not have a significant effect on the quality of the human environment"[12]. The FCC pointed out that there was no evidence of excessive exposure to RF radiation during routine normal operation of these radio services.

7. Conclusion

This report is an analysis of the RF environment surrounding Sprint's PCS base-station antennas proposed for installation in Yorktown, NY. The analysis utilizes engineering data provided by Sprint together with well-established analytical techniques for calculating the RF fields associated with PCS transmitting antennas. Worst-case assumptions were used to ensure safe-side estimates, i.e., the actual values will be significantly lower than the corresponding analytical values.

The results of this analysis indicate that the maximum level of RF energy to which the public may be exposed is below all applicable health and safety limits. Specifically, in all normally accessible areas surrounding the installation, the maximum level of RF energy associated with *simultaneous and continuous operation of all proposed transmitters* will be less than 0.05% of the safety criteria adopted by the FCC as mandated by the Telecommunications Act of 1996. The Telecommunications Act of 1996 is the applicable Federal law with respect to consideration of environmental effects of RF emissions in the siting of personal wireless facilities. The maximum level of RF energy will also be less than 0.05% of the exposure limits of ANSI, IEEE, NCRP, the limits used by the NYS DOH and the limits used by all states that regulate RF exposure.

Enclosure:
Figure. Electromagnetic Spectrum

8. References

[1] Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996).

[2] Federal Communication Commission 47 CFR Parts 1, 2, 15, 24 and 97. "*Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*" (August 6, 1996)

[3] Petersen, R.C., and Testagrossa, P.A., "Radiofrequency Fields Associated with Cellular-Radio Cell-Site Antennas," *Bioelectromagnetics*, Vol. 13, No. 6. (1992)

[4] *Biological Effects and Exposure Criteria for Radio Frequency Electromagnetic Fields*, NCRP Report No. 86, National Council on Radiation Protection and Measurements, Bethesda, MD. (1986)

[5] Federal Register, Vol. 51, No. 146, Wednesday, July 30, 1986.

[6] Notice of Proposed Rule Making *In the Matter of Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation*, August 13, 1993. ET Docket No. 93-62. (1993)

[7] *ANSI/IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz*, ANSI/IEEE C95.1-1992, Institute of Electrical and Electronics Engineers, Piscataway, NJ. (1992)

[8] American National Standard *Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz*, ANSI C95.1-1982, American National Standards Institute, New York, NY. (1982)

[9] *Electromagnetic Fields (300 Hz to 300 GHz)*, Environmental Health Criteria 137, World Health Organization, Geneva, Switzerland. (1993)

[10] *Board Statement on Restrictions on Human Exposure to Static and Time Varying Electromagnetic Fields and Radiation*, Documents of the NRPB, Vol. 4, No. 5, National Radiological Protection Board, Chilton, Didcot, Oxon, United Kingdom. (1993)

[11] "Guidelines for Limiting Exposure to Time-Varying Electric, Magnetic, and Electromagnetic Fields (up to 300 GHz) - ICNIRP Guidelines," *Health Physics*, Vol. 74, No. 4, pp 494-522. (1998)

[12] Action by the Commission February 12, 1987, by Second Report and Order (FCC 87-63), and Third Notice of Proposed Rulemaking (FCC 87-64). General Docket No. 79-144.

Table 1
Engineering Specifications for the Proposed PCS System, Yorktown, NY

Site Specifications	Sprint
maximum ERP per channel †	400 watts
actual radiated power per channel	18.5 watts
actual *total* radiated power per sector	55.5 watts
number of transmit antennas	3 per sector ‡
number of receive antennas	2 per sector ‡
maximum number of transmitters	3 per sector
number of sectors configured	3
antenna centerline height above grade	100 & 106 ft
antenna manufacturer	EMS Wireless
model number	FR90-16-02DP‡
gain	15.5 dBi
type	directional
downtilt	2° (electrical)

† *Effective Radiated Power* - ERP is a measure of how well an antenna concentrates RF energy; it is not the actual power radiated from the antenna. To illustrate the difference, compare the brightness of an ordinary 100 watt light bulb with that from a 100 watt spot-light. Even though both are 100 watts, the spot-light appears brighter because it concentrates the light in one direction. In this direction, the spot-light effectively appears to be emitting more than 100 watts. In other directions, there is almost no light emitted by the spot-light and it effectively appears to be much less than 100 watts.

‡ These EMS model antennas contain two antenna arrays (Tx, Rx) in a single radome, i.e., there is only one structure per Tx/Rx pair.

Table 2
Calculated Maximal Levels and the Levels as a Percentage of 1996 FCC MPEs* for the Proposed PCS Antennas, Yorktown, NY

Location	Power Density ($\mu W/cm^2$)	% of MPEs*
anywhere, 6 ft above mean grade level	< 0.420	0.042%
anywhere, 16 ft above mean grade level	< 0.526	0.053%

* MPE: The FCC limits for maximum permissible exposure (same as 1986 NCRP limits at the frequencies of interest)

Table 3
Summary of International, Federal, State and Consensus Safety Criteria for Exposure to Radiofrequency Energy at Frequencies Used for PCS Systems

Organization/Government Agency	Exposure Population	Power Density ($\mu W/cm^2$)
International Safety Criteria/Recommendations		
International Commission on Non-Ionizing Radiation Protection (1997) *Health Physics*, Vol. 74, No. 4, pp 494-522. (1998)[1]	Occupational	4875
	Public	975
National Radiological Protection Board (NRPB, 1993) (United Kingdom)	Occupational	10,000
	Public	10,000
Federal Requirements		
Federal Communications Commission (47 CFR §1.1310)	Occupational	5000
	Public	1000
Consensus Standards and Recommendations		
American National Standards Institute (ANSI C95.1 - 1982)	Occupational	5000
	Public	5000
Institute of Electrical and Electronics Engineers (IEEE Standard C95.1-1999 Edition)[2]	Occupational	6500
	Public	1300
National Council on Radiation Protection & Measurements (NCRP Report 86, 1986)	Occupational	5000
	Public	1000
State Codes		
New Jersey (NJAC 7:28-42)	Public	5000
Massachusetts (Department of Health 105 CMR 122)	Public	1000
New York State[3]	Public	1000

NOTES:

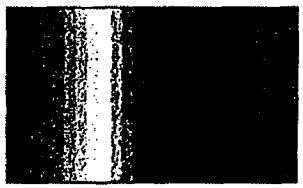
1. Reaffirmed in 1997 and published, with modification in 1998
2. Incorporating IEEE Standard C95.1-1991 and IEEE Standard C95.1a-1998
3. State of New York Department of Health follows NCRP Report 86.

ELECTROMAGNETIC SPECTRUM

Non-Ionizing Radiation

Ionizing Radiation

Light



AM Radio: *535 - 1605 kHz*
CB Radio: *27 MHz*
Cordless Phones: *49 MHz*
TV Ch 2-6: *54 - 88 MHz*
FM Radio: *88 - 108 MHz*
Marine Radio: *160 MHz*
TV Ch 7-13: *174 - 216 MHz*
TV UHF Ch 14-69: *470 - 800 MHz*
Cellular Radio, Specialized Mobile Radio, Paging: *806 - 946 MHz*
Antitheft devices: *10-20 kHz and/or 915 MHz*
Microwave oven: *915 and 2450 MHz*
Personal Communication Services: *1800 - 2200 MHz*
Intrusion alarms / door openers: *10.5 GHz*
Microwave radio: *1 - 40 GHz*
Satellite Communications: *100 MHz - 275 GHz*

Power Frequency