LOUDOUN COUNTY, VA
TECHNICAL REVIEW

PROPOSED
NEW

106-FOOT STEALTH SILO
by
NEXTEL COMMUNICATIONS

Nextel Site ID: VA2639B/WA72XC061
(Snickersville - Philomont)
CMPT 2002-0017
SPEX 2002-0032

Submitted by:

ATLANTIC TECHNOLOGY CONSULTANTS, INC.
A Member of The Atlantic Group of Companies

ATC PROJECT #: 1025-15

November 2, 2007

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EXECUTIVE SUMMARY:

Nextel Communications of the Mid-Atlantic, Inc. ("Nextel") of Columbia, Maryland has submitted an application to Loudoun County requesting a Special Exception and Commission Permit to construct an 106-foot stealth silo on property owned by Rita Childs located approximately 1.5 miles southeast of Philomont, east of Jeb Stuart Road (Route 630), northeast of Snickersville Turnpike (Route 734), and to the west of Watermill Road (Route 731) at 20741 Watermill Road, Purcellville, Virginia.

Nextel, also known as Sprint/Nextel is a FCC licensed telecommunications provider authorized and mandated to provide wireless communications services to the Loudoun County area. Nextel is proposing an 106-foot stealth silo ("silo") to support service delivery in an area of verifiable lack of coverage along Snickersville Turnpike (Route 734) from Philomont to Mountville.

This report outlines the specific areas of evaluation with respect to this proposal, and this consultant's recommendations regarding the Application package as presented. Supporting and clarifying evidence regarding the suitability of the proposed design in meeting the specified coverage goals is also included.

In general, it is the opinion of this consultant that the Applicant will be able to meet their stated coverage goals at a height of 80-feet. Therefore, it is recommended that the application is approved for an 80-foot silo with new setback requirements, and should be considered for approval contingent upon the criteria noted in Section 3.0 "Recommendations" of this document.

George N. Condyles IV

George N. Condyles, IV
President and COO
Atlantic Technology Consultants, Inc.

1.0 TECHNICAL:

1.1 Siting

The proposed tower site is a 100' x 100' lease area on approximately 10,000 square foot portion of a 12.72 acre parent parcel. The property is zoned AR-1 (Agricultural Rural-1) and located on Tax Map 56 Parcel 39B (MCPI # 496-15-6472). The proposed site, located approximately 1.5 miles southeast of Philomont, east of Jeb Stuart Road (Route 630), north of the intersection of Snickersville Turnpike (Route 734) and Watermill Road (Route 731), can be accessed from Watermill Road and is physically located at coordinates N 39° 02' 41.5" and W 77° 43' 18.4" at a ground elevation of 465' AMSL.

The Applicant is proposing to construct a 106' x 25' stealth silo, which can accommodate three (3) co-locators. Nextel proposes to place their ground equipment inside the silo (a 252 square foot equipment room) and the site compound surrounding the silo would accommodate additional carrier ground equipment. Nextel proposes the installation of 12 panel antenna to be mounted inside a 14-foot fiberglass cap located on the upper portion of the silo.

Setback:
The tower complies with the County's setback requirement that "…towers shall be set back one (1) foot for every five (5) feet in height from the property line." [Loudoun County 1993 Zoning Ordinance, Section 5-618 (C) (3) (e)] In other words, it is a 20% setback requirement. The Site Plan submitted with this Application shows the proposed 106' silo setback from the nearest property line approximately 216', which is 204% of the height of the tower and greater than the recommended 110% of the height of the tower.

The nearest occupied dwelling to the silo, a new residence located on the adjacent property north of the subject site, is approximately 300'. It is recommended that the proposed silo is moved approximately 450' to the west or southwest to meet a 750' setback as recommended by ATC. In addition to the residence on the adjacent property, the Applicant will need to consider the subject property's residence.

Note: While viewing the Applicant's site plan drawing (Sheet No. Z-1), it was observed that the stated scale (1" = 200') did not appear to match the measurements on the site plan. The Dewberry Professional Engineer, Alec Norris, was contacted about the discrepancy. He checked the scale and agreed that it should state 1" = 100'. He checked the scales on the remaining sheets and confirmed they were correct. Mr. Norris agreed to make the appropriate correction to Sheet NO. Z-1 and forward a revision to Loudoun County.

Geotechnical:

No special requirements

Landscape Buffer:

Trees along the property line are approximately 40' to 60' AGL. The proposed site is down hill from the crest approximately 20-feet. The proposed site would be located on a "working" farm.

The County concluded the following:

"The design of the proposed stealth silo and the presence of natural landscape features (rolling topography, existing tree cover, etc.) help to minimize the larger visual impact of the proposed construction on the surrounding area and enable it to blend with the agricultural character of the area…Staff finds the overall visual impact of the proposed stealth silo and mobile telecommunication facility to be in general conformance with Plan policies."

(Staff Report for Planning Commission Public Hearing Dated September 17, 2007, "Visual Impact", Page 10, paragraph 4)

Co-Location:

While co-location is preferable to construction of a new site, with such co-location minimizing visual impact of telecommunications equipment on the surrounding area, there are currently no existing structures within a 2-mile radius on which to co-locate.

A Verizon Wireless stealth 80-foot flag pole exists at the Philomont Volunteer Fire Department (VFD) located approximately 1 ½ miles northwest of the proposed site. It is a single carrier site and co-location at this site would not be feasible. In order for another carrier to be located at this site another flag pole or similar stealth structure would need to be constructed.

1.2 Structural

The proposed 106' stealth silo is designed to mimic traditional agricultural silos and shall be constructed of concrete with a 14-foot fiberglass cap. Nextel proposes the installation of 12 panel antennas to be mounted inside of the 14-foot fiberglass cap located on the upper portion of the silo.

The purpose of the fiberglass silo cap is to allow the antennas to be mounted to the interior of the structure. This design would be considered a "true" stealth silo. Sample pictures of stealth silos are attached to this report.

Structural drawings of the stealth silo signed/sealed by a Professional Engineer licensed in the Commonwealth of Virginia demonstrating the structure's ability to structurally accommodate the antennae and associated appurtenances of three (3) co-locations, while complying with all applicable construction and loading standards, guidelines, and codes has NOT been submitted with the Application.

The silo design shall be in full compliance of the EIA/TIA-222-F guidelines (the accepted industry standard) for structures, which is mandated to withstand the structural loading of all appurtenances, plus additional wind and ice loading.

Furthermore, in conformance with County ordinance, work at this site will remain in compliance with ALL federal, state, and local building codes and regulations if work proceeds as outlined in the application.

1.3 RF Exposure

FCC bulletin OET-65 provides guidance for a licensee proposing to construct a telecommunications support structure in calculation of RF exposure limitations, including analysis of the cumulative effect of all transmitters on the structure. Appropriate steps, including warning signage at the site, must be taken to protect both the general public and site workers from unsafe RF exposure in accordance with federal guidelines.

Documentation of an RF exposure study is NOT included with this application; therefore it is assumed that this study has not been performed. Although this Consultant sees no evidence of unsafe RF exposure levels being generated at this site if co-location were to proceed as proposed, a certified RF Analysis Report is recommended.

RF site exposure warning signage placement shall be appropriately planned for this site.

1.4 Grounding

Grounding of all structures and equipment at an RF site is critically important to the safety of both personnel and equipment at the site. Even a single component not meeting this standard places all other site components at risk for substantial damage. All structures and equipment at the site should maintain a ground potential difference of less than 5 ohms.

A grounding plan was not submitted with this Application.

1.5 General Safety

The 100'x100' site compound will be surrounded by suitable 8' high wooden stockade fence to prevent unauthorized access to the tower.

Additional safety measures to be placed at this site include RF exposure warning signage, site identification information, routine and emergency contact information, and FCC Registration number.

The Permit Plans should include the installation of an OSHA-approved style of fall prevention cable.

1.6 Interference

An interference study, taking into account all proximally located transmitters and receivers known to be active in the area, is advisable prior to any new tower construction. A full interference study has not been included with the Applicant's design, and therefore it is assumed that such a study has not been performed. While it remains technically prudent and advisable to complete this study for any co-location, practically speaking this consultant sees no evidence of interference by or with this site after a general evaluation of the surrounding transmitter sites.

Should any interference issues be posed with respect to this site, mitigation would nevertheless remain the responsibility of the tower owner and affected carrier(s), and would be regulated by the Federal Communication Commission, having no effect or burden on the County.

2.0 PROCEDUREAL

2.1 FAA Study

An initial search was performed by this consultant via TOWAIR Determination under the ASR online system on the FCC website to determine if registration is required. The TOWAIR determination results were as follows:

"Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided."

2.2 FCC Antenna Site Registration

This site does not yet have, nor is it required to have, an antenna site registration number. For both routine and emergency identification purposes, however, it is recommended that this site be registered with the Federal Communication

Commission. All registered sites should have their registration number conspicuously displayed at the site which is normally on the security fence surrounding the compound area.

2.3 Environmental Impacts

The National Environmental Policy Act of 1969 (NEPA), delineated in Title 47 of the Code of Federal Regulations, Part 1, Subpart I, sections 1.1301-1.1319, requires federal agencies to incorporate environmental considerations into their decision-making process when evaluating new construction proposals. As a licensing agency, the Federal Communication Commission (FCC) requires all licensees to consider the potential environmental effects from their construction of antenna support structures, and to disclose those effects in an Environmental Assessment (EA) that must be filed with the FCC for review.

A Phase I Environmental Site Assessment, dated April 20, 2001, performed by Nutshell Enterprises, LTD was submitted with the Application. According to the report, "The site has aboveground storage of diesel fuel and gasoline. Storage conditions do not meet current EPA and NFPA codes, however the tanks do not appear to be leaking and there is no spillage around them…It also has an aboveground propane tank and an underground fuel oil tank."

The Findings and Conclusions of the report stated, "We have found no on-site environmental concerns, and there are no neighboring environmental concerns, that would impact Nextel's use of the site for a new tower."

Typically, a NEPA Phase I Report should include the following items:

- NEPA Checklist
- NEPA Summary Report
- Associated documentation
  - Figures, Drawings, Maps
  - Tribal Correspondence
  - Land Resources Map and FEMA Floodplain Map
  - SHPO Correspondence (See next Section 2.4 "Historic Impacts)
  - Department of Game and Inland Fisheries Response
  - Department of Conservation and Recreation Response

While the April 20, 2001 report indicates that correspondence was initiated by Nutshell Enterprises with the appropriate agencies, with the exception of the Virginia Department of Historic Resources (VDHR), however correspondence letters and responses were not included with the report.

Due to the amount of time that has passed since the report was prepared, it is this Consultant's recommendation that a new assessment and NEPA Phase I Report be prepared for review.

The NEPA Phase I Assessment is a report that is submitted to the FCC only if requested by the FCC. Otherwise, it shall be reviewed by the appropriate locality for which the proposed tower site is being considered for approval.

2.4 Historic Impacts

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires that State Historic Preservation Offices (SHPO) and the President's Advisory Council on Historic Preservation be given a reasonable opportunity to comment on all undertakings with the potential to affect historic properties. The licensee is required to submit to the SHPO a detailed description of the project, a listing of local historic resources, and a discussion of any measures being undertaken to mitigate impacts (if any) on historic resources. Upon receipt, the SHPO has thirty (30) days to review and respond to those submissions. All agencies with authority to permit construction are required to consider the SHPO response in its decision making process with respect to new construction applications.

A Cultural Resources Survey, dated May 12, 2005, was submitted with the Application. A balloon test at a height of 106' was performed and photographs were taken from old and historic locations with the 1-mile radius study area. The report concluded that the proposed 106' silo would "…have negligible negative impact on the historic properties or 50+ year old structures in or around the surrounding area." However, a response from the Virginia Department of Historic Resources (VDHR) was NOT submitted with the Application.

2.5 Supporting Documentation

The Applicant has included documentation supporting the construction of the proposed site in the form of propagation mapping.

In addition, supporting documentation in the form of photosimulation was submitted with the Application. This Consultant believes the photosims are an accurate representation of the silo from various locations at a significant distance surrounding the proposed site.

An independent RF analysis has been performed by this Consultant showing coverage achieved at different heights, i.e., 105', 90', 80', 70', 60', 50'. Although a stealth silo is a good choice in an agricultural environment, the height of the silo should be considered from a visual impact perspective. The goal should be to consider the minimum height

necessary to achieve the coverage objectives in order to minimize the visual impact on the surroundings. Coverage maps are appended to this report that indicates the applicant will still be able to meet their stated coverage objectives at height of 80'.

3.0 RECOMMENDATIONS

This application should be approved with a reduction in height of the silo from 106' AGL to 80' AGL and moved west from the proposed location to accommodate the 750' setback requirement.

It is therefore the recommendation of this Consultant that the County consider the Applicant's proposal contingent upon the following criteria being submitted for review prior to final approval:

- Structural Drawings of a stealth concrete silo with a fiberglass silo cap;
- Grounding specifications;
- Certified RF Analysis Report;
- An updated NEPA Phase I Evaluation;
- Response from Virginia Department of Historic Resources;
- Setback adjustment from nearest residence.

In addition, it is the opinion of this Consultant that the silo be approved for an 80-foot height.

In closing, this consultant remains available to address any comments or questions which may arise after review of this report. Any interested party with such comments or questions may feel free to contact this firm, which remains committed to delivering independent, objective, unbiased, and thorough consulting services.

Respectfully submitted,

George N. Condyles IV

George N. Condyles, IV
President & COO

Tower Located on Water Mill Road

Closest Tower – Verizon – Philomont
Stealth Flag Pole

Nearby Barn

Farm Utility Building

Approximate Location of Tower

Tree Buffer along property Line

Nearby Residence

SAMPLE STEALTH SILO

SAMPLE STEALTH SILOS

Antenna Structure Registration

TOWAIR Determination Results

HELP

New Search Printable Page

*** NOTICE ***

TOWAIR's findings are not definitive or binding, and we cannot guarantee that the data in TOWAIR are fully current and accurate. In some instances, TOWAIR may yield results that differ from application of the criteria set out in 47 C.F.R. Section 17.7 and 14 C.F.R. Section 77.13. A positive finding by TOWAIR recommending notification should be given considerable weight. On the other hand, a finding by TOWAIR recommending either for or against notification is not conclusive. It is the responsibility of each ASR participant to exercise due diligence to determine if it must coordinate its structure with the FAA. TOWAIR is only one tool designed to assist ASR participants in exercising this due diligence, and further investigation may be necessary to determine if FAA coordination is appropriate.

DETERMINATION Results

Structure does not require registration. There are no airports within 8 kilometers (5 miles) of the coordinates you provided.

Your Specifications

NAD83 Coordinates	
Latitude	39-02-41.5 north
Longitude	077-43-18.4 west
Measurements (Meters)	
Overall Structure Height (AGL)	32.3
Support Structure Height (AGL)	32.3
Site Elevation (AMSL)	141.7

Structure Type

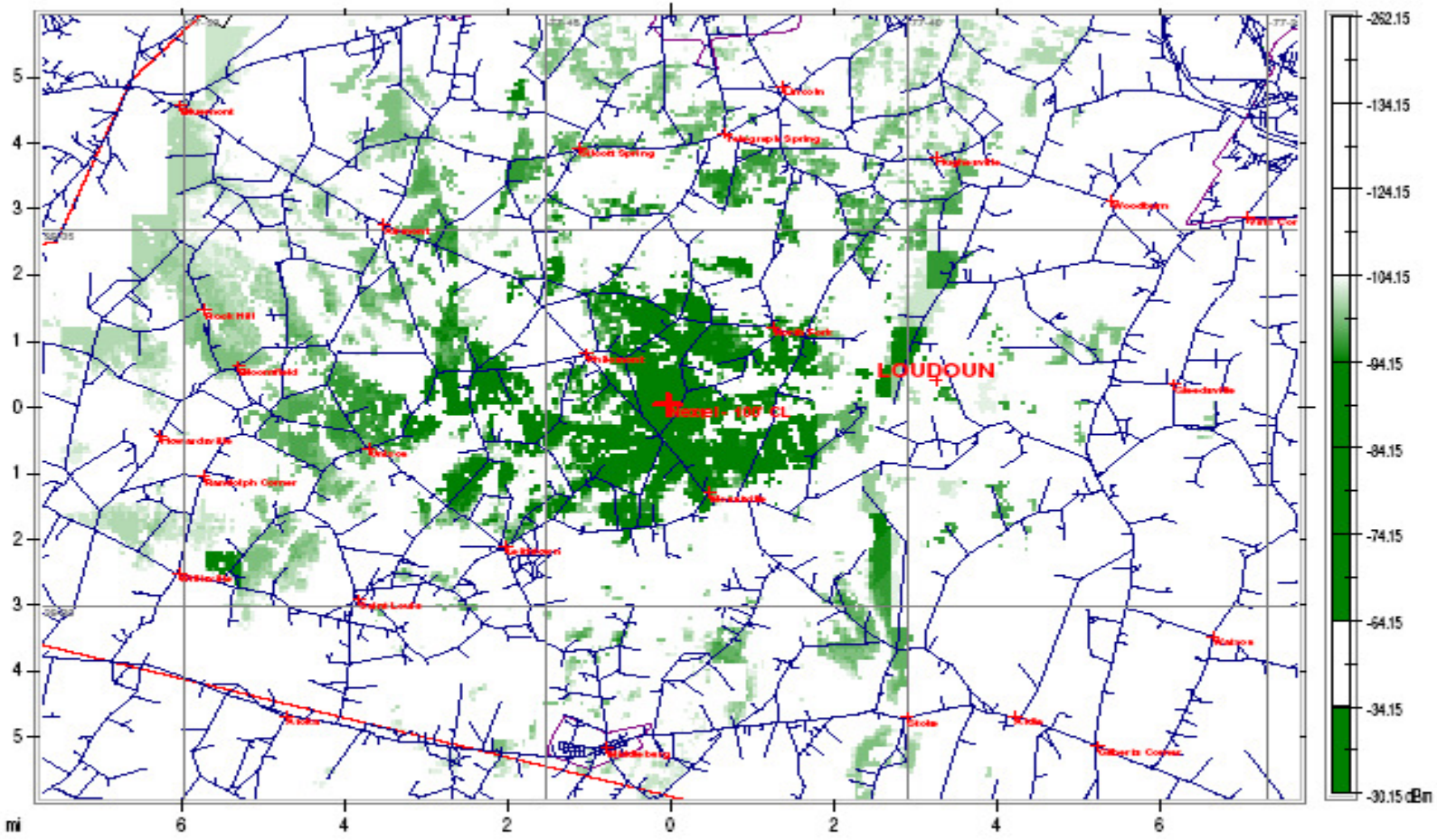
TOWER - Free standing or Guyed Structure used for Communications Purposes

Tower Construction Notification
Notify Tribes and Historic Preservation Officers of your plans to build a tower.
Note: Notification does NOT replace Section 106 Consultation.

Federal Communications Commission
445 12th Street SW

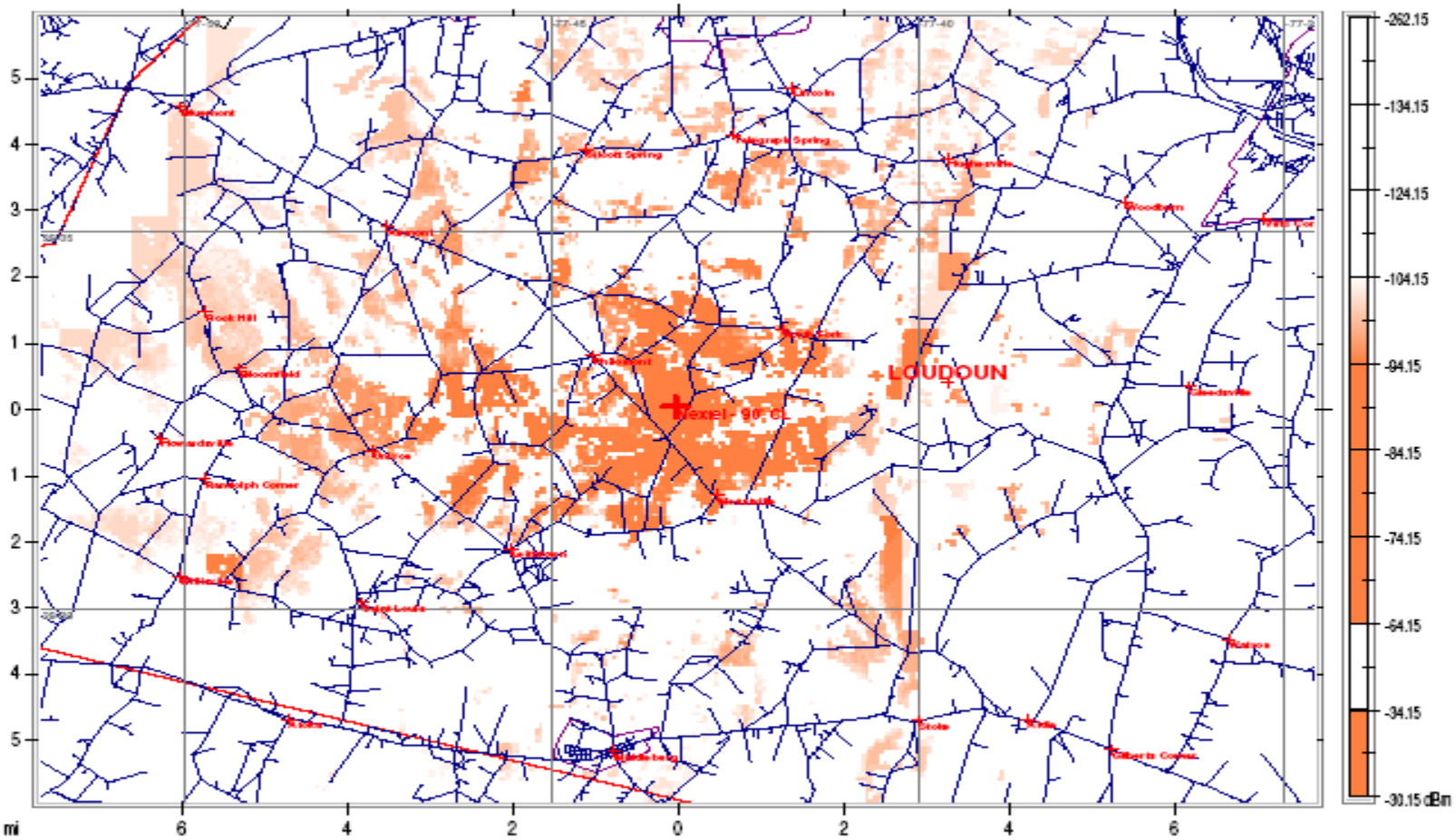
Phone: 1-877-480-3201
TTY: 1-717-338-2824

Loudon County, Virginia



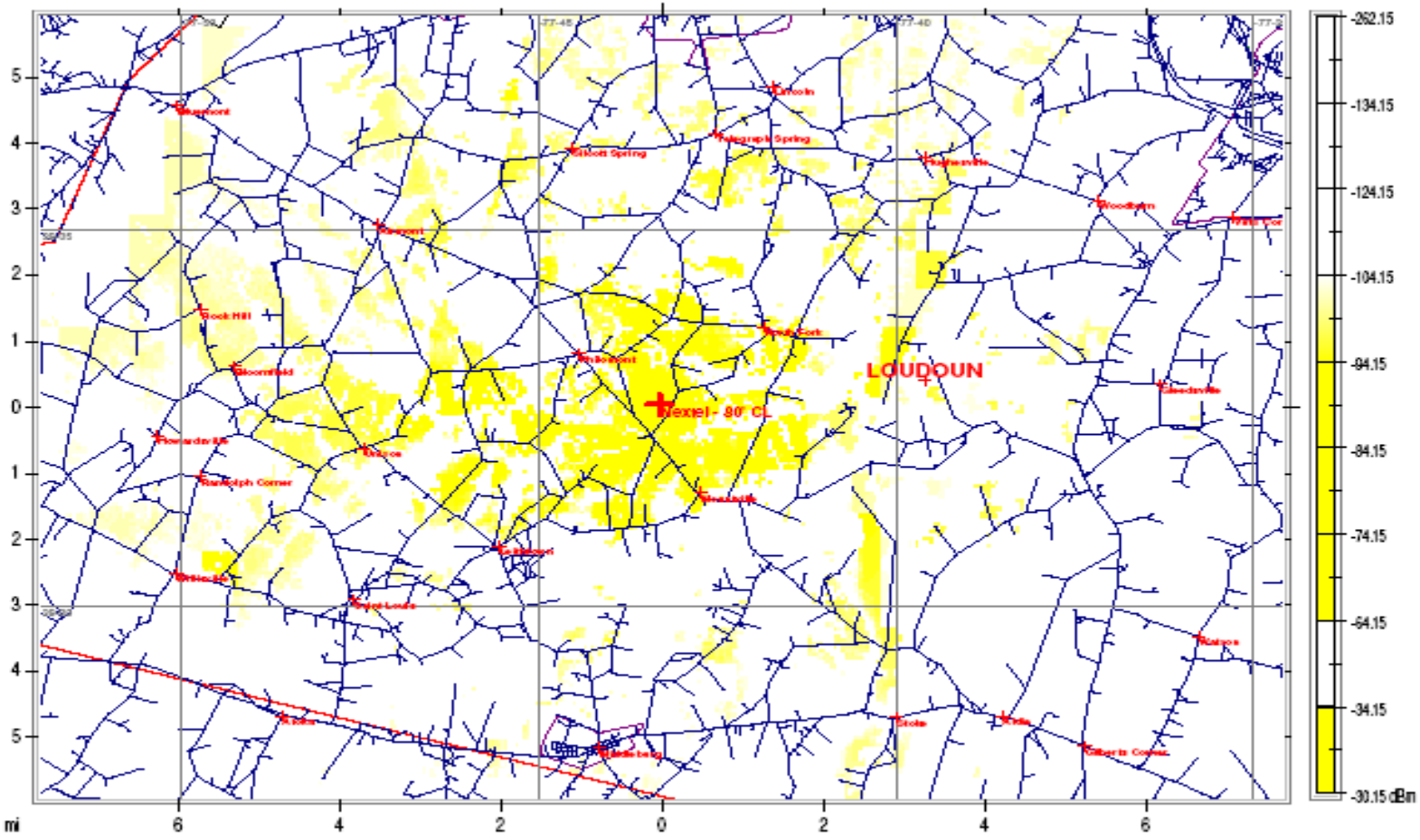
NEXTEL-SILO-AGL. 105'

Loudon County, Virginia



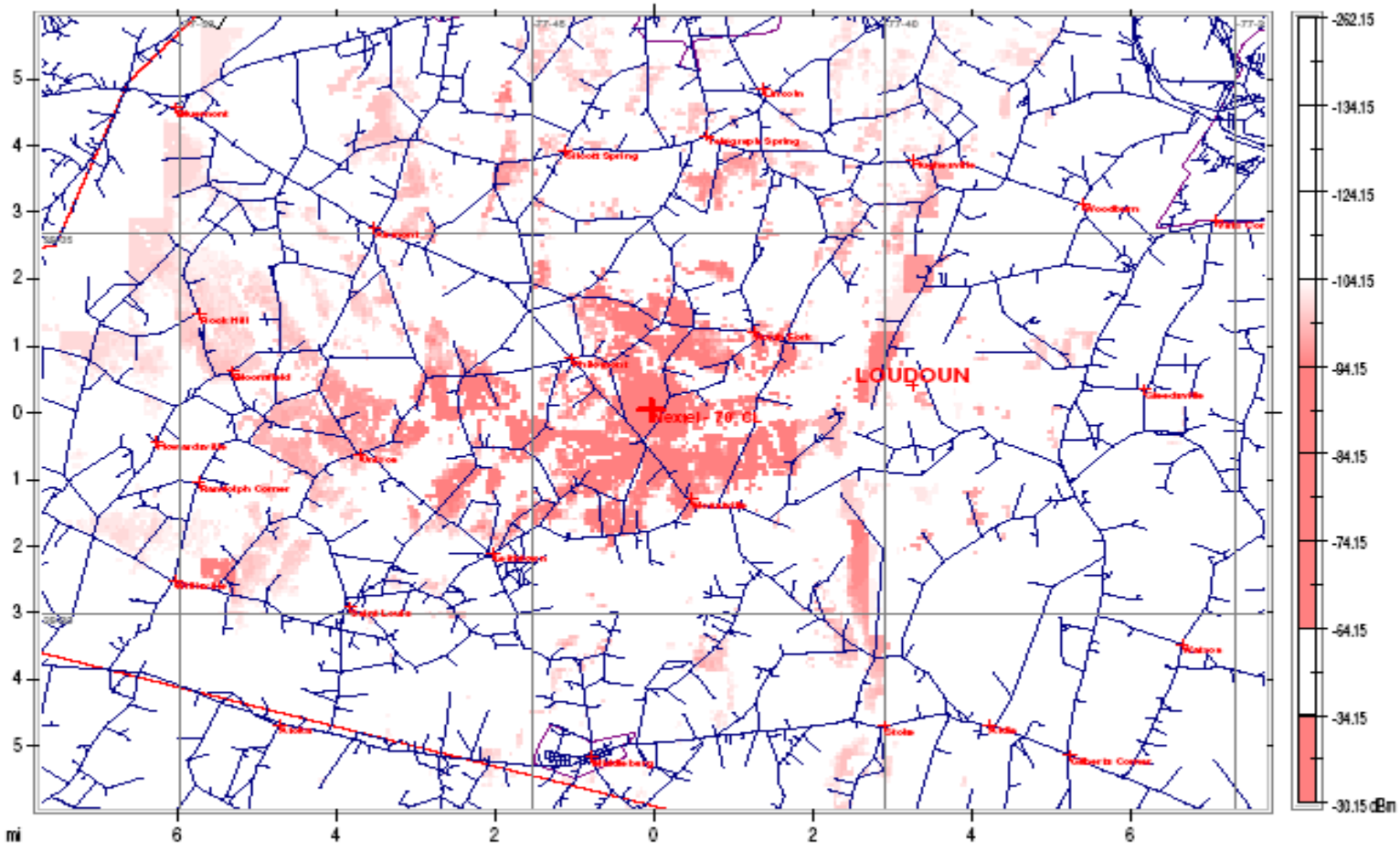
NEXTEL-SILO- AGL. 90'

Loudon County, Virginia



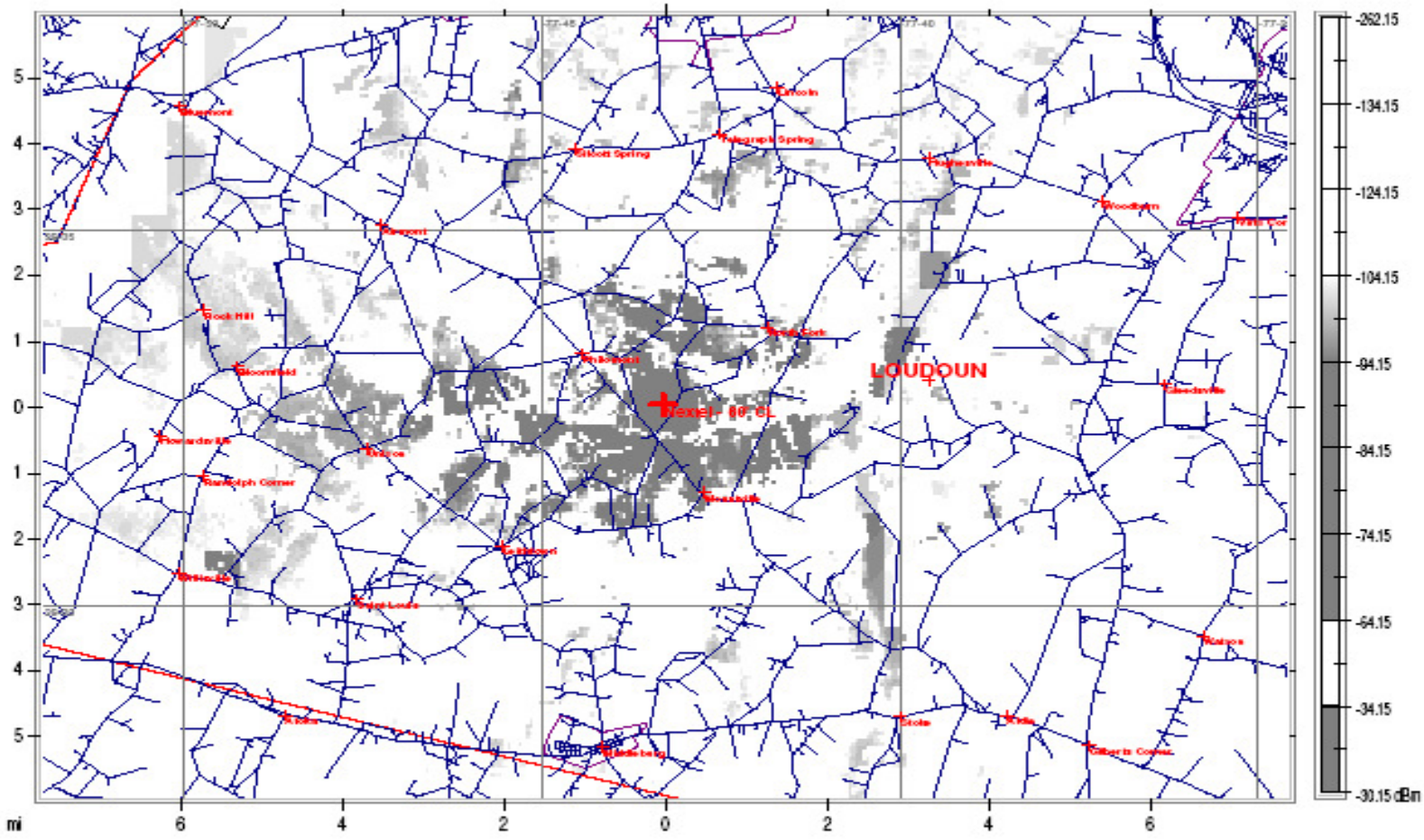
NEXTEL-SILO- AGL. 80'

Loudon County, Virginia



NEXTEL-SILO- AGL 70'

Loudon County, Virginia



NEXTEL-SILO- AGL. 60'