



**NIXON
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February 28, 2019

VIA FEDERAL EXPRESS

Planning Board
Town of Thompson
4052 Route 42
Monticello, New York 12701
Attn: Heather Zangla, Planning Board Secretary

RE: Application by Tarpon Towers II, LLC ("Tarpon") and Bell Atlantic Mobile Systems of Allentown, Inc. d/b/a Verizon Wireless ("Verizon Wireless") for the approvals necessary to construct and operate a 184' wireless telecommunications tower (with 4' lightning rod) and associated improvements on land owned by Calcam Associates, Inc. located off Wurtsboro Mountain Road (S.B.L. # 35-1-34) in the Town of Thompson, Sullivan County, New York (Verizon Wireless' "Louise Marie" site)

Dear Members of the Planning Board:

By application dated January 24, 2019, Tarpon/Verizon Wireless applied to the Town of Thompson Planning Board for the approvals necessary to construct and operate the above-referenced project. On February 4, 2019, representatives of Tarpon/Verizon Wireless met with Town Engineer Richard McGoe, P.E. regarding the project. Thereafter, we received questions/comments from Mr. McGoe (the "Engineer's Comments"). The Engineer's Comments are set forth below in bold italicized type, followed by Tarpon/Verizon's response in regular type.

1. ***The Applicant proposes to erect a 184 ft. tall cell tower sized for 4 carriers on a site next to the Route 17 off ramp on Old 17 (Wurtsboro Mountain Road).***

Response: No response necessary.

2. ***The Board should be aware that this will be a lattice type tower in lieu of a monopole.***

Response: Tarpon has proposed a 184' lattice tower. In Tarpon's experience, once a tower exceeds 150', a lattice tower is often preferred. While monopole towers are often preferred for towers of shorter height, the overall visibility of a 184' monopole is likely to be greater than the proposed lattice tower because the base of the monopole will have to be so large (approximately 6' in diameter gradually tapering to approximately 18" in diameter at the top) to accommodate the overall 184' tower height, and a lattice tower

permits backlighting to be seen through the tower structure limiting its overall visibility, while as a solid opaque structure, a monopole does not. It is for these reasons that Tarpon has proposed a lattice tower.

3. *We recommended during our work session that the Planning Board may request a balloon test for determination of visual impacts.*

Response: As set forth in Exhibit I, Tarpon has completed a balloon fly and a zone of visibility map is enclosed documenting the overall visibility of the proposed tower. In addition, attached hereto as Exhibit R (lettered to follow Exhibits A-Q previously submitted with the Application) is a visual methodology report documenting the balloon fly procedures.

4. *Structural calculations are to include ice and wind loads.*

Response: As set forth in Exhibit Q, the tower will be designed to the ANSI/TIA-222-G structural standard for towers located in the upstate New York region. The structural standard includes design standards for ice and wind loads found in the Thompson region.

5. *The metes and bounds for the easement for the access road should be shown on the site plans. We understand they are available in written form.*

Response: The metes and bounds are included in the revised project plans (the "Revised Plans") attached hereto as Exhibit S. See Sheet SU-101. Two (2) full size copies of the Revised Plans are also enclosed.

6. *The 9% grade on the access drive will require stabilized swales which should be detailed on the plans.*

Response: The requested detail is shown on Sheets C-1B, C-5, and C-6 of the Revised Plans. The new access road will create a "berm" so to speak for water naturally flowing off the top of the hill toward the W/NW. We have designed the access road with a drainage swale on the south side to capture this runoff and two culverts will divert the water under the new access road so the water can continue the natural drainage path to the W/NW. The drainage swale is a grass lined swale with stone check dams. The new access road is superelevated to pitch water into the swale. For this reason we have only designed for a swale on one side of the road (as opposed to both sides) as it captures all the runoff associated with the construction of the road.

7. *Based on a field review, site distance at the newly proposed access drive may be challenging and should be noted on the site plan.*

Response: The requested information is shown on Sheet C-1A of the revised plans. The sight distance in both directions exceeds MUTCD requirements (200' minimum) for 30mph roads.

8. *We would recommend a removal bond.*

Response: Tarpon is willing to provide a removal bond as part of its building permit application, in an amount determined by the Planning Board.

9. *The coverage maps provided with the study are illegible and at too small a scale. We were unable to identify the coverage areas and road names.*

Response: Enclosed as Exhibit T is a revised RF report (the "Revised RF Report") that includes detailed (zoomed in) google earth based supplemental maps of the Rock Hill area (see pp. 24-26 in revised RF Report). Other areas of interest can be discussed and viewed at the public hearing, with the RF Design Engineer.

10. *The Applicant's engineer should explain the difference between the coverage map being shown in Exhibit F page 15 and the coverage map being shown on page 19. The coverage map on page 19 continues to show major voids in coverage in the Rock Hill area.*

Response: The RF plot on p. 15 of the Revised RF Report demonstrates the best server coverage for 700MHz (this is Verizon's coverage layer) in the coverage area. Page 19 shows the proposed best server for 2100MHz. 2100MHz gap areas will transition seamlessly to the 700MHz frequency. Coverage gaps like the ones shown on p. 19 can be a problem in areas of high capacity demand where 2100MHz coverage is critical to offloading other sectors or carriers. The vast majority of the gap area near Rock Hill, however, is wooded area that will not impact the overall coverage or capacity off-load provided by the site. The higher frequencies like the 2100MHz/AWS band are more susceptible to terrain and clutter and therefore, provides less overall coverage than a 700 MHz frequency. The electrical characteristics (especially the vertical beam-width) of the higher frequency antennas vary as well. While it is possible to make antenna adjustments now to improve coverage closer to the site, doing so would pull coverage away from the larger potential coverage area, thereby reducing the overall capacity offload benefit to adjacent sites (especially Monticello). We have demonstrated this with replacement coverage slides on pp. 19 and 21 of the Revised RF Report.

11. *Exhibit D provided the zoning code section 2 50-61. Paragraph A3 states that the site plan elements required including road, buildings, grading plans, etc. is "not applicable". The Applicant's representative should explain. Applicable site plans have been provided however.*

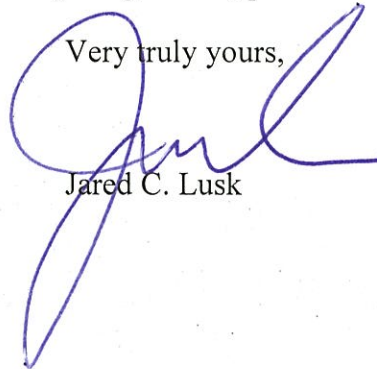
Response: This response was submitted in error. Exhibit M and the Revised Plan, provide the requested information.

12. *Section 2 50-70 B requires that if the tower complies with the setback requirements of the zoning district the tower must be designed to fall within itself. Therefore, the documents provided should verify that the tower is designed to fall within itself.*

Response: As set forth in Exhibit Q, the proposed tower will be designed to fall within 90' of its base in the unlikely event of a tower failure.

If you have any questions or need anything further, please do not hesitate to contact me.

Very truly yours,



Jared C. Lusk

JCL/mkv

Enclosure

cc: Brett Buggeln
Kathy Pomponio
Michael Crosby
Sara Colman

EXHIBIT R

VISUAL RESOURCE EVALUATION

PROPOSED 184' TALL TELECOMMUNICATIONS STRUCTURE

**NY1137
Louise Marie
Wurtsboro Mountain Road
Town of Thompson
Sullivan County
New York, 12775**

Submitted by:



1001 3rd Ave West
Bradenton, Florida 34205

Prepared by:



PRACTICAL SOLUTIONS. EXCEPTIONAL SERVICE.
36 British American Blvd., Suite 101
Latham, New York 12110
518-783-1630
518-783-1544 FAX

February 22, 2019

VISUAL RESOURCE EVALUATION

Tectonic Engineering & Surveying Consultants, P.C., was contracted by Tarpon Towers II, LLC to conduct a "Visual Resource Evaluation" to determine which areas within the Town of Thompson will contain views of the proposed 184 foot tall wireless telecommunications structure.

Setting:

The proposed site is located off of Wurtsboro Mountain Road in the Town of Thompson, Sullivan County, New York. The surrounding land use is HC-2: Highway Commercial-2. Within the study area the topography ranges in elevation from 1,400' +/- AMSL (Above Mean Sea Level) to 1,650' +/- AMSL. The predominant forest species are mixed deciduous and coniferous, with an estimated height of 30 to 60 feet. The field study for this visual resource evaluation was conducted in the winter season during 100% leaf off conditions. The leaf off condition represents a worst case scenario in that it is a scenario in which the visibility of the structure is maximized due to the lack of leaves on existing vegetation.

Methodology:

On Tuesday, January 8th, 2019, Tectonic Engineering & Surveying Consultants, P.C., conducted a field investigation for the purpose of evaluating the viewshed associated with the proposed installation of the 184 foot tall self-support tower (structure) with a 4 foot lightning rod. Conditions were foggy, approximately 34°-41°, with wind speeds of approximately 5-8 mph. The study area consisted of a Two (2) mile radius from the project site. The two (2) mile radius is generally consistent with current industry practices. Creating a viewshed greater than a two (2) mile radius is generally unwarranted. Due to the fact that objects tend to appear smaller the farther they are from the viewer, in this case, the structure would appear very small, if visible at all, from a distance of more than two (2) miles.

The methodology utilized during this field investigation is referred to as a "balloon test." The height of the proposed structure was simulated by floating a three-foot diameter, helium-filled weather balloon at 184 feet above ground level (AGL). The balloon is set at the top of the structure (184'), as opposed to the top of the lightning rod (188') because the lightning rod is very narrow and is notably less visible than the antenna array. The balloon provided reference points for height as well as location and also provides a known dimension that later aids in the production of photo simulations.

The participants then proceeded with a review of the proposed structure's visual impact by noting those areas on a USGS 7.5 Minute Series Topographic Quadrangles Map that fall within the study area and marking those points from which, in theory, one might see the structure upon its completion. The terrain represented in the topographic map, was then analyzed to determine those areas from which views would be "blocked by topography," and therefore from which one would not see the structure upon its completion.

Tectonic drove the study area to confirm the potential visibility of the structure based on the viewshed map. Areas delineated as "blocked by topography" were confirmed by viewing the site from public roadways within the two (2) mile radius and it was found that the topography only viewshed map first produced was correct and accurate, and that the balloon was in fact not visible from areas indicated to be blocked by topography. During the "in field" review, the participants conducted a second analysis to determine those areas from which views of the structure may be "visible" or "concealed by vegetation."

The resulting data from this second analysis was reviewed and referenced on the "Viewshed Analysis Map" attached. Colors are used to differentiate between areas from which the structure will be visible (Green), concealed by vegetation (Yellow) and areas from which a view of the structure will be blocked by topography (Red). The viewshed analysis resulted in the discovery that the proposed structure would be visible from only very few locations within the two (2) mile radius. The structure will only be visible from a small area along Bowers Road, Adams Road, Glen Wild Road, Lake Louise Marie and Wanaksink Lake. Overall, the viewshed map confirms that the proposed structure will not result in any significant visual impacts.

Photographs were taken from various vantage points within the study area to document the actual view towards the proposed structure, as well as the general character of the viewshed. Each photograph attached includes a brief description of the location and orientation from which it was taken, as summarized below:

1. *View from the intersection of Rockhill Drive & Factory Road, looking south towards the proposed structure from approximately 1,150' away.*
2. *View from Iroquois Springs on Bowers Road, looking south towards the proposed structure from approximately 1,850' away.*
3. *View from the intersection of Bowers Road & East Glen Wild Road, looking south towards the proposed structure from approximately 9,050' away.*
4. *View from the intersection of Glen Wild Road & East Glenwild Road, looking south towards the proposed structure from approximately 9,800' away.*
5. *View from the intersection of Glen Wild Road & Adams Road, looking southeast towards the proposed structure from approximately 8,050' away.*
6. *View from 316 Adams Road, looking south towards the proposed structure from approximately 1,550' away.*
7. *View from the intersection of Rock Hill Drive & Emerald Place, looking east towards the proposed structure from approximately 2,900' away.*
8. *View from Holiday Mountain Trail near the Holiday Mountain Ski Area, looking east towards the proposed structure from approximately 8,850' away.*
9. *View from the intersection of Bristol Circle & North Emerald Drive, looking northeast towards the proposed structure from approximately 4,800' away.*
10. *View from the intersection of Lake Shore Drive & Lake View Court, looking northeast towards the proposed structure from approximately 3,100' away.*
11. *View from the intersection of Wolf Lake Road & NYS Route-17, looking northwest towards the proposed structure from approximately 4,950' away.*

These photo locations are presented on the "Photo Log Map" attached.

Process:

Photographs of the weather balloon from the view points noted were taken with a Canon EOS Digital Rebel XT 8 mega pixel camera using a 55mm focal length lens to mimic the view as observed from the human eye. A three (3) foot diameter red helium filled balloon was floated to a height of 184'. The 3' diameter was checked with the algebraic formula of circumference = $\pi \times \text{diameter}$ where ($\pi = 3.14$) x (diameter = 3') = 9.42' around.

In order to analyze the potential visual impacts of the proposed structure, Tectonic took photographs of the balloons from locations within the search area for the purpose of preparing simulations of the proposed structure. Photographs for which there is a corresponding simulated view (#2 & 6) of the proposed structure were produced by first photographing an existing similar type structure, then photographing the view towards the proposed site where the marker balloon was set to a height of 184' AGL. The digital images of the balloons and similar structure were then merged and scaled through the use of the image editing software, "Adobe Photoshop CS5." With this process, the structure is scaled to the correct height and width by scaling the similar type structure using measurements from the marker balloon. The similar type structure used has an antenna array that spans twelve feet (12'). By measuring the balloon width of 3 feet (3'), one can determine the proper width of the antenna array by multiplying the balloon width by four (4). The composite is printed out directly on a color printer, producing the final image.

Conclusion:

The Viewshed Analysis Map presents a conservative delineation of the viewshed within the study area, along the public roadways, and inside public parks. Therefore, any area from which any part of the structure may be visible is presented as a "visible area." In actuality, the views from many of these areas will be partially obscured by the mature vegetation and/or only the top of the structure may be visible. The installation of this telecommunications structure will not have a significant impact on the viewshed and surrounding area.

Sincerely,

TECTONIC ENGINEERING & SURVEYING CONSULTANTS, P.C.

By: 

Phil Cocca
Visual Technician

By: 

Ed Frawley
Vice President

EXHIBIT S



DIRECTIONS TO SITE:

FROM ALBANY, TAKE I-87 S AND FOLLOW FOR 50.8± MILES. TAKE EXIT 19 TOWARD NY-28 AND FOLLOW FOR 0.8± MILES. TURN RIGHT ONTO NY-28 W AND FOLLOW FOR 0.5± MILES. MERGE ONTO US-209 S AND FOLLOW FOR 38.7 MILES. TURN RIGHT ONTO SULIVAN ST AND FOLLOW FOR 0.40± MILES. CONTINUE ONTO WOODLAND TRAIL AND FOLLOW FOR 0.2± MILES. CONTINUE ONTO WURTSBORO MOUNTAIN RD AND FOLLOW FOR 5.5± MILES. SITE WILL BE ON THE LEFT.

SITE ADDRESS:	WURTSBORO MOUNTAIN RD THOMPSON, NY 12775
MUNICIPALITY:	TOWN OF THOMPSON
COUNTY:	SULLIVAN
TAX MAP NUMBER:	35-1-34
ZONING DISTRICT:	HC-2 - HIGHWAY COMMERCIAL-2
STRUCTURE COORDINATES:	41.621411* -74.579762*
GROUND ELEVATION:	1593'± AMSL
PROPERTY OWNER:	CALCAM ASSOC INC 390 BROADWAY MONTICELLO, NY 12701
APPLICANT:	TARPON TOWERS II, LLC 1001 3RD AVE WEST, SUITE 420 BRADENTON, FL 34205
CONTACT PERSON:	BRETT BUGGELN
CONTACT PHONE:	(941) 400-2202

PROJECT SUMMARY

PROJECT DESCRIPTION

THE PROPOSED WORK CONSISTS OF INSTALLING CELLULAR ANTENNAS AND RELATED EQUIPMENT ON A PROPOSED SELF SUPPORT TOWER AND THE INSTALLATION OF EQUIPMENT WITH GENERATOR AT GRADE WITHIN A PROPOSED FENCED COMPOUND. ACCESS TO THE FACILITY WILL BE VIA PROPOSED GRAVEL ACCESS DRIVE. PROPOSED UTILITIES (POWER & FIBER) WILL BE ROUTED UNDERGROUND ALONGSIDE ACCESS ROAD.

[illegible]

SHEET INDEX

THIS SET OF PLANS SHALL NOT BE UTILIZED AS CONSTRUCTION DOCUMENTS UNTIL ALL ITEMS OF CONCERN HAVE BEEN ADDRESSED AND EACH OF THE DRAWINGS HAS BEEN REVISED AND ISSUED "FOR CONSTRUCTION".

SIGNATURE BLOCK

OWNER _____ DATE _____

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DO NOT SCALE DRAWINGS

THESE DRAWINGS ARE FORMATTED FOR 22"x34" FULL SIZE AND 11"x17" HALF SIZE. OTHER SIZED VERSIONS ARE NOT PRINTED TO THE SCALE SHOWN. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS & CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.



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BRADENTON, FL, 34205

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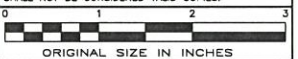
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SITE INFORMATION

NY1137
LOUISE MARIE

SITE ADDRESS

WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

SHEET TITLE

TITLE SHEET

SHEET NUMBER

T-1



NOTE:
THE PROPERTY LINES HEREON ARE APPROXIMATE BASED ON GIS DATA AND ARE FOR ORIENTATION PURPOSES ONLY. THEY DO NOT REPRESENT A PROPERTY/BOUNDARY DECISION BY A LAND SURVEYOR.

1
AD-1
ADJOINERS PLAN
SCALE: 1" = 400' (11x17 SIZE)
1" = 200' (22x34 SIZE)

ID	OWNER	SBL	ADDRESS	CITY/TOWN/ZIP
1	CALCAM ASSOC INC	35-1-34	390 BROADWAY	MONTICELLO, NY12701
2	TWIN BRIDGE REALTY CORP	35-1-35	WURTSBORO MOUNTAIN RD	MONTICELLO, NY12701
3	CALCAM ASSOC INC	35-1-27.1	390 BROADWAY	MONTICELLO, NY12701
4	KIM YOUNG S & KIM CECILIA H	35-1-27.2	390 ROCK HILL DR	ROCK HILL, NY12775
5	GOTTLIEB HARRIET	35-1-33	30 WURTSBORO MOUNTAIN RD	ROCK HILL, NY12775
6	MURRAY JUDITH K	35-1-39.1	207 106TH ST	NEW YORK, NY10025
7	MURRAY JUDITH K	35-1-38	207 106TH ST	NEW YORK, NY10025

2
AD-1
ADJOINERS LIST
SCALE: NTS

TARPON
TOWERS

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BRADENTON, FL, 34205

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ORIGINAL SIZE IN INCHES

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LOUISE MARIE

SITE ADDRESS

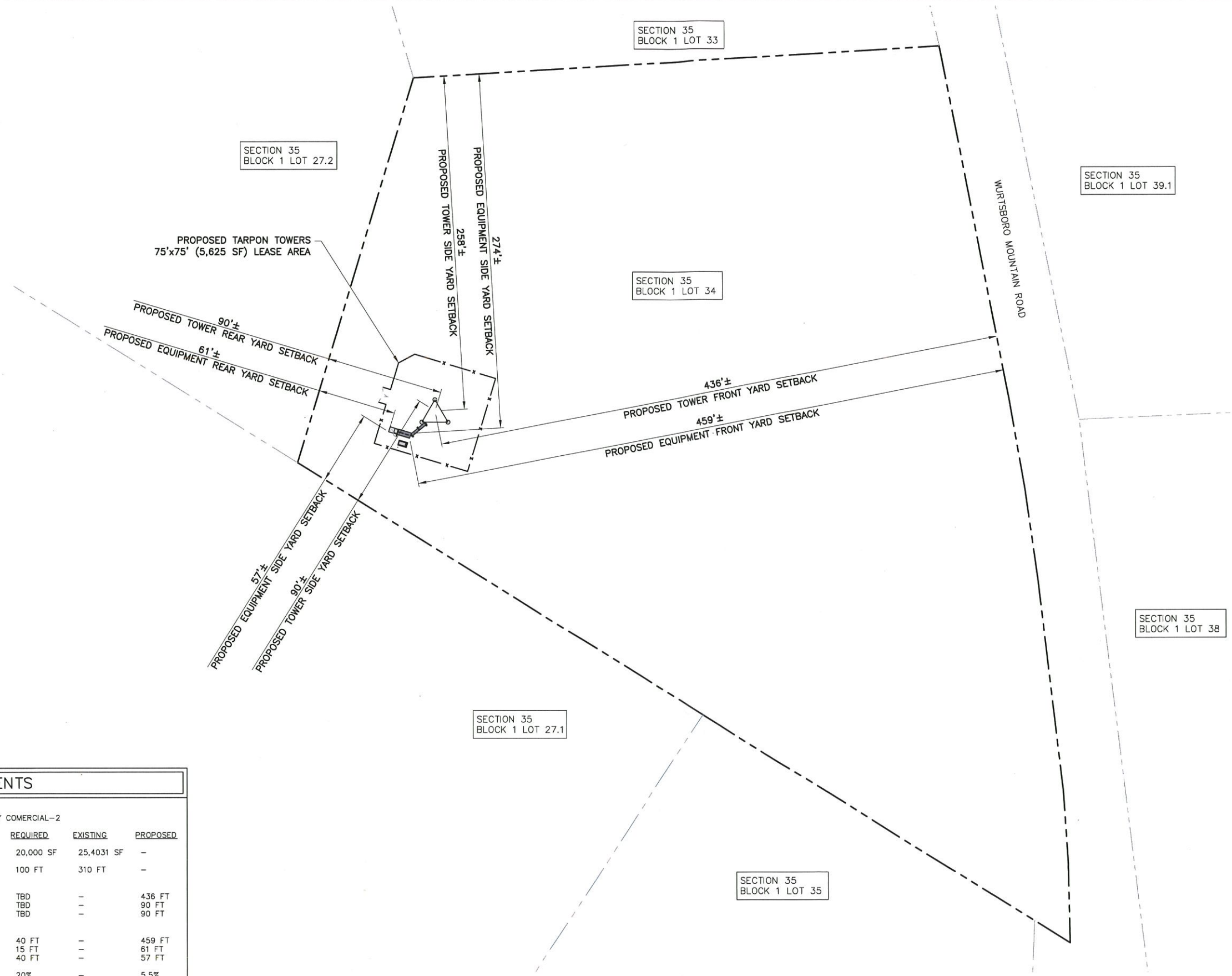
WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

SHEET TITLE

ADJOINERS PLAN

SHEET NUMBER

AD-1



BULK REQUIREMENTS

TOWN OF THOMPSON
ZONING DISTRICT: HC-2 HIGHWAY COMERCIAL-2

	REQUIRED	EXISTING	PROPOSED
MINIMUM LOT SIZE:	20,000 SF	25,4031 SF	-
MINIMUM LOT WIDTH:	100 FT	310 FT	-
MINIMUM YARDS (TOWER)*			
FRONT:	TBD	-	436 FT
SIDE:	TBD	-	90 FT
REAR:	TBD	-	90 FT
MINIMUM YARDS (EQUIPMENT)			
FRONT:	40 FT	-	459 FT
SIDE:	15 FT	-	61 FT
REAR:	40 FT	-	57 FT
MAXIMUM LOT COVERAGE:	20%	-	5.5%
MAXIMUM TOWER HEIGHT:	TBD	-	185 FT

* PER § 250-70.B - TELECOMMUNICATIONS TOWERS SHALL COMPLY WITH ALL EXISTING SETBACK REQUIREMENTS OF THE UNDERLYING ZONING DISTRICT, IF THE TOWER IS DESIGNED TO FALL WITHIN ITSELF.

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1
SB-1
SETBACK PLAN
SCALE: 1" = 80' (11x17 SIZE)
1" = 40' (22x34 SIZE)

**TARPON
TOWERS**

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SITE INFORMATION

NY1137
LOUISE MARIE

SITE ADDRESS

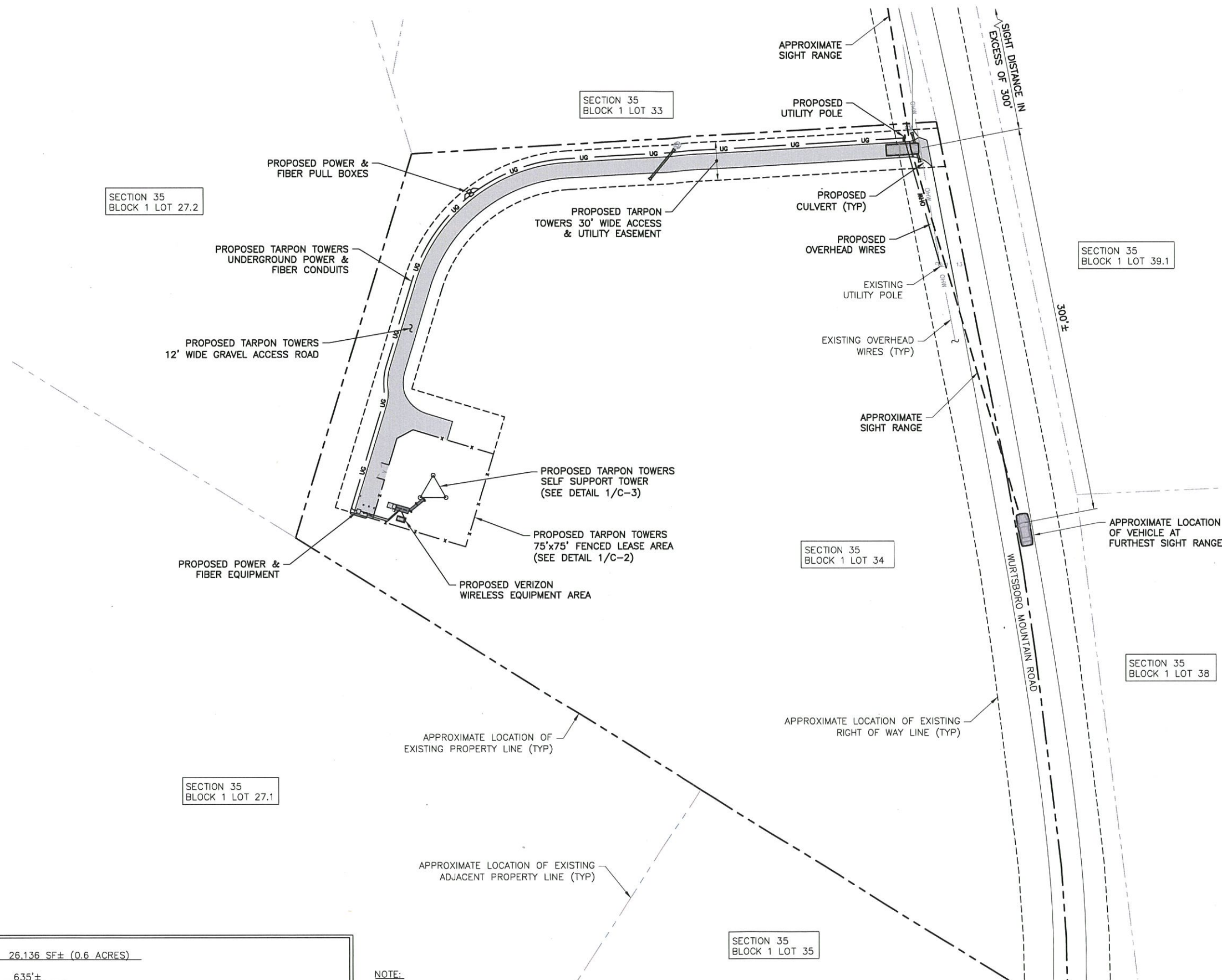
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SETBACK PLAN

SHEET NUMBER

SB-1



AREA OF DISTURBANCE = 26,136 SF± (0.6 ACRES)
TOTAL ROAD LENGTH = 635'±
TOTAL U/G UTILITY LENGTH= 610'±
APPROXIMATE VOLUME OF MATERIAL TO BE EXCAVATED = 500 CY± (TO BE REUSED ON SITE)
APPROXIMATE VOLUME OF FILL REQUIRED = 600 CY± (ROAD & COMPOUND STONE & GRAVEL)

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OVERALL SITE PLAN

SCALE: 1" = 80' (11x17 SIZE)
1" = 40' (22x34 SIZE)

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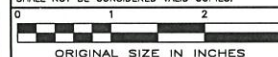
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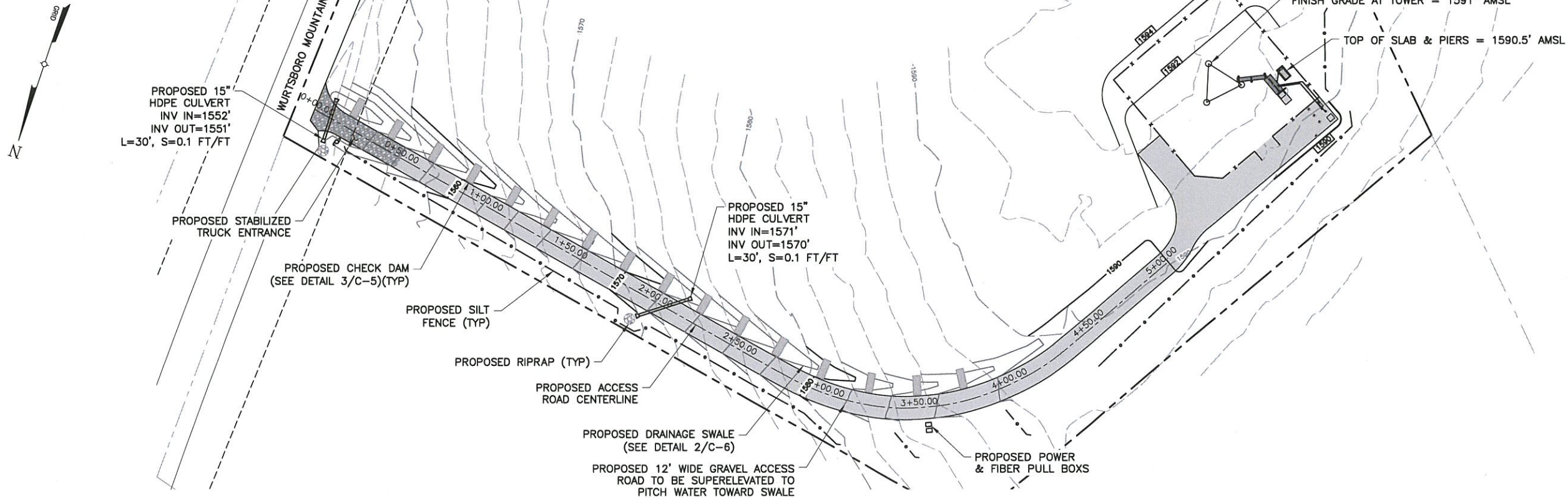
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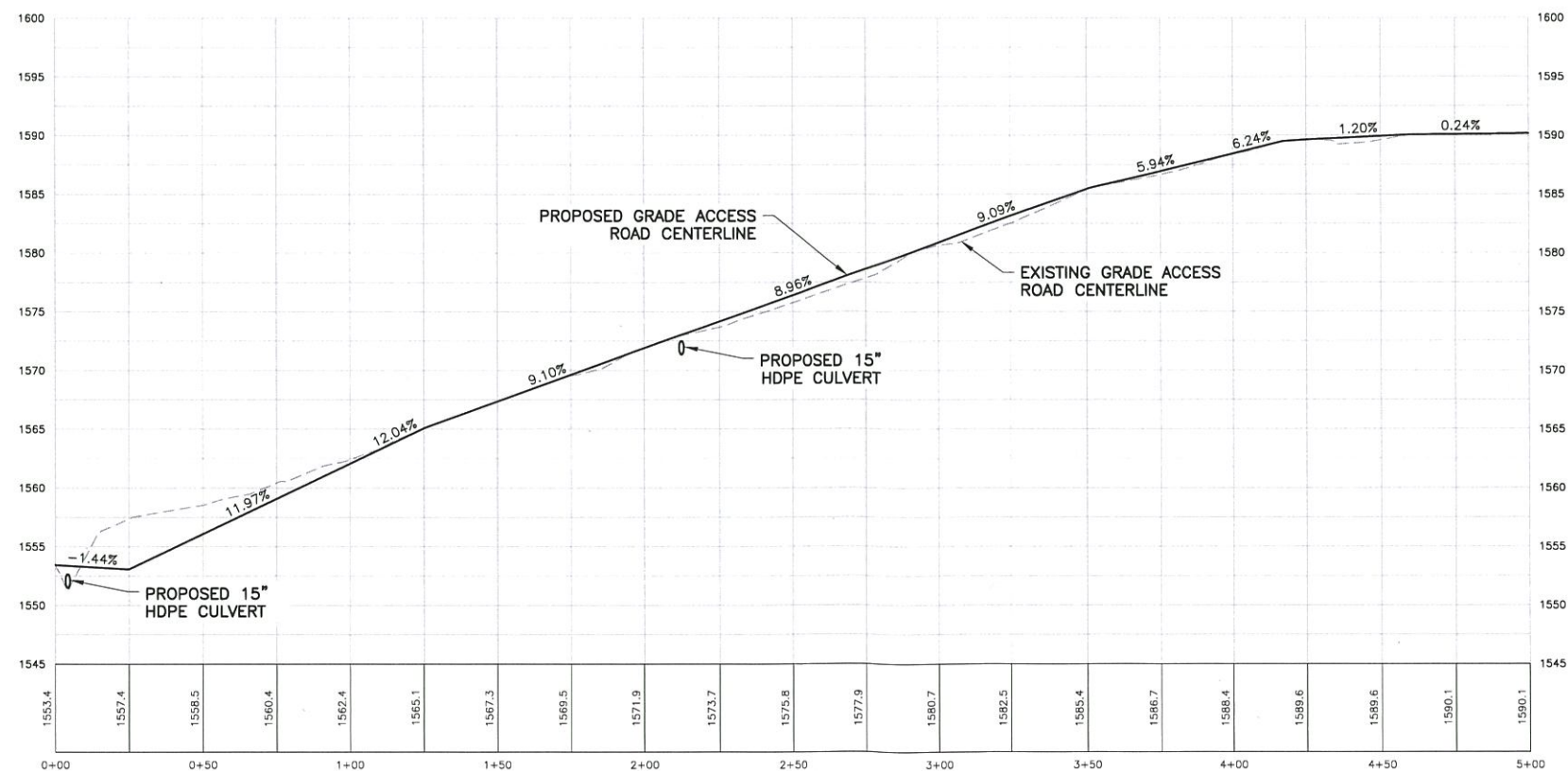
OVERALL SITE PLAN

SHEET NUMBER

C-1A



1 ROAD PLAN VIEW
C-1B SCALE: 1" = 60' (11x17 SIZE)
1" = 30' (22x34 SIZE)



2 ROAD PROFILE VIEW
C-1B SCALE: 1" = 60' (11x17 SIZE)
1" = 30' (22x34 SIZE)

TARPON TOWERS

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ORIGINAL SIZE IN INCHES

SITE INFORMATION

NY1137
LOUISE MARIE

SITE ADDRESS

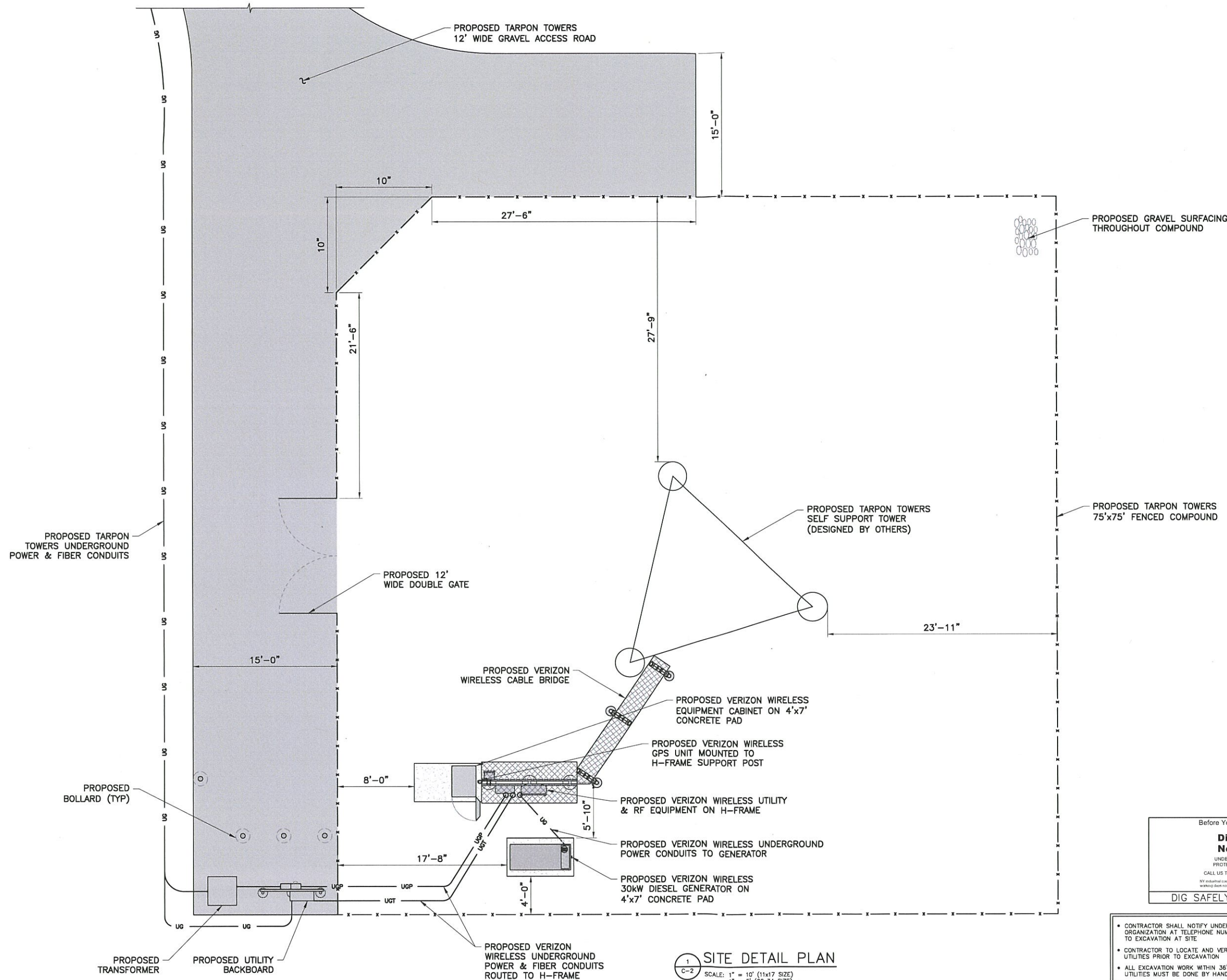
WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

SHEET TITLE

ROAD PLAN & PROFILE

SHEET NUMBER

C-1B



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TOWERS**

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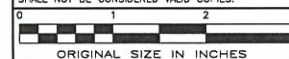
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ORIGINAL SIZE IN INCHES

SITE INFORMATION

NY1137
LOUISE MARIE

SITE ADDRESS

WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

SHEET TITLE

SITE DETAIL PLAN

SHEET NUMBER

C-2

Before You Dig, Drill Or Blast!

Dig Safely.
New York

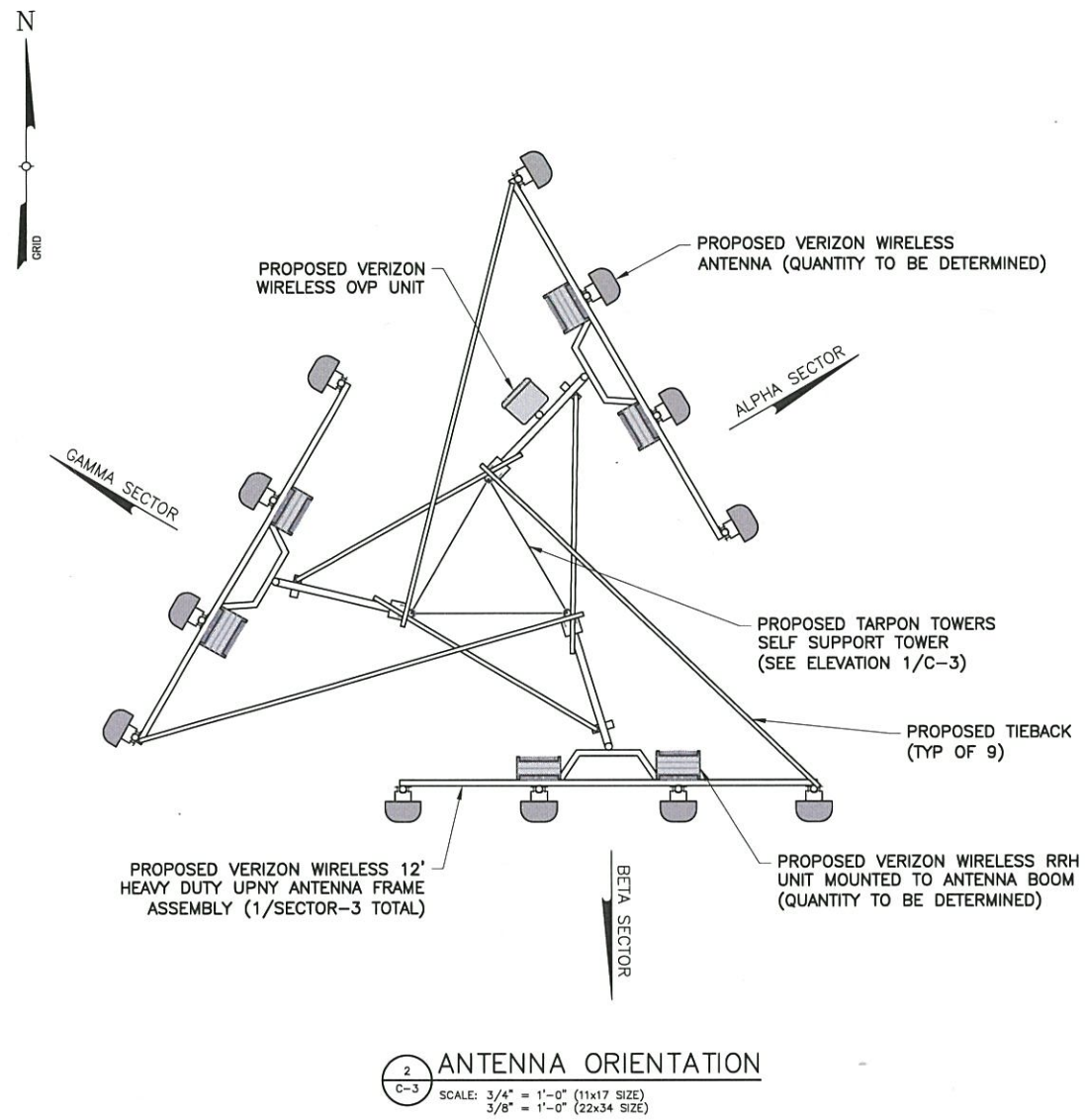
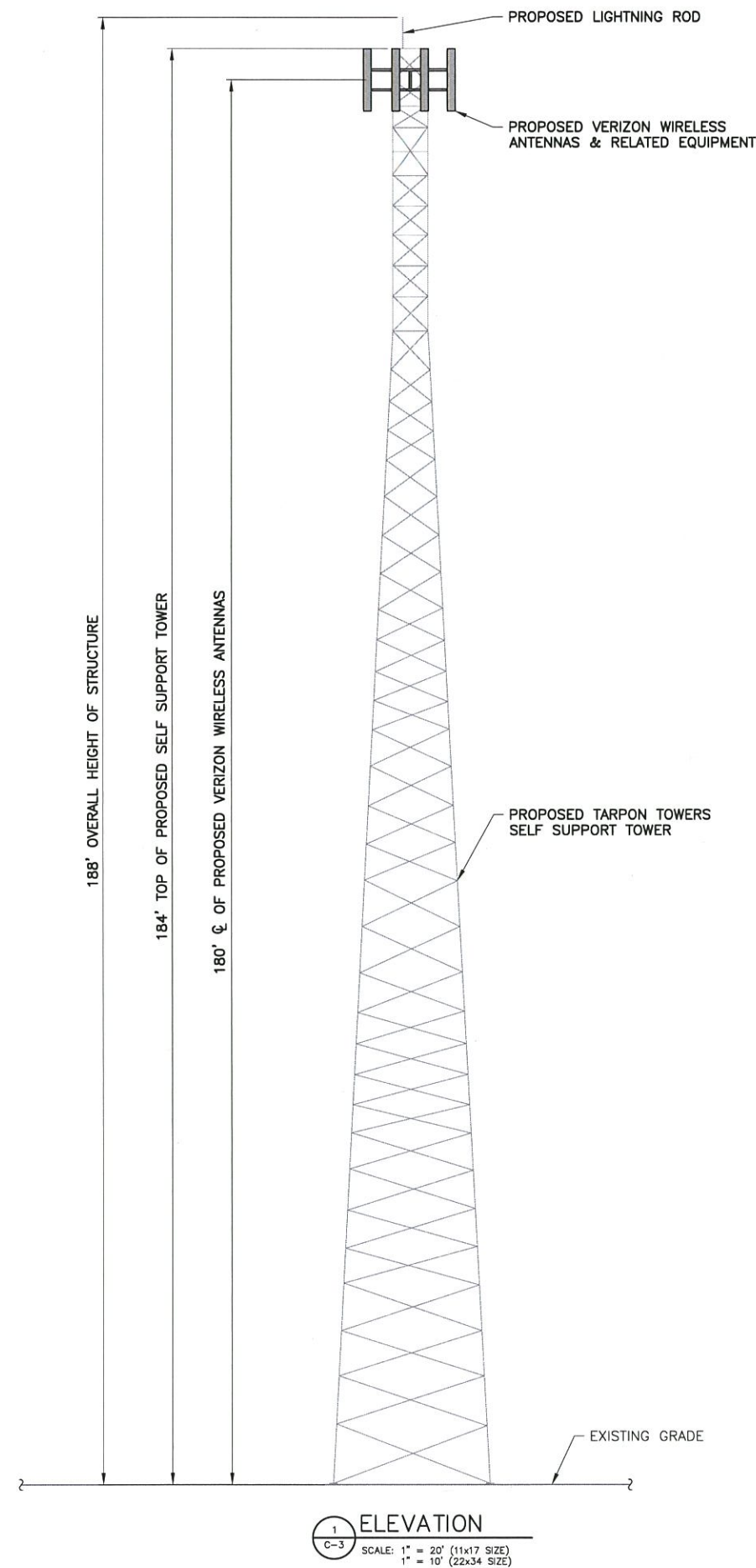
UNDERGROUND FACILITIES
PROTECTIVE ORGANIZATION

CALL US TOLL FREE 1-800-962-7962

NY Industrial Code Rule 713 requires us to know what lies
waiting beneath our feet. Dig Safely. New York.

DIG SAFELY - NEW YORK

- CONTRACTOR SHALL NOTIFY UNDERGROUND FACILITIES PROTECTIVE ORGANIZATION AT TELEPHONE NUMBER 1-800-962-7962 PRIOR TO EXCAVATION AT SITE
- CONTRACTOR TO LOCATE AND VERIFY ALL EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION
- ALL EXCAVATION WORK WITHIN 36" OF EITHER SIDE OF UNDERGROUND UTILITIES MUST BE DONE BY HAND EXCAVATION METHODS



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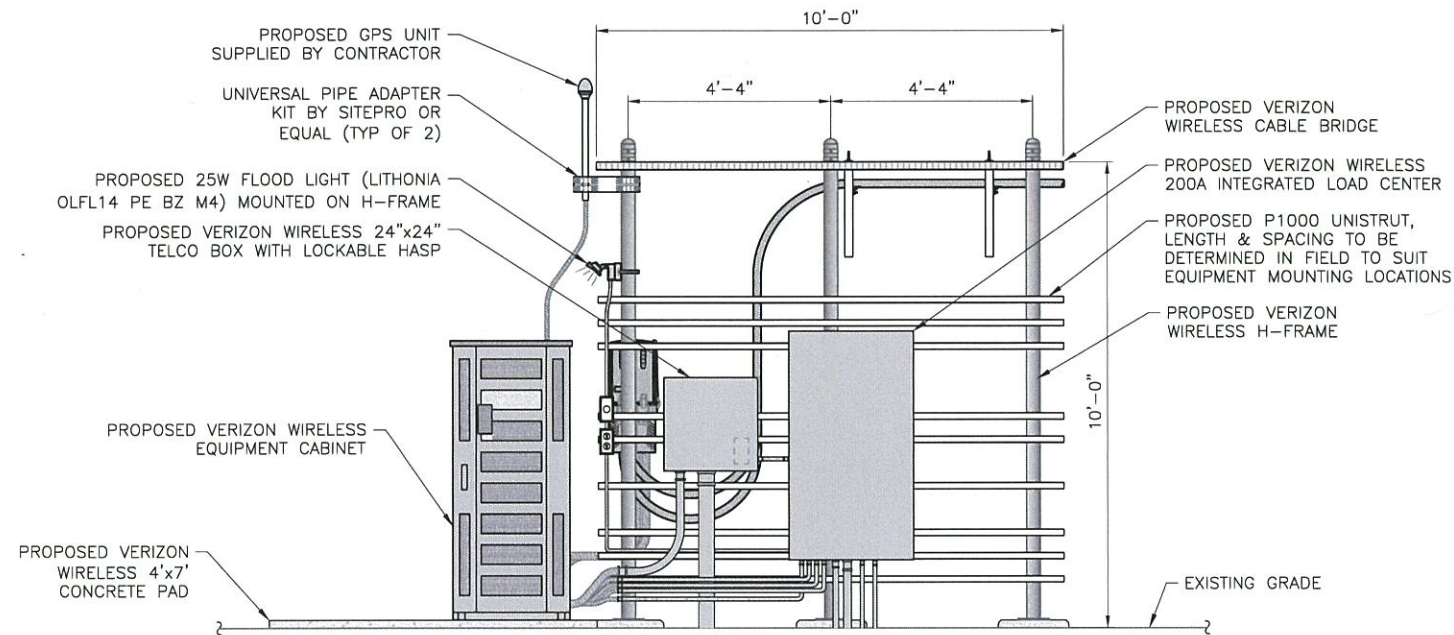
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SITE INFORMATION
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 LOUISE MARIE

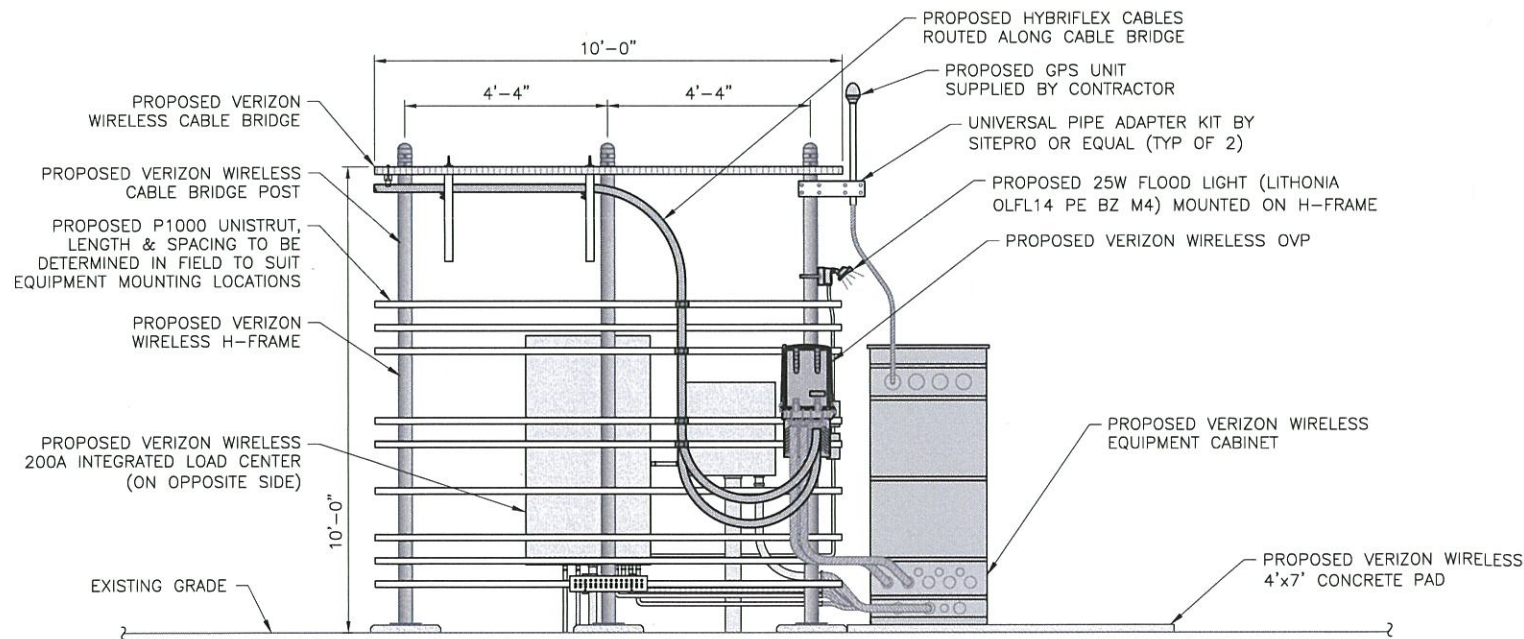
SITE ADDRESS
 WURTSBORO MNT RD
 TOWN OF THOMPSON
 SULLIVAN COUNTY
 NY 12775

SHEET TITLE
 ELEVATION &
 ORIENTATION PLAN

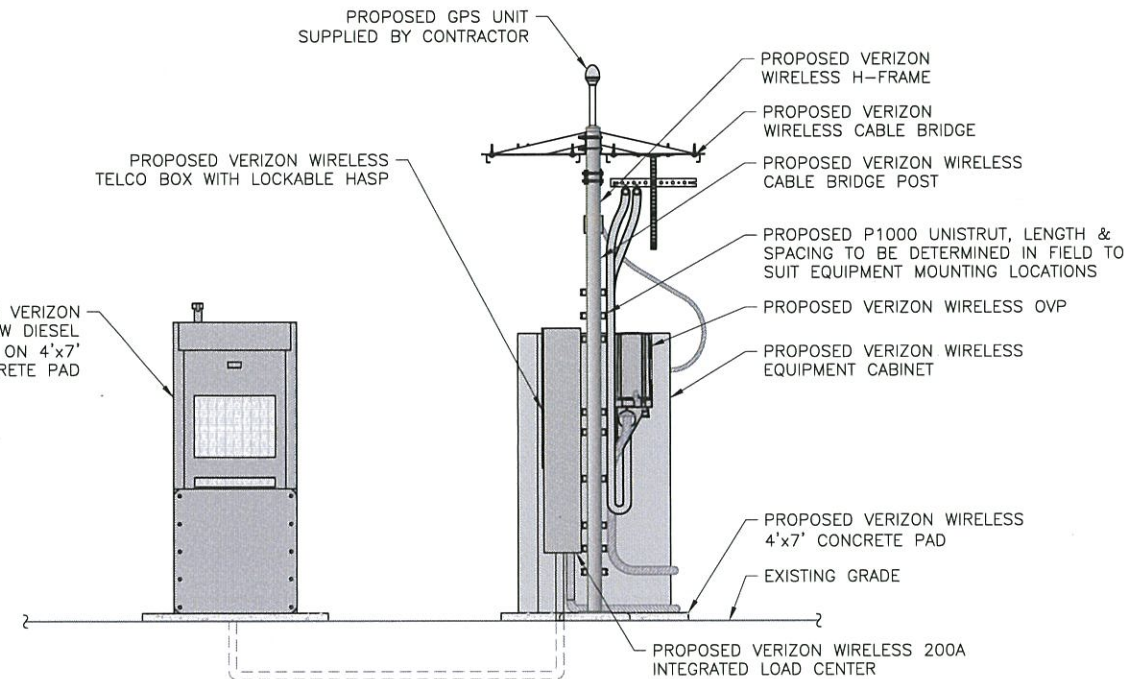
SHEET NUMBER
 C-3



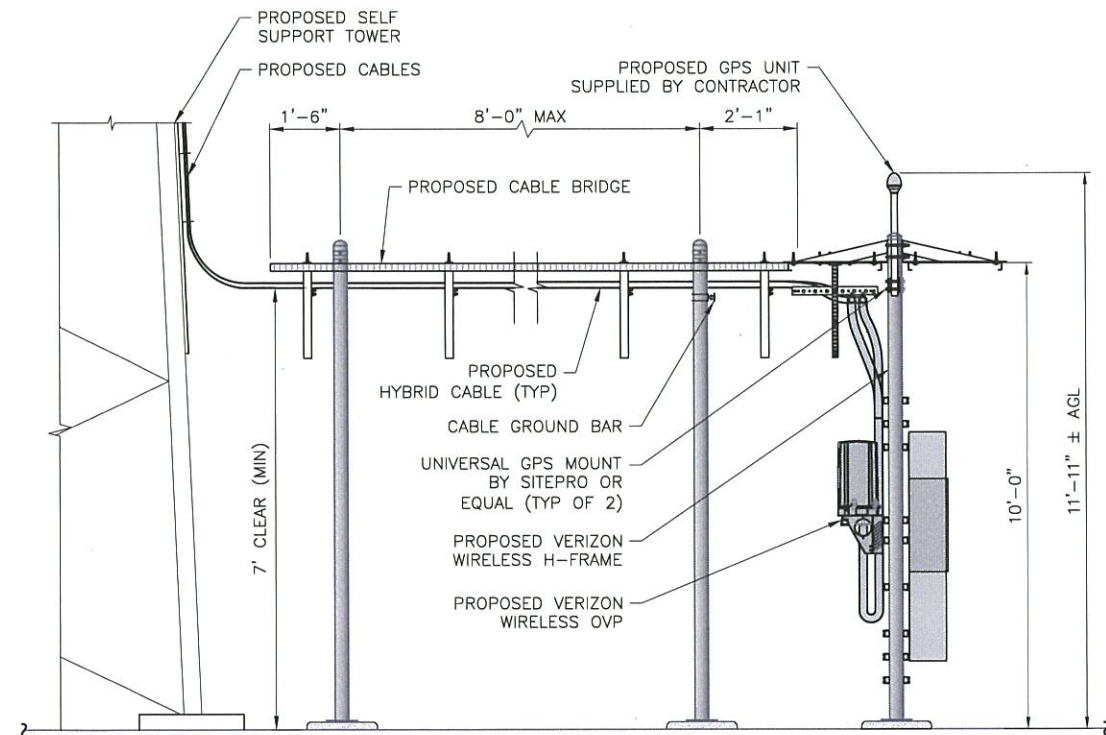
1 FRONT ELEVATION
C-4 SCALE: 1/4" = 1'-0" (11x17 SIZE)
1/2" = 1'-0" (22x34 SIZE)



3 REAR ELEVATION
C-4 SCALE: 1/4" = 1'-0" (11x17 SIZE)
1/2" = 1'-0" (22x34 SIZE)



2 SIDE ELEVATION
C-4 SCALE: 1/4" = 1'-0" (11x17 SIZE)
1/2" = 1'-0" (22x34 SIZE)



4 EQUIPMENT ELEVATION
C-4 SCALE: 1/4" = 1'-0" (11x17 SIZE)
1/2" = 1'-0" (22x34 SIZE)

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SITE INFORMATION

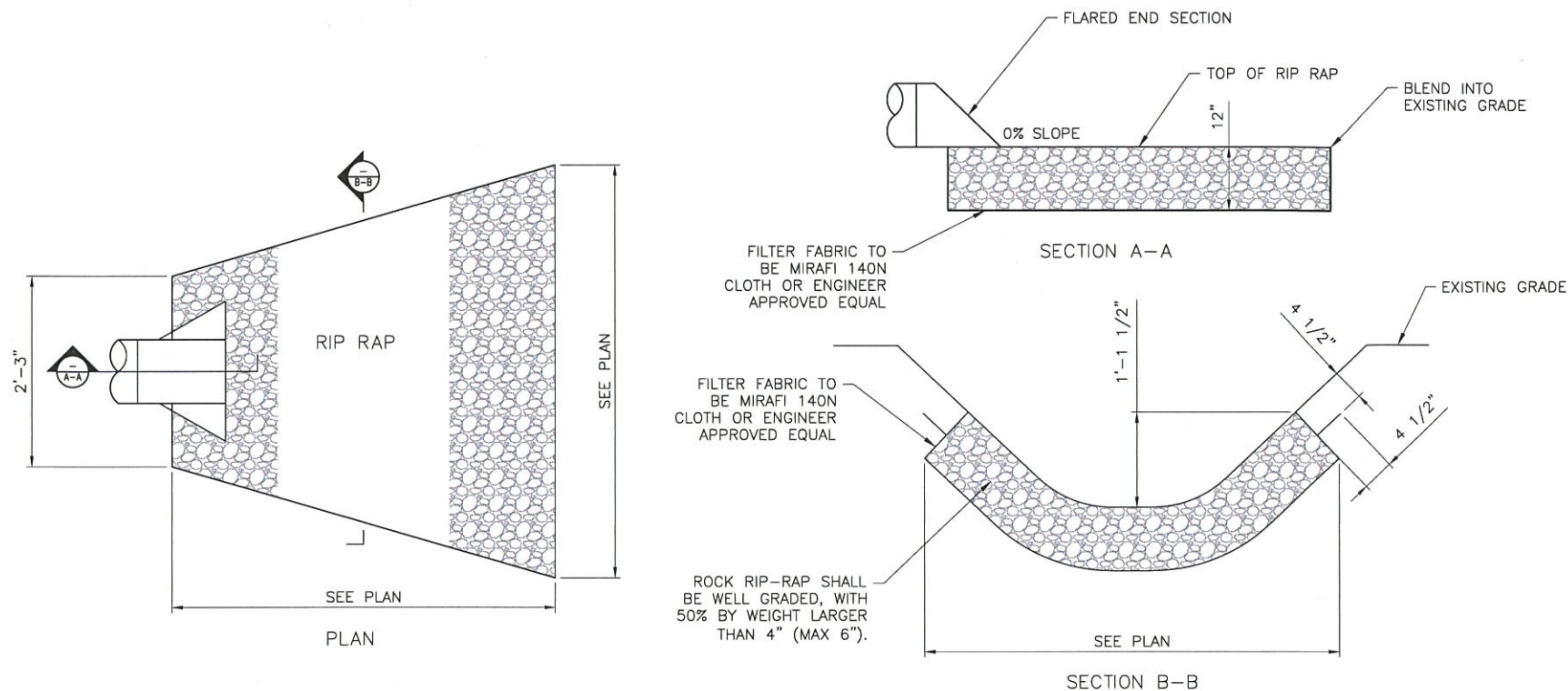
NY1137
LOUISE MARIE

SITE ADDRESS
WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

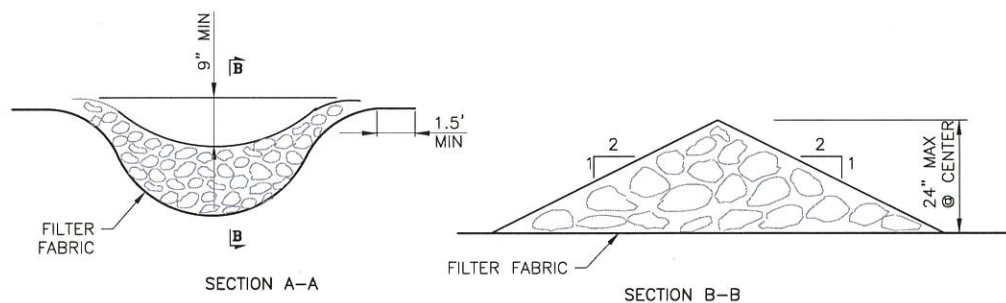
SHEET TITLE
EQUIPMENT ELEVATIONS

SHEET NUMBER

C-4



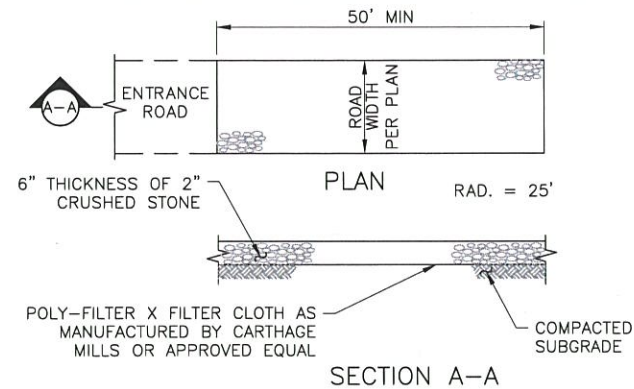
1
C-5
OUTLET PROTECTION
SCALE: 1/2" = 1'-0" (11x17 SIZE)
1" = 1'-0" (22x34 SIZE)



CONSTRUCTION SPECIFICATIONS:

1. STONE SHALL BE MAXIMUM SIZE OF 12" WITH 50 TO 100 PERCENT BY WEIGHT LARGER THAN 6" AND 0 TO 10 PERCENT SMALLER THAN 1/2".
2. FILTER FABRIC SHALL BE MARAFI 140N FILTER CLOTH OR APPROVED EQUAL.
3. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION AT LOCATIONS SHOWN ON THE PLAN.
4. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
5. PROTECT THE CHANNEL DOWNSTREAM OF THE LOWEST CHECK DAM FROM SCOUR AND EROSION WITH STONE OR LINER AS APPROPRIATE.

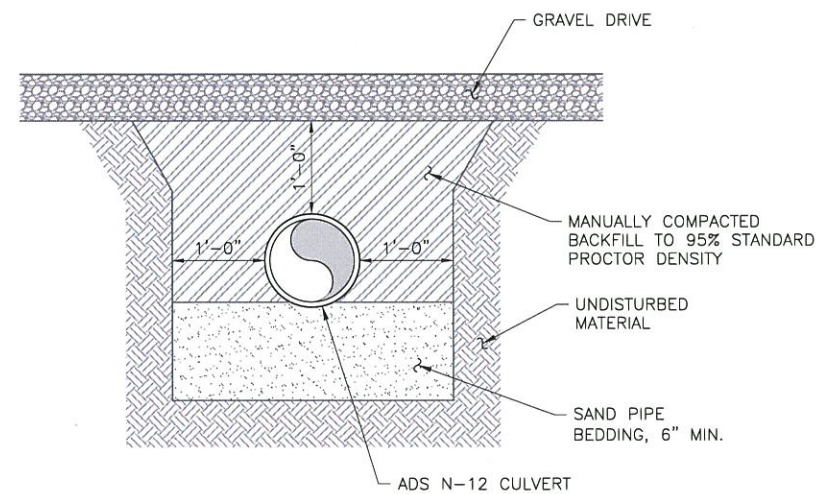
3
C-5
STONE CHECK DAM DETAIL
SCALE: NTS



NOTES:

1. STONE SIZE - USE 2" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET
3. THICKNESS - NOT LESS THAN SIX INCHES
4. WIDTH - 12 FOOT MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH SHALL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING - WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHTS-OF-WAY. IF ACCUMULATED SOIL DOES NOT COME OFF BY WAY OF STABILIZED CONSTRUCTION ENTRANCE, THE CONTRACTOR SHALL KNOCK OFF ACCUMULATED SOIL BY MANUAL METHODS UPSLOPE OF A SILT FENCE BARRIER.
9. SEDIMENT TRAPPING - SILT FENCE BARRIER SHALL BE INSTALLED DOWN SLOPE OF CONSTRUCTION ENTRANCE TO CATCH ANY SEDIMENT THAT COULD POTENTIALLY FALL OFF OF CONSTRUCTION EQUIPMENT AND/OR VEHICLES.
10. PERIODIC INSPECTIONS AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

2
C-5
STABILIZED CONSTRUCTION ENTRANCE
SCALE: NTS



NOTES:

1. OVEREXCAVATE FOR BELLS.
2. ADDITIONAL BEDDING MAY BE USED AS ORDERED BY ENGINEER.
3. ALL EXCAVATION AND TRENCHING SHALL MEET OSHA REQUIREMENTS.

4
C-5
CULVERT TRENCH DETAIL
SCALE: 1/2" = 1'-0" (11x17 SIZE)
1" = 1'-0" (22x34 SIZE)

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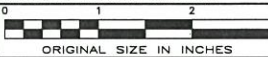
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ORIGINAL SIZE IN INCHES

SITE INFORMATION

NY1137
LOUISE MARIE

SITE ADDRESS

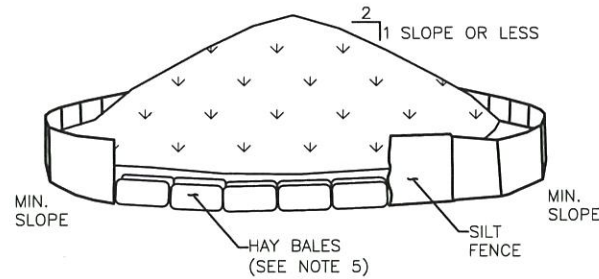
WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

SHEET TITLE

EROSION & SEDIMENT
CONTROL DETAILS

SHEET NUMBER

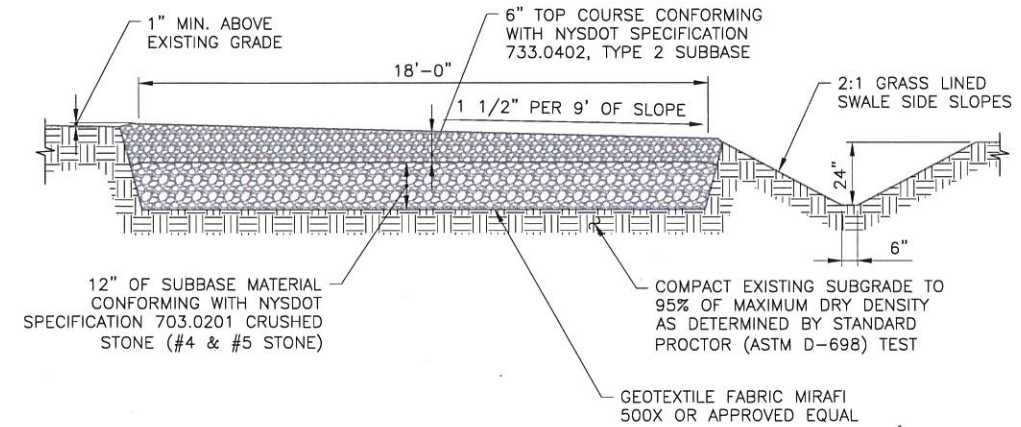
C-5



1
C-6
TEMPORARY SOIL STOCKPILE DETAIL
SCALE: NOT TO SCALE

NOTES:

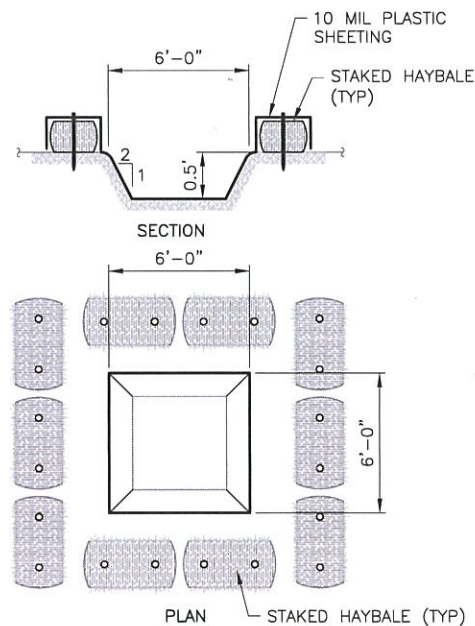
1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1V:2H.
3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH SILT FENCING, THEN STABILIZED WITH VEGETATION OR COVERED.
4. SEE SPECIFICATIONS FOR INSTALLATION OF SILT FENCE.
5. HAYBALES TO BE USED WHERE STOCKPILES ARE LOCATED ON PAVED AREAS.



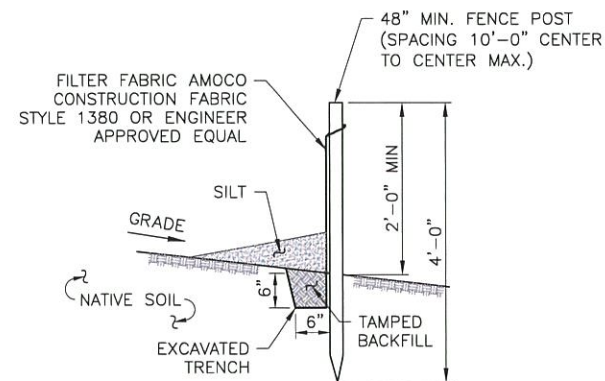
EARTH WORK SUBGRADE COMPACTION & SELECT GRANULAR FILL

1. CONTRACTOR SHALL BE RESPONSIBLE FOR CLEARING & GRUBBING THE CONSTRUCTION SITE AND ROADWAY AREAS. THE CONTRACTOR SHALL COMPLY WITH THE RECOMMENDATIONS CONTAINED WITHIN THE GEOTECHNICAL REPORT, AS PREPARED FOR THIS SITE, WHEN NECESSARY, FOR SITE WORK PREPARATION, & FOUNDATION WORK. AS A MINIMUM THE TOP 3" OF GRADE SHALL BE REMOVED, THE EXPOSED SUBGRADE COMPACTED AND GEOTEXTILE FABRIC INSTALLED AS REQUIRED FOR UNSTABLE SOIL CONDITION.
2. ALL SELECT GRANULAR FILL SHALL BE COMPACTED TO A 95% COMPACTION AT A MAXIMUM DRY DENSITY AS DETERMINED BY MODIFIED PROCTOR TEST (ASTM D-1557) AND WITHIN PLUS OR MINUS 3% OF OPTIMUM MOISTURE CONTENT.
3. CONTRACTOR TO ASSURE THAT EXISTING DRAINAGE PATTERNS ARE MAINTAINED.

2
C-6
GRAVEL DRIVE CROSS SECTION DETAIL
SCALE: 3/8" = 1'-0" (11x17 SIZE)
3/4" = 1'-0" (22x34 SIZE)



3
C-6
TEMPORARY CONCRETE WASH
SCALE: NTS



NOTES:

1. SILT FENCE SHALL BE MAINTAINED IN PLACE DURING CONSTRUCTION AND SOIL STABILIZATION PERIOD.
2. CONTRACTOR SHALL CONSTRUCT SILT FENCE IN ACCORDANCE WITH MANUFACTURER'S REQUIREMENTS.
3. EXCAVATE TRENCH 6" WIDE X 6" DEEP. BURY BOTTOM 12" OF FABRIC AND TAMP IN PLACE.
4. WHEN FENCE IS NO LONGER NEEDED, THE ACCUMULATED SILT, ALL THE POSTS AND FABRIC SHALL BE REMOVED AND TRENCH BACK FILLED WITH TOPSOIL AND SEEDED.

4
C-6
SILT FENCE DETAIL
SCALE: NTS

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ORIGINAL SIZE IN INCHES

SITE INFORMATION

NY1137
LOUISE MARIE

SITE ADDRESS

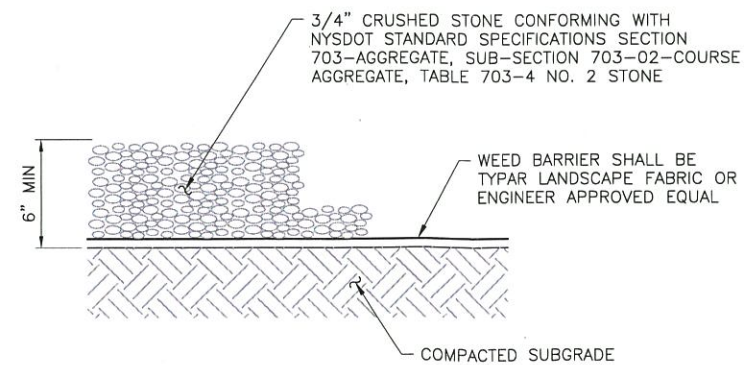
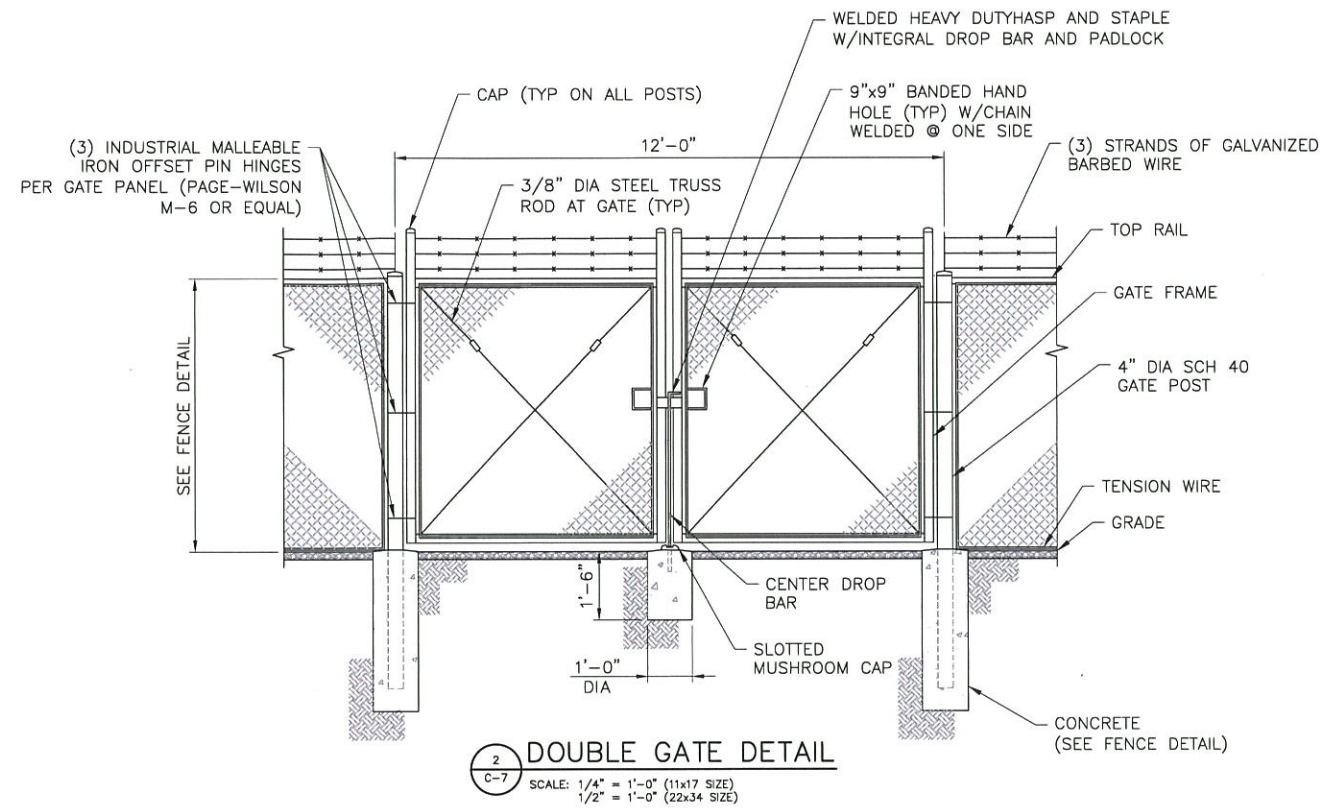
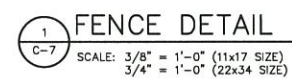
WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

SHEET TITLE

EROSION & SEDIMENT
CONTROL DETAILS

SHEET NUMBER

C-6



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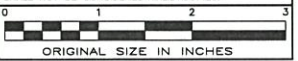
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SITE INFORMATION

NY1137

LOUISE MARIE

SITE ADDRESS

WURTSBORO MNT RD
TOWN OF THOMPSON
SULLIVAN COUNTY
NY 12775

SHEET TITLE

DETAILS

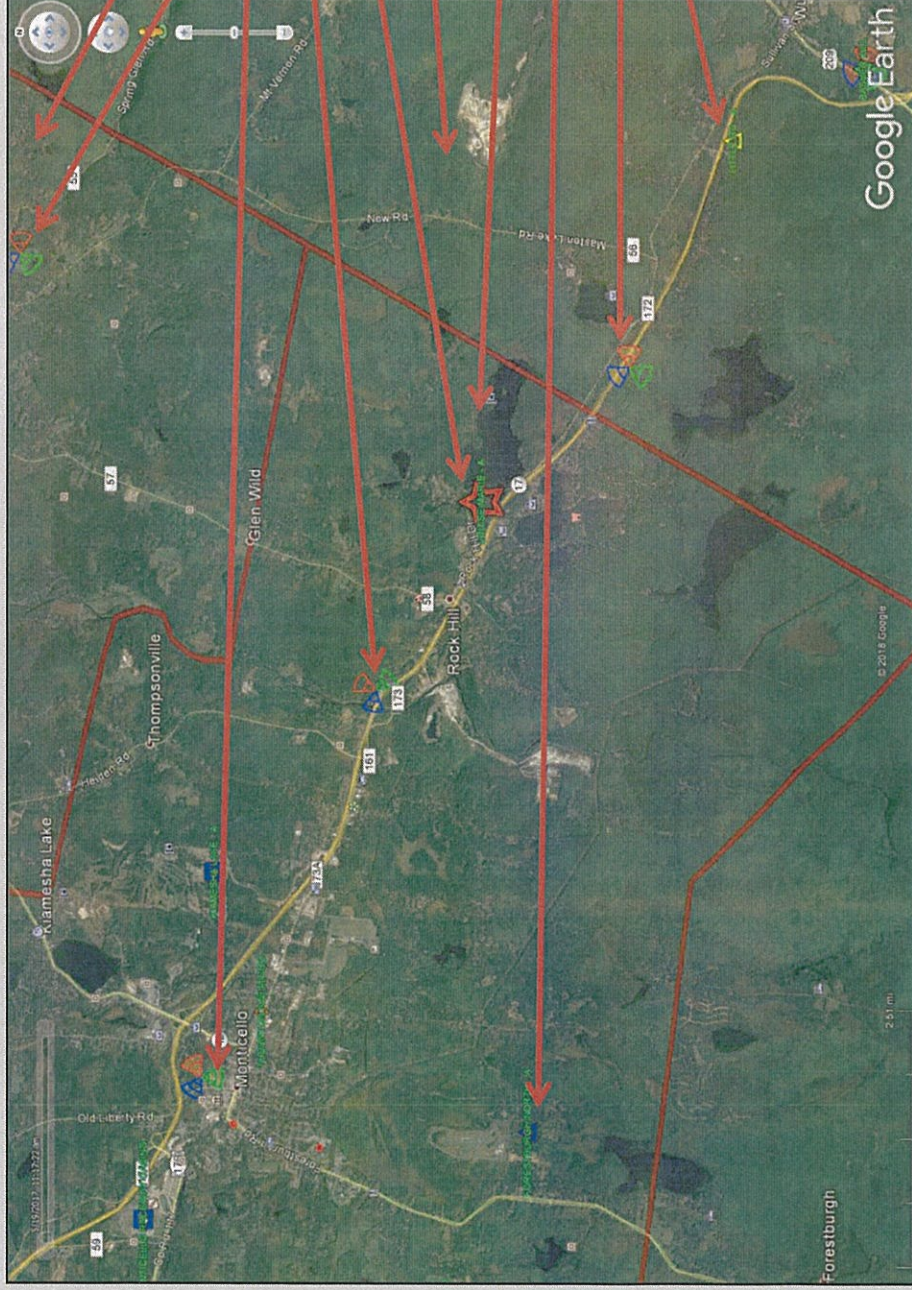
SHEET NUMBER

C-7

EXHIBIT T

Verizon Wireless Communications Facility

Engineering Necessity Case – “Louise Marie”



- Town of Fallsburg
- Mountindale Existing Site
- Monticello Existing Site
- Bridgeville Existing Site
- Project Location "Louise Marie"
- Town of Mamakating
- Town of Thompson
- Forestburgh North (2019*)
- Wurtsboro Existing Site
- Little Road (2020*)

* Planned year at the time of this document

Prepared by: Michael R. Crosby

Project: The project is the installation and operation of a new tower and co located wireless telecommunications site in the Town of Thompson (the "Project Facility").



Introduction

The purpose of this subsequent analysis is to summarize and communicate the technical radio frequency (RF) information used in the justification of this new site.

Coverage and/or capacity deficiencies are the two main drivers that prompt the need for a new wireless communications facility/site. All sites provide a mixture of both capacity and coverage for the benefit of the end user.

Coverage can be defined as the existence of signal of usable strength and quality in an area, including but not limited to in-vehicles or in-buildings.

The need for improved coverage is identified by RF Engineers that are responsible for developing and maintaining the network. RF Engineers utilize both theoretical and empirical data sets (propagation maps and real world coverage measurements). Historically, coverage improvements have been the primary justification of new sites.

Capacity can be defined as the amount of traffic (voice and data) a given site can process before significant performance degradation occurs.

When traffic volume exceeds the capacity limits of a site serving a given area, network reliability and user experience degrades. Ultimately this prevents customers from making/receiving calls, applications cease functioning, internet connections time out and data speeds fail. This critical condition is more important than just a simple nuisance for some users. Degradation of network reliability and user experience can affect emergency responders and to persons in a real emergency situation can literally mean life or death.

Project Need Overview

The project area located within the eastern portion of Thompson is currently served by two sites. These sites are overloaded requiring capacity relief. Additionally the project area is relatively distant from these existing serving sites. This distance combined with area terrain and foliage prevent effective propagation of Verizon's RF signals into this area compounding the capacity issue with areas of variable coverage creating significant gaps in coverage.

The primary serving site is **Wurtsboro**, located in the neighboring town of Mamakating, which is approximately two miles southeast (of the project location) situated on a tower located off Swindon Street (south of Rt. 17). While this site provides weak/variable coverage (on low band 700MHz) in portions of the project area, it does so from a terrain challenged position combined with foliage and distance making the site not capable of efficiently or effectively providing adequate coverage or capacity.

The secondary serving site is **Monticello**, located in the village of Monticello, which is approximately six miles west-northwest (of the project location) situated on a tower located off Hillcrest Ave. While this site provides weak/variable coverage (on low band 700MHz) in portions of the project area, it does so from such a great distance that the site is not capable of efficiently or effectively providing adequate coverage or capacity.

Available (high band AWS/PCS) carriers at these sites are not capable of effectively serving/offloading the project area due to inherent propagation losses from excessive distance and challenging terrain negatively impacting high band coverage and capacity offload capabilities. There are other Verizon sites in this general area but due to distance and terrain they also do not provide any significant overlapping coverage in the area in question that could allow for increased capacity and improved coverage from other sources.

The primary objectives for this project are to increase capacity and improve coverage in the eastern portion of Thompson including but not limited to portions of Rock Hill, Rt. 17, Exits 109, 110, Bowers Rd, Rock Hill Dr, Glen Wild Rd, Lake Louise Marie, Wanaksink Lake, Treasure Lake, Davis Lake, Wolf Lake, Beaver Lake as well as the surrounding residential areas. In order to offload capacity from Wurtsboro and Monticello a new dominant server must be created. This new dominant coverage will effectively offload the existing overloaded sites/cells as well as provide improved coverage where significant gaps exist today.

Following the search for co-locatable structures to resolve the aforementioned challenges and finding none, Verizon proposes the current application to attach it's antennas to a new 184' tall tower. Verizon's antennas will utilize 180' for the ACL (Antenna Center Line) with a top of antenna height of 184'. This solution will provide the necessary coverage and capacity improvements needed.

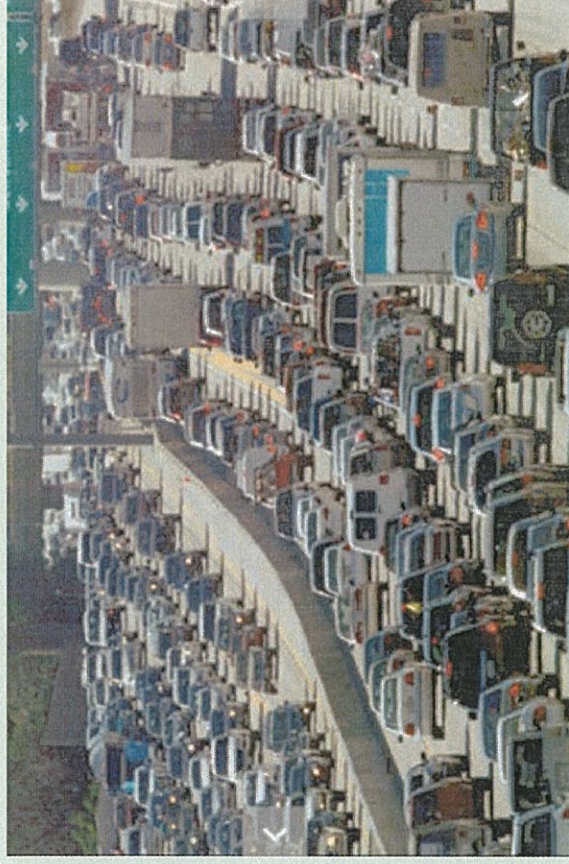
Wireless LTE (Voice and Data) Growth

Each year Verizon experiences substantial increases in data volume including VoLTE (Voice over LTE) that its customers utilize. Data traffic grew 65% between Q3 2016 and Q3 2017 (Ericsson Mobility Report, November 2017)

Machine to Machine communications will also increase the data burden on wireless networks. During the next five years increasingly more services that improve our safety and make our lives easier will become available via the wireless infrastructure, such as:

- Autonomous vehicular communications including automatic 911 notification when airbag deploys.
- Medical monitors that alert caretakers of patient related issues.
- Home alarms that notify people when their child arrives home from school.
- Smart street lights that notify the city when they are not working.
- City garbage cans that let people know when they need to be emptied.
- Tracking watches that can aid in finding lost Alzheimer patients, children, etc.

Explanation of Wireless Capacity

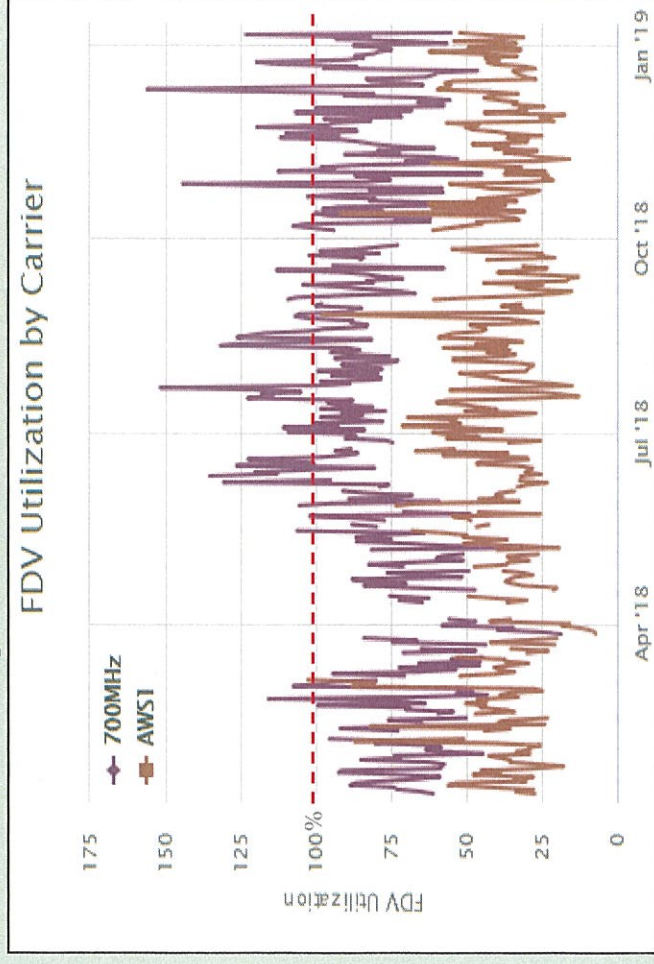


Capacity in this analysis is evaluated with up to three metrics further explained below. These metrics assist in determining actual usage for a given site as well as are used to project when a site is expected to run out of capacity (i.e. reach a point of exhaustion where it can no longer process the volume of voice and data requested by local wireless devices, thus no longer providing adequate service).

- Forward Data Volume (“**FDV**”), is a measurement of usage (data throughput) on a particular site over a given period of time.
- Average Schedule Eligible User (“**ASEU**”), is a measurement of the loading of the control channels and systems of a given site.
- Average Active Connections (“**AvgAC**”) is a measurement of the number of devices actively connected to a site in any given time slot.

Verizon Wireless uses proprietary algorithms developed by a task force of engineers and computer programmers to monitor each site in the network and accurately project and identify when sites will approach their capacity limits. Using a rolling two-year window for projected exhaustion dates allows enough time, in most cases, to develop and activate a new site. It is critical that these capacity approaching sectors are identified early and the process gets started and completed in time for new solutions (sites) to be on air before network issues impact the customers.

Capacity Utilization FDV (Wurtsboro Gamma)

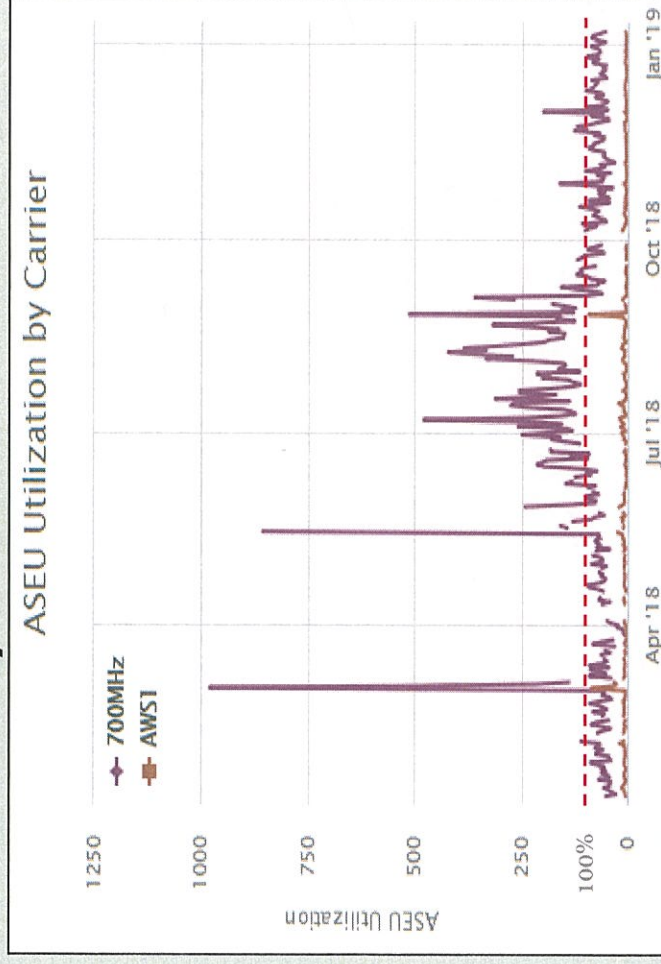


Summary: This graph shows FDV (Forward Data Volume) which is a measurement of the customer data usage that this sector currently serves. As this limit is approached, data rates slow to unacceptable levels, potentially causing unreliable service for Verizon Wireless customers.

The purple line represents the daily max busy hour 700MHz utilization and the dark red line is daily max busy hour AWS utilization on the **Gamma** sector of the **Wurtsboro** site. The red dashed line is the limit where the sector reaches exhaustion and service starts to significantly degrade. The point in time where we see the purple or dark red lines reach or exceed the red dashed line is when service quickly degrades as usage continues to increase.

Detail: The existing **Wurtsboro Gamma** sector shown above has exceeded its capability of supporting FDV requirements as shown by the purple line exceeding the max utilization threshold (red dashed line). FDV is one of three metrics used in this presentation to evaluate capacity capability in this area.

Capacity Utilization ASEU (Wurtsboro Gamma)

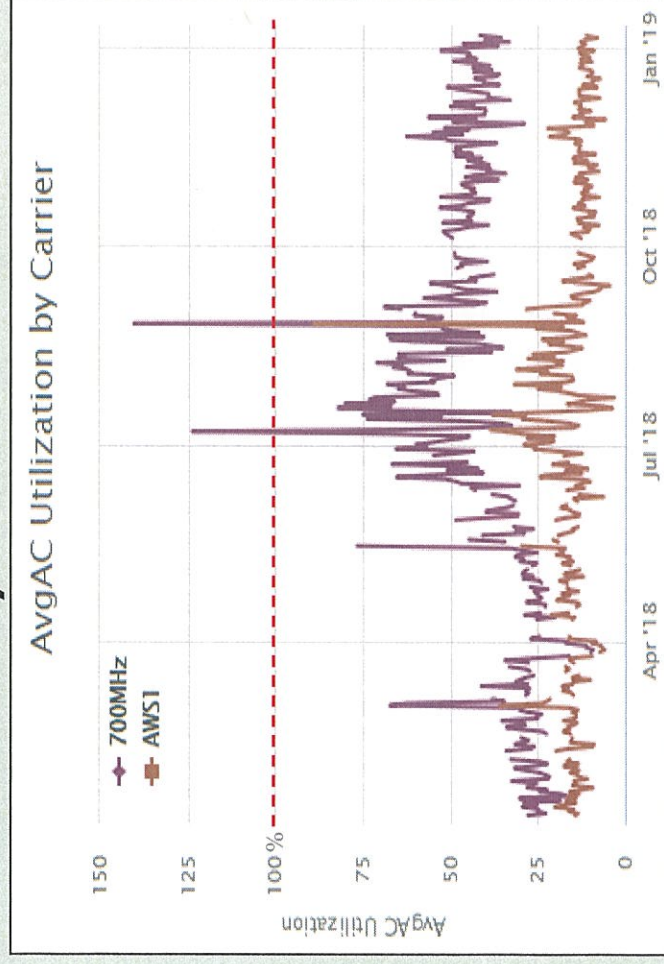


Summary: This graph shows ASEU (**A**verage **S**chedule **E**ligible **U**ser). ASEU is a measurement of the loading of the control channels and systems of a given site. The ASEU load is heavily impacted by distant users or those in poor RF conditions.

The purple line represents the daily max busy hour 700MHz utilization and the dark red line is daily max busy hour AWS utilization on the **Gamma** sector of the **Wurtsboro** site. The red dashed line is the limit where the sector reaches exhaustion and service starts to significantly degrade. The point in time where we see the purple line reach or exceed the red dashed line is when service quickly degrades as usage continues to increase.

Detail: The existing **Wurtsboro Gamma** sector cannot support the traffic demand throughout the extents of the area it covers. **Wurtsboro Gamma** is already overloaded, as shown by the purple actual use line exceeding the red dashed exhaustion threshold. Although the dark red line representing high band (capacity) service have previously reached their limits they are most recently below the limit threshold indicating spare capacity. This graph reveals the inability of this carrier to provide the necessary capacity offload for the low band carrier due to differences in RF propagation characteristics. The solution is additional network densification.

Capacity Utilization AvgAC (Wurtsboro Gamma)

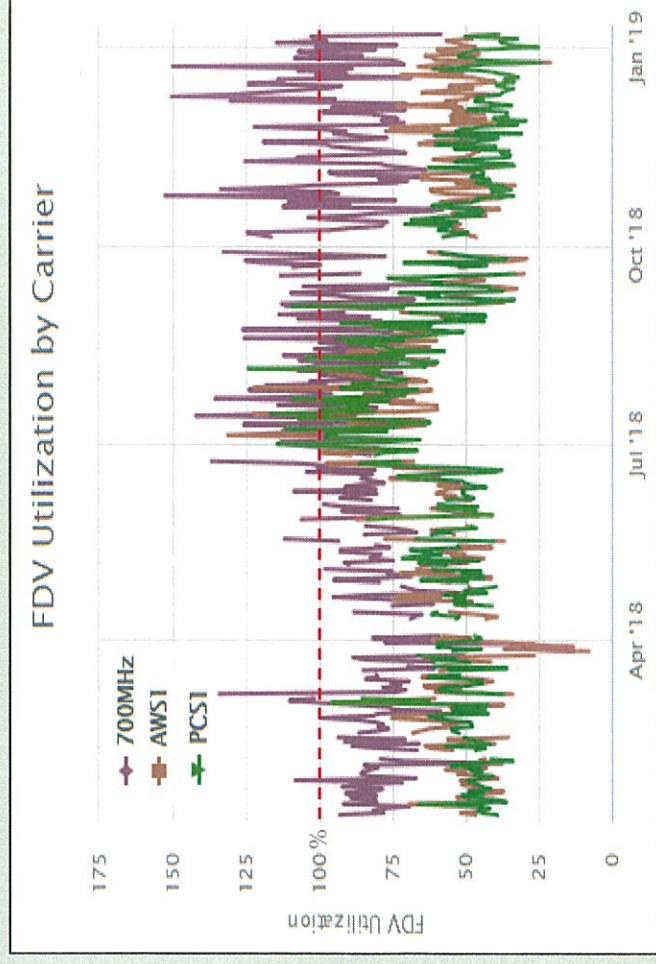


Summary: This graph shows AvgAC (Average Active Connections). AvgAC utilization by carrier is a measurement of max active connection capacity per sector in any given time slot. When this limit is reached, no additional devices will be able to connect to the site, resulting in connection failures and dropped calls.

The purple line represents the daily max busy hour 700MHz utilization and the dark red line is daily max busy hour AWS utilization on the **Gamma** sector of the **Wurtsboro** site. The red dashed line is the limit where the sector reaches exhaustion and service starts to significantly degrade. The point in time where we see the purple line reach or exceed the red dashed line is when service quickly degrades as usage continues to increase.

Detail: The existing **Wurtsboro Gamma** sector has spare capacity for this metric however mass calling events have occurred during the summer showing there are times this sector cannot support the traffic demand throughout the extents of the area it covers. **Wurtsboro Gamma** has reached overloaded conditions, as shown by the purple actual use line exceeding the red dashed exhaustion threshold. The Dark red line representing high band (capacity) service is below the limit threshold indicating spare capacity. This graph reveals the inability of this carrier to provide the necessary capacity offload for the low band carrier due to differences in RF propagation characteristics. The solution is additional network densification.

Capacity Utilization FDV (Monticello Alpha)

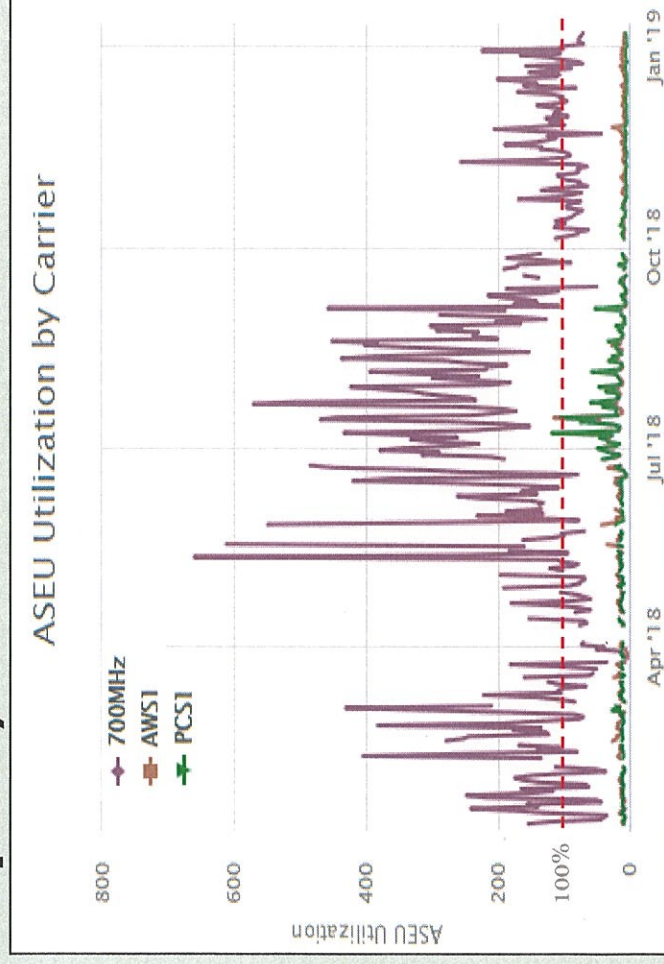


Summary: This graph shows FDV (Forward Data Volume) which is a measurement of the customer data usage that this sector currently serves. As this limit is approached, data rates slow to unacceptable levels, potentially causing unreliable service for Verizon Wireless customers.

The purple line represents the daily max busy hour 700MHz utilization, dark red line is daily max busy hour AWS utilization and green line is daily max busy hour PCS utilization on the Alpha sector of the **Monticello** site. The red dashed line is the limit where the sector reaches exhaustion and service starts to significantly degrade. The point in time where we see the purple, dark red or green lines reach or exceed the red dashed line is when service quickly degrades as usage continues to increase.

Detail: The existing **Monticello Alpha** sector shown above has exceeded its capability of supporting FDV requirements as shown by the purple, dark red and green lines exceeding the max utilization threshold (red dashed line). FDV is one of three metrics used in this presentation to evaluate capacity capability in this area.

Capacity Utilization ASEU (Monticello Alpha)

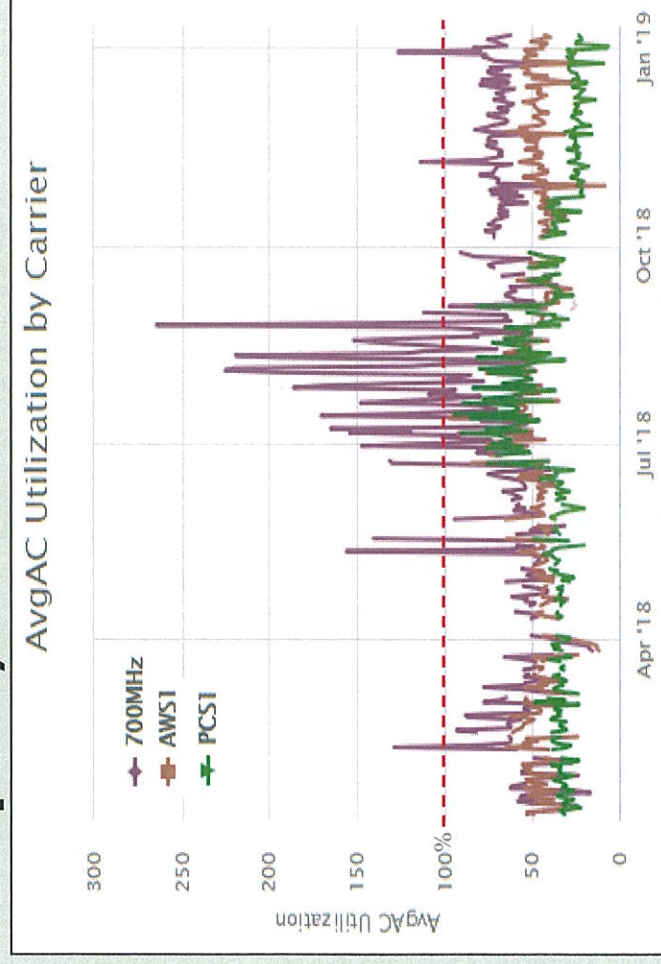


Summary: This graph shows ASEU (Average Schedule Eligible User). ASEU is a measurement of the loading of the control channels and systems of a given site. The ASEU load is heavily impacted by distant users or those in poor RF conditions.

The purple line represents the daily max busy hour 700MHz utilization, dark red line is daily max busy hour AWS utilization and green line is daily max busy hour PCS utilization on the Alpha sector of the **Monticello** site. The red dashed line is the limit where the sector reaches exhaustion and service starts to significantly degrade. The point in time where we see the purple line reach or exceed the red dashed line is when service quickly degrades as usage continues to increase.

Detail: The existing **Monticello Alpha** sector cannot support the traffic demand throughout the extents of the area it covers. **Monticello Alpha** is already overloaded, as shown by the purple actual use line exceeding the red dashed exhaustion threshold. Although the green and dark red lines representing high band (capacity) service have previously reached their limits they are most recently below the limit threshold indicating spare capacity. This graph reveals the inability of these carriers to provide the necessary capacity offload for the low band carrier due to differences in RF propagation characteristics. The solution is additional network densification.

Capacity Utilization AvgAC (Monticello Alpha)

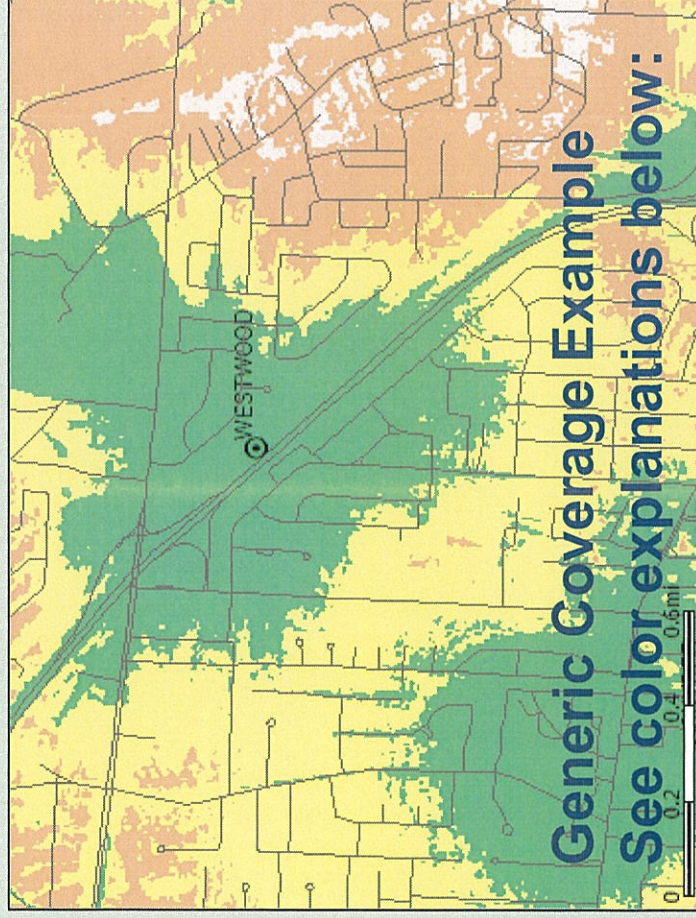


Summary: This graph shows AvgAC (Average Active Connections). AvgAC utilization by carrier is a measurement of max active connection capacity per sector in any given time slot. When this limit is reached, no additional devices will be able to connect to the site, resulting in connection failures and dropped calls.

The purple line represents the daily max busy hour 700MHz utilization, dark red line is daily max busy hour AWS utilization and green line is daily max busy hour PCS utilization on the **Alpha** sector of the **Monticello** site. The red dashed line is the limit where the sector reaches exhaustion and service starts to significantly degrade. The point in time where we see the purple line reach or exceed the red dashed line is when service quickly degrades as usage continues to increase.

Detail: The existing **Monticello Alpha** sector cannot support the traffic demand throughout the extents of the area it covers. **Monticello Alpha** is already overloaded, as shown by the purple actual use line exceeding the red dashed exhaustion threshold. Green and dark red lines representing high band (capacity) service are below the limit threshold indicating spare capacity. This graph reveals the inability of these carriers to provide the necessary capacity offload for the low band carrier due to differences in RF propagation characteristics. The solution is additional network densification.

Explanation of Wireless Coverage



Note the affect of clutter on the predicted coverage footprint above

Green $\geq -85\text{dBm}$ RSRP, typically serves suburban residential and light commercial buildings (stronger coverage levels may be needed for proper evaluation in urban applications or where more substantial building construction exists)

Yellow $\geq -95\text{dBm}$ RSRP, typically serves most rural/suburban-residential and in car applications

Orange $\geq -105\text{dBm}$ RSRP, rural highway coverage, subject to variable conditions including fading and seasonality gaps

White = $< -105\text{dBm}$ RSRP, variable to no reliable coverage gap area

More detailed, site-specific coverage slides are later in the presentation

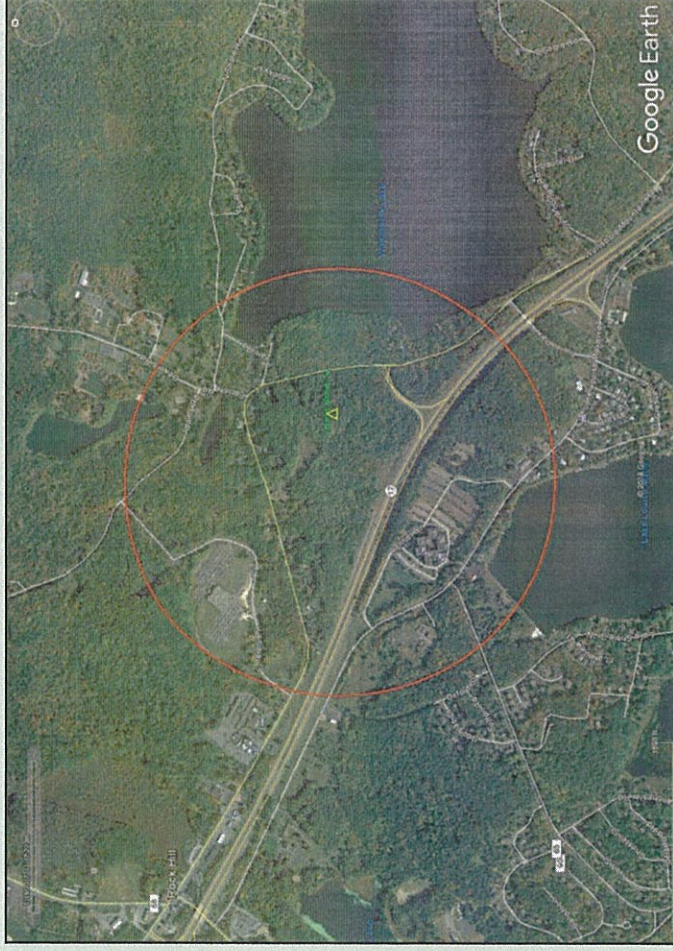
*Signal strength requirements vary as dictated by specific market conditions

Coverage is best shown via coverage maps. RF engineers use computer simulation tools that take into account terrain, vegetation, building types, and site specifics to model the RF environment. This model is used to simulate the real world network and assist engineers to evaluate the impact of a proposed site (along with industry experience and other tools).

Many Verizon Wireless sites provide 3G CDMA at 850 MHz and 4G LTE at 700 MHz. As capacity requirements increase, higher frequency PCS (1900 MHz) and AWS (2100 MHz) carriers are added. In some mountaintop situations the high band AWS and PCS carriers are not effective due to excessive distance from the user population.

Coverage provided by a given site is affected by the frequencies used. Lower frequencies propagate further distances, and are less attenuated by clutter than higher frequencies. To provide similar coverage levels at higher frequencies, a denser network of sites is required (network densification).

Explanation of this Search Area



Louise Marie Search Area

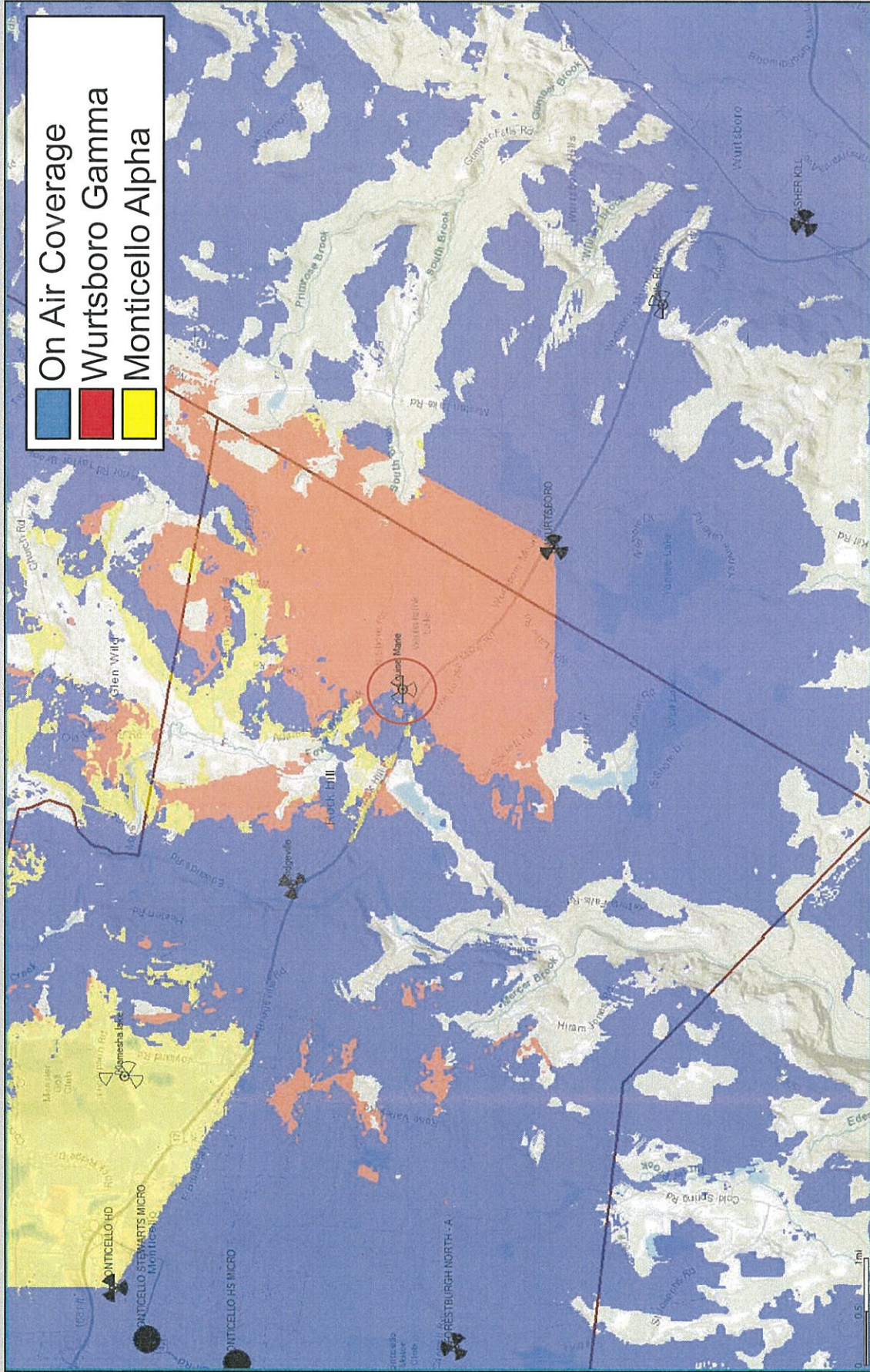
To resolve the coverage and capacity deficiencies previously detailed, Verizon Wireless is seeking to add one new 'macro' cell facility within this area to improve wireless service capacity and coverage. By offloading traffic from **Wurtsboro Gamma** and **Monticello Alpha** with the proposed site, adequate and reliable service will be restored. The new **Louise Marie** site will provide dominant and dedicated signal to the eastern portion of Thompson helping to improve not only the **Louise Marie** area but also indirectly will result with significant improvements throughout the entire service footprint of **Wurtsboro Gamma** and **Monticello Alpha**.

A **Search Area** is the geographical area within which a new site is targeted to solve a coverage or capacity deficiency. Three of the factors taken into consideration when defining a search area are topography, user density, and the existing network.

- **Topography** must be considered to minimize the obstacles between the proposed site and the target coverage area. For example, a site at the bottom of a ridge will not be able to cover the other side from a certain height.
- In general, the farther from a site the **User Population** is, the weaker the RF conditions are and the worse their experience is likely to be. These distant users also have an increased impact on the serving site's capacity. In the case of a multi sector site, centralized proximity is essential to allow users to be evenly distributed and allow efficient utilization of the site's resources.
- The existing **Network Conditions** also guide the design of a new site. Sites placed too close together create interference due to overlap and are an inefficient use of resources. Sites that are too tall or not properly integrated with existing sites cause interference and degrade service for existing users.
- Existing co-locatable structures inside the search area as well as within a reasonable distance of the search area are submitted by site acquisition and reviewed by RF Engineering. If possible RF will make use of existing or nearby structures before proposing to build new towers.

Existing 700MHz Best Server -105dBm RSRP

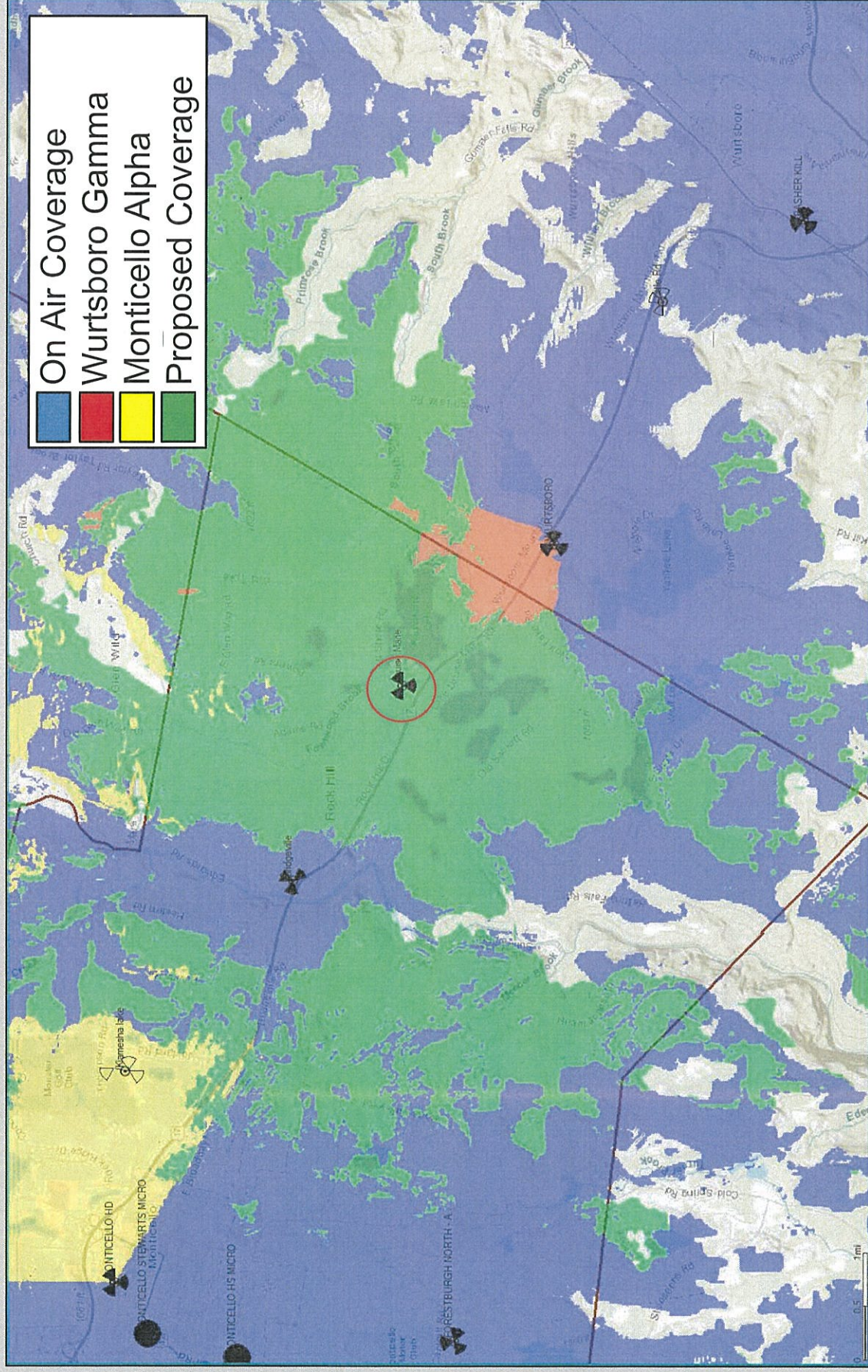
Best Server plots depict the actual footprint of each sector in question at one threshold so the viewer can accurately evaluate the area offloaded by the new sites dominant signal area.



The map above represents coverage from existing sites, with the sites in need of capacity offload in red (Wurtsboro Gamma) and yellow (Monticello Alpha). Blue coverage is from other on air sites.

Proposed 700MHz Best Server -105dBm RSRP

Best Server plots depict the actual footprint of each sector in question at one threshold so the viewer can accurately evaluate the area offloaded by the new sites dominant signal area (at 180' ACL).

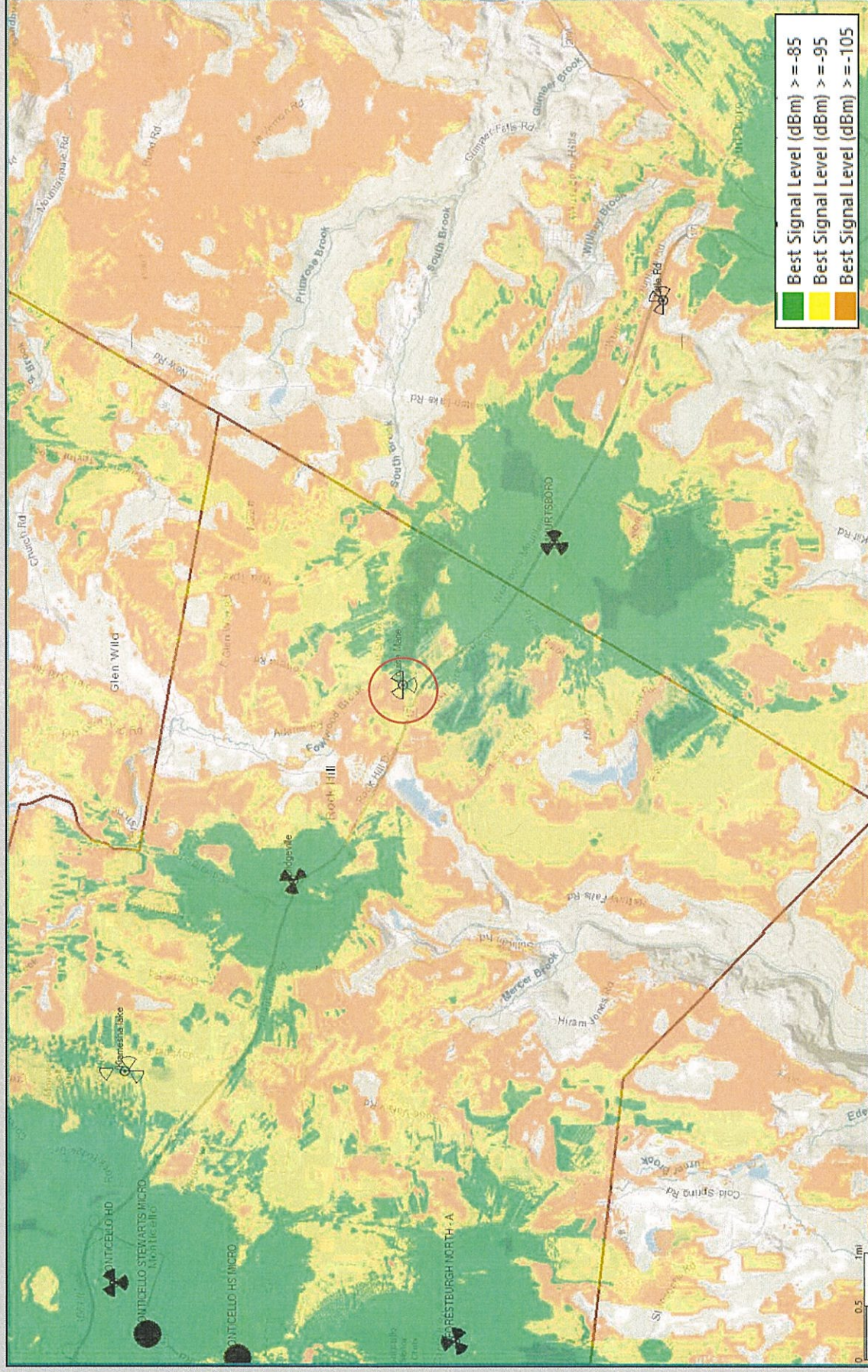


The map above adds the footprint of the proposed Louise Marie site in green. The green best server footprint provides improved coverage and capacity throughout the identified significant gap area. This will help to resolve the coverage and capacity issues impacting the Wurtsboro Gamma and Monticello Alpha sectors.

Note: Although Forestburgh North is not yet on air, it is shown as on air for these plots.

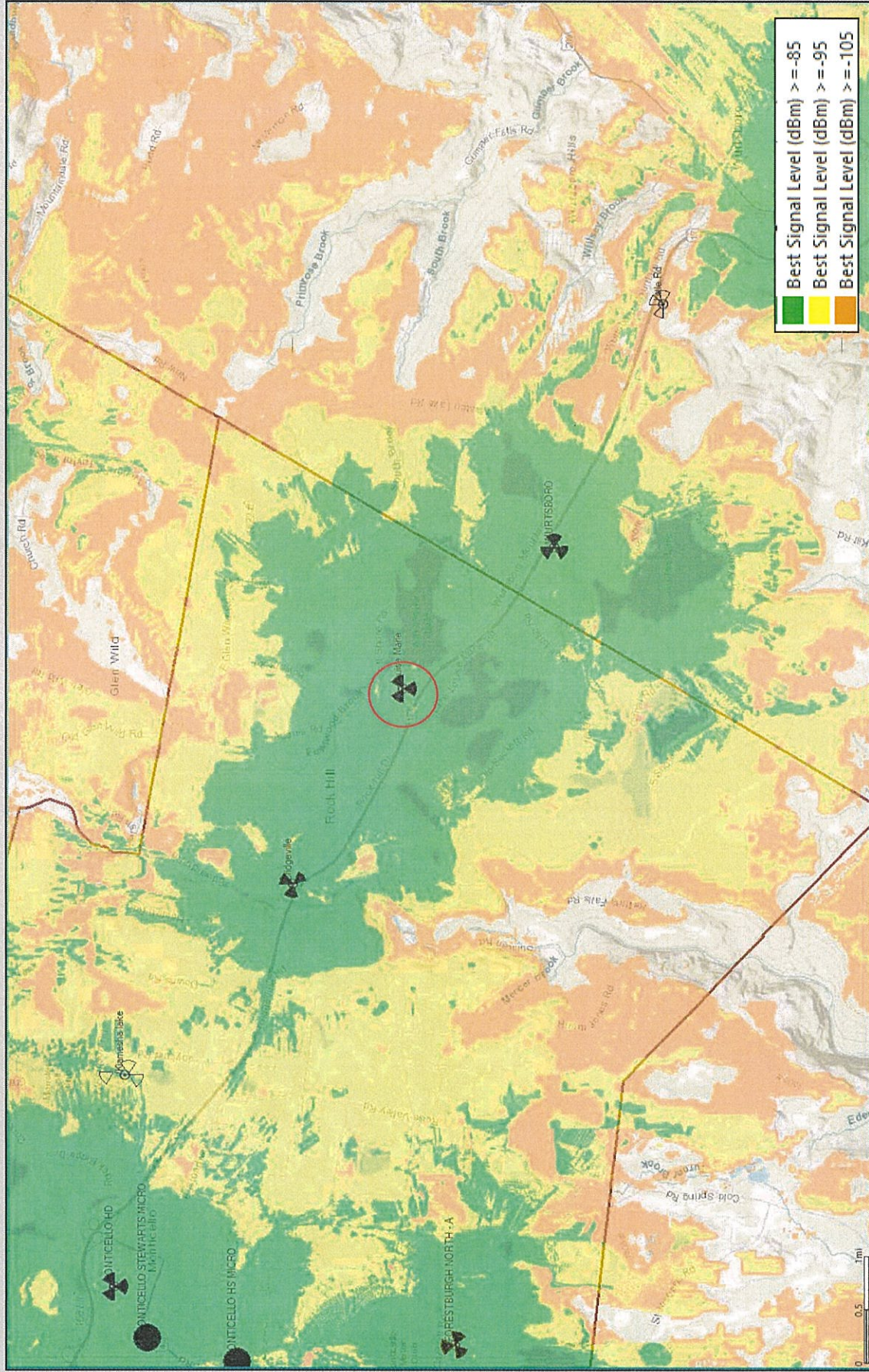
Existing 700MHz Coverage

This coverage map shows how weak the RF conditions are in and around the Louise Marie site area. Refer to slide 12 for further explanation of these color thresholds



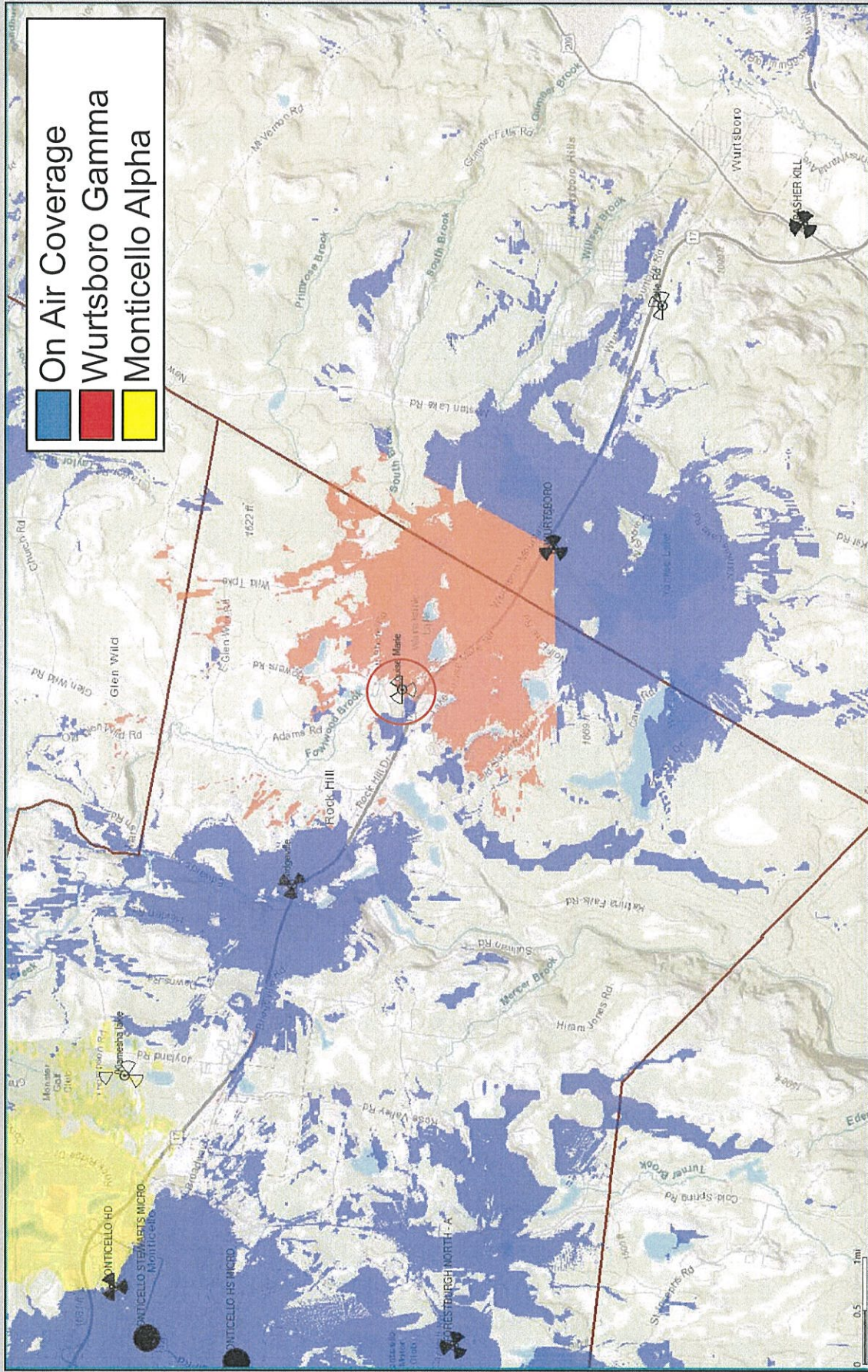
Proposed 700MHz Coverage

This coverage map shows how improved the RF conditions will be in and around the Louise Marie site area (at 180' ACL). Refer to slide 12 for further explanation of these color thresholds



Existing 2100MHz Best Server -105dBm RSRP

Best Server plots depict the actual footprint of each sector in question at one threshold so the viewer can accurately evaluate the area offloaded by the new sites dominant signal area.



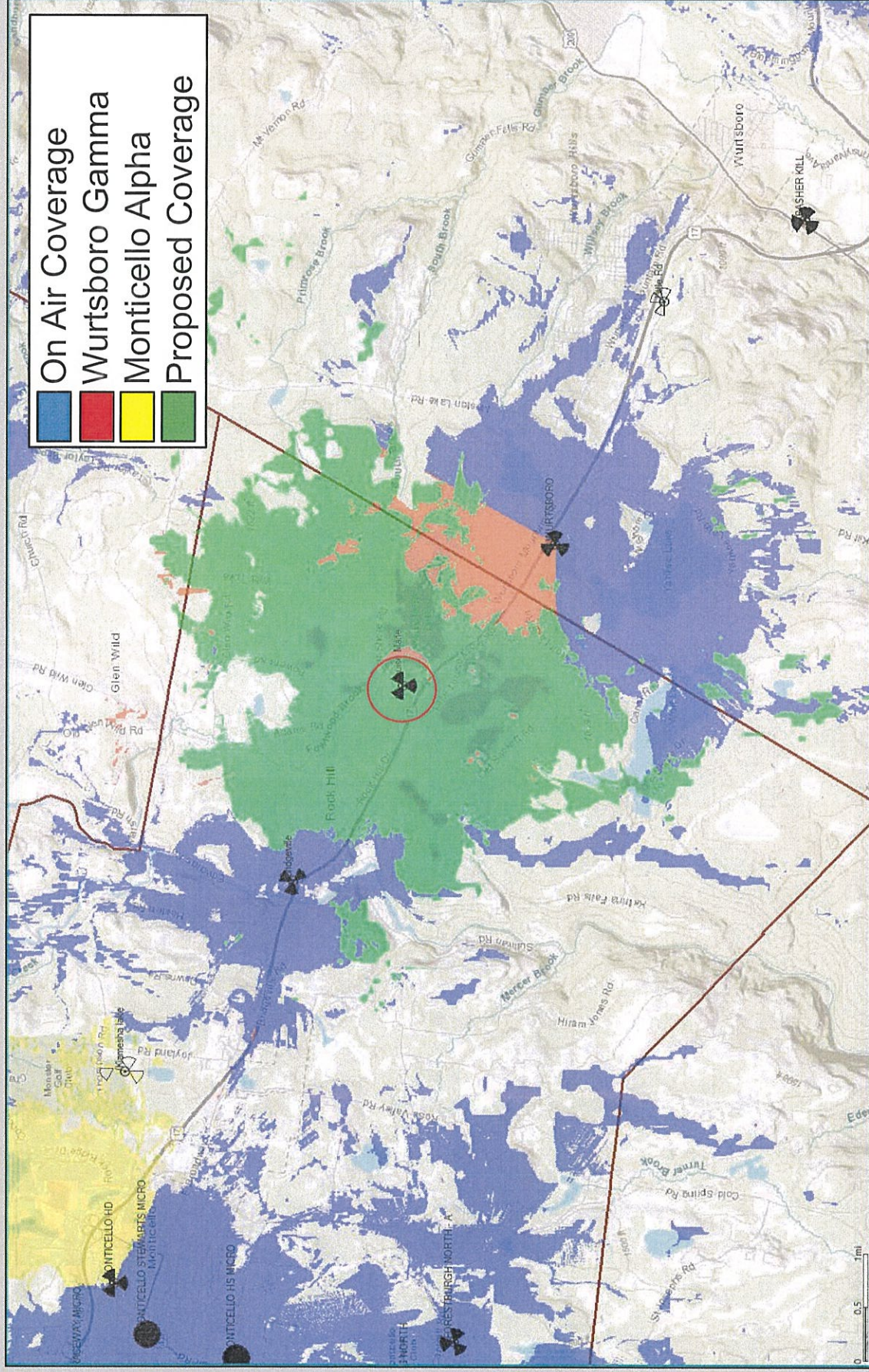
The map above represents coverage from existing sites, with the sites in need of capacity offload in red (Wurtsboro Gamma) and yellow (Monticello Alpha). Blue coverage is from other on air sites.



Note: Although Forestburgh North is not yet on air, it is shown as on air for these plots.

Proposed 2100MHz Best Server -105dBm RSRP

Best Server plots depict the actual footprint of each sector in question at one threshold so the viewer can accurately evaluate the area offloaded by the new sites dominant signal area (at 180' ACL).

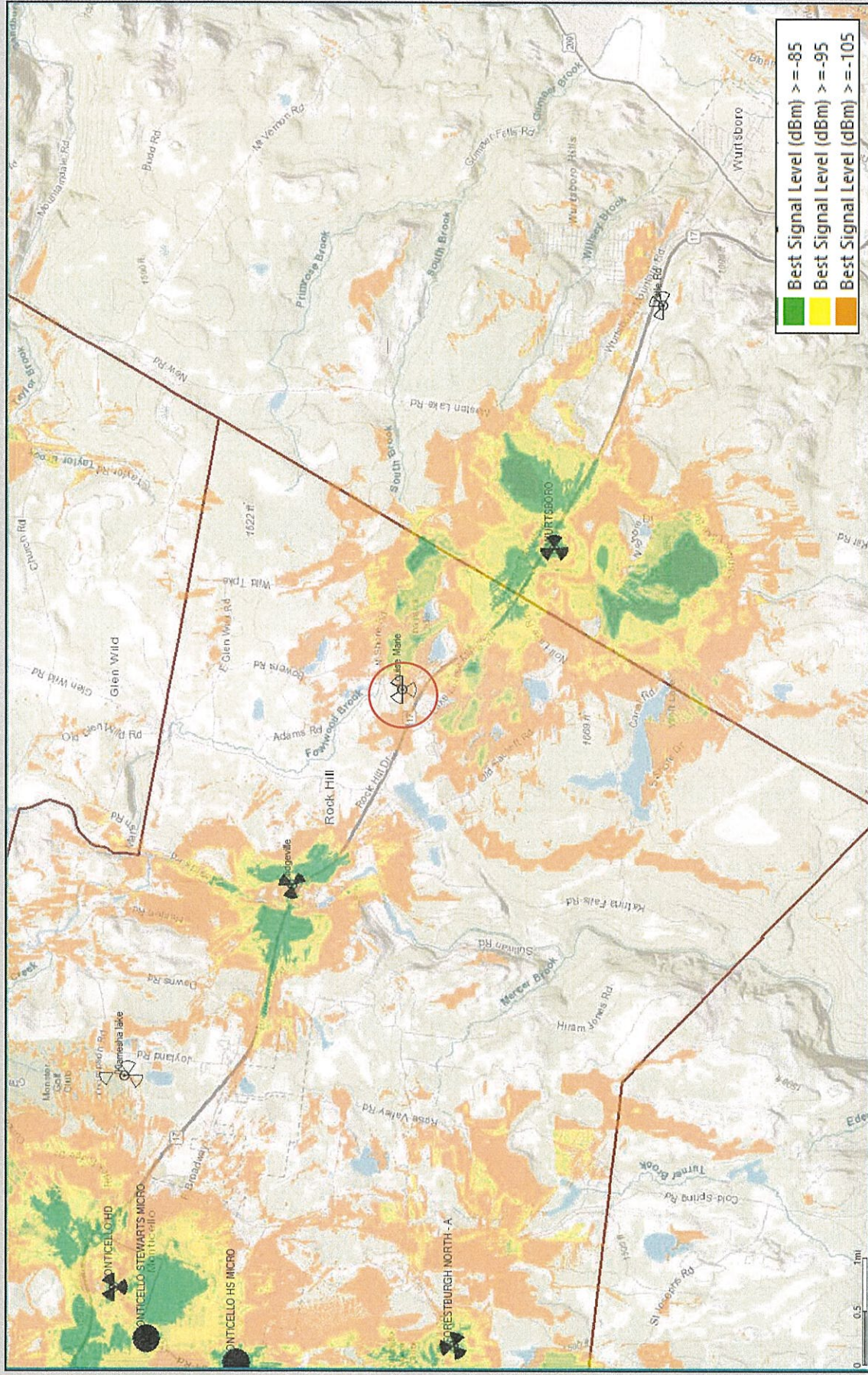


The map above adds the footprint of the proposed Louise Marie site in green. The green best server footprint provides improved coverage and capacity throughout the identified significant gap area. This will help to resolve the coverage and capacity issues impacting the Wurtsboro Gamma and Monticello Alpha sectors.

Note: Although Forestburgh North is not yet on air, it is shown as on air for these plots.

Existing 2100MHz Coverage

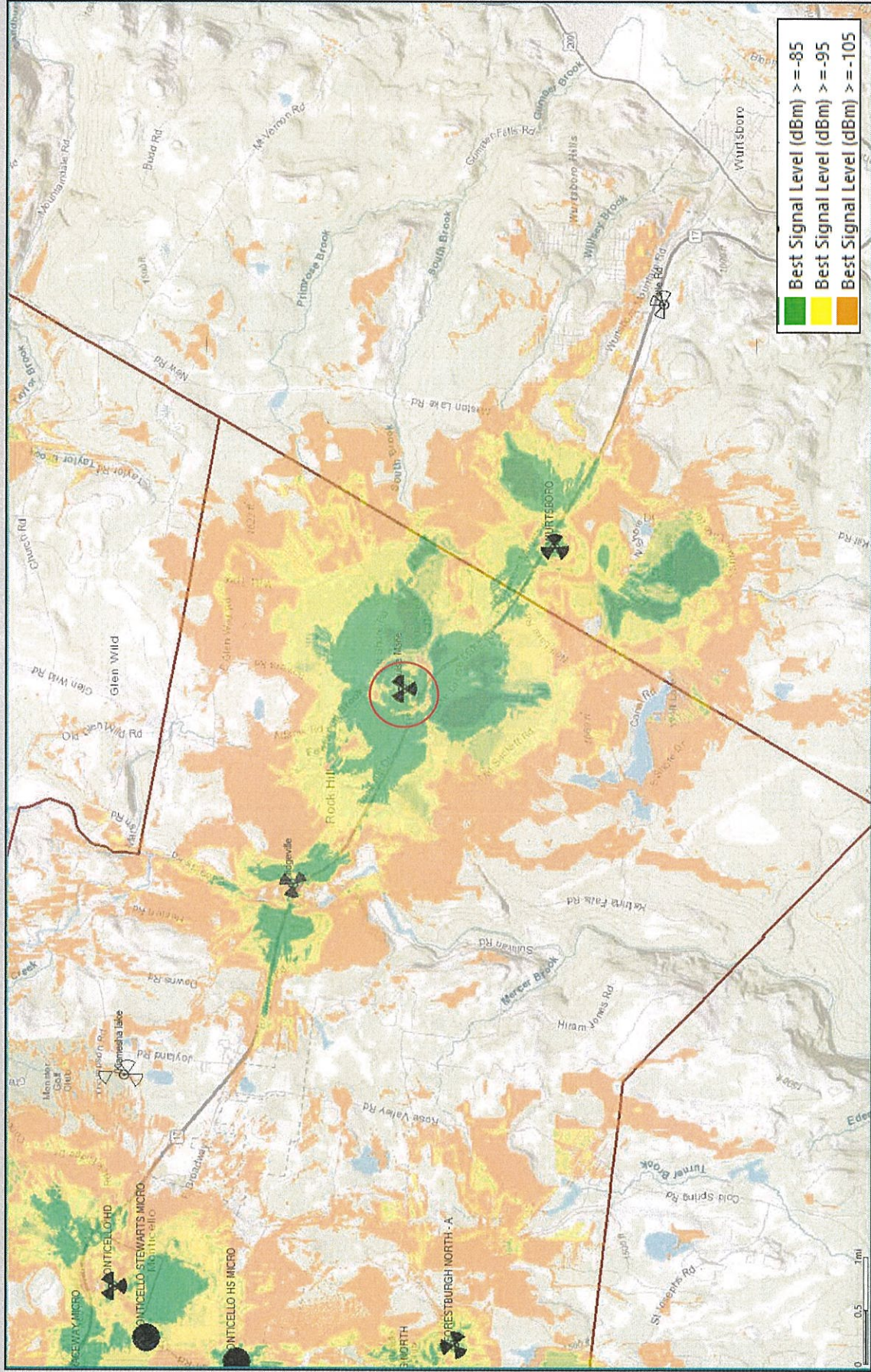
This coverage map shows how weak the RF conditions are in and around the Louise Marie site area. Refer to slide 12 for further explanation of these color thresholds



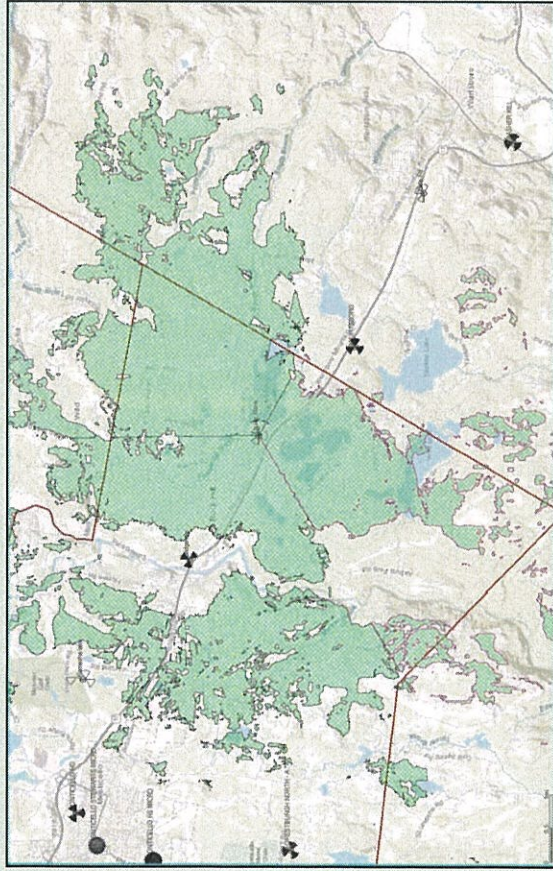
Note: Although Forestburgh North is not yet on air, it is shown as on air for these plots.

Proposed 2100MHz Coverage

This coverage map shows how improved the RF conditions will be in and around the Louise Marie site area (at 180' ACL). Refer to slide 12 for further explanation of these color thresholds



RF Justification Summary



The proposed site at 180' ACL resolves the substantial and significant gap in coverage and capacity impacting the Louise Marie area. This gap is shown above within the green shaded area.

The network was analyzed to determine whether there is sufficient **RF coverage and capacity** in the town of Thompson. It was determined that there are significant gaps in adequate LTE service for Verizon Wireless in the 700, 2100 and 1900MHz frequency bands. In addition to the coverage deficiencies, Verizon Wireless' network does not have sufficient capacity (low band or high band) to handle the existing and projected LTE voice and data traffic in the area near and neighboring the proposed **Louise Marie** facility ("targeted service improvement area"). Based on the need for additional coverage and capacity while considering the topography and specific area requiring service, any further addition of capacity to distant existing sites does not remedy Verizon's significant gap in reliable service. Therefore, the proposed facility is also needed to provide "**capacity relief**" to the existing nearby Verizon Wireless sites, allowing the proposed facility and those neighboring sites to adequately serve the existing and projected capacity demand in this area.

With the existing network configuration there are significant gaps in service which restricts Verizon Wireless customers from originating, maintaining or receiving reliable calls and network access. It is our expert opinion that the proposed height will satisfy the coverage and capacity needs of Verizon Wireless and its subscribers in this portion of **Thompson** and the **Louise Marie** project area. The proposed location depicted herein satisfies the identified service gaps and is proposed at the minimum height necessary for adequate service.

Michael R. Crosby

Michael R. Crosby
Engineer IV – RF Design
Verizon Wireless

Supplemental: Alternative Candidates

Several candidates were considered throughout the process of developing the Louise Marie ring including:

- A. 41.624408°, -74.586462° (Rooftop) this was RF Rejected due to inadequate coverage, too low
- B. 41.623233°, -74.586631° (Water tank) RF Rejected due to inadequate coverage, too low
- **C.* 41.620629°, -74.580232° (NEW TOWER) RF Approved at 180' ACL**
- D.* 41.624061°, -74.584990° (NEW TOWER) RF Approved, LL not interested
- E.* 41.616981°, -74.579803° (NEW TOWER) RF Approved as backup candidate, LL still developing property
- F.* 41.618270°, -74.587171°, (NEW TOWER) RF Rejected due to inadequate coverage, too low
- G.* 41.618630°, -74.584753°, (NEW TOWER), RF Approved, LL not interested

Starred (*) candidates above would require the construction of a new tower structure at each location.

- Candidate C is the RF Approved candidate, there is a willing LL and the site is constructible as designed.



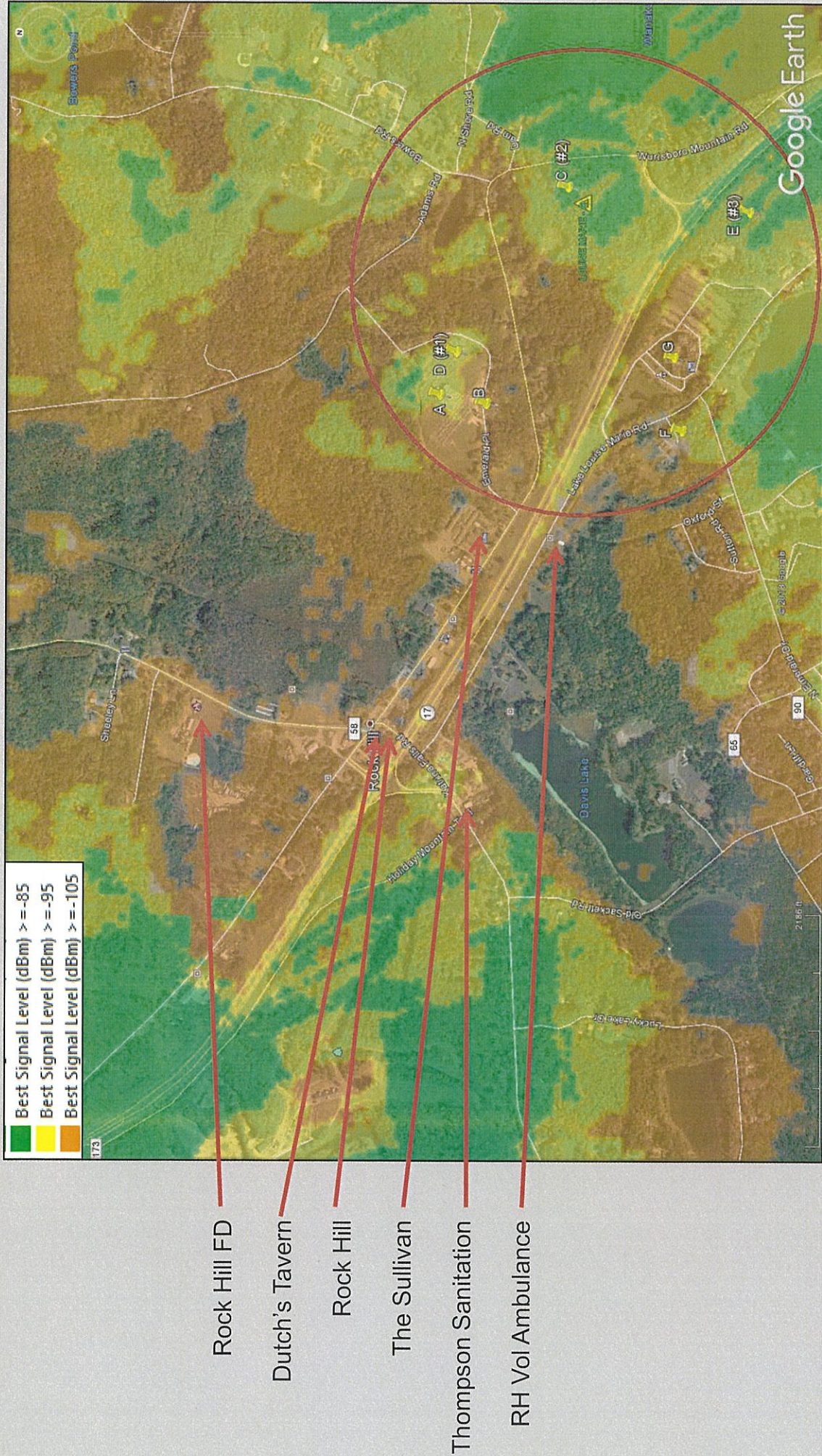
This is an aerial map from Google Earth showing a golf course and surrounding area. A red circle highlights a specific area containing points A, B, C (#1), C (#2), D, and E. Red arrows point to specific locations on the map. The map includes labels for roads like 'Holdsby Mountain Rd', 'Spartanburg Rd', and 'Spartanburg Mountain Rd'. Other labels include 'Bowers Pond', 'Wanaki', 'Davis Lake', and 'Sheepskin'. The map is sourced from Google Earth.

RH Vol Ambulance

24

Existing 700MHz Coverage – Zoom In Rock Hill

This coverage map shows how weak the RF conditions are currently in and around the Rock Hill area. Refer to slide 12 for further explanation of these color thresholds



Proposed 700MHz Coverage – Zoom In Rock Hill

This coverage map shows how improved the RF conditions will be in and around the Rock Hill area (at 180' ACL). Refer to slide 12 for further explanation of these color thresholds

