



STAFF REPORT

DATE: 7/17/2018

AGENDA ITEM: 22

TO: City Council

FROM: Emily Becker, Planning Director

ITEM: Verizon Wireless Telecommunications Tower Conditional Use Permit – 11351 Upper 33rd St N

REVIEWED BY: Garrett Lysiak, P.E., OWL Engineering and EMC Test Labs, Inc.
Jack Griffin, City Engineer
Kristina Handt, City Administrator

BACKGROUND:

The Council is being asked to consider a request from Verizon Wireless Communications for a Conditional Use Permit to install a new 125-foot telecommunications tower with a nine-foot lightning rod on the property located at 11351 Upper 33rd Street North. The proposed tower is the second facility that has been submitted under the Wireless Communications Ordinance that was adopted in 2009. As per the ordinance, the City has retained the services of a consulting engineer to review the plans for compliance with these requirements. With the recommendation from the City's consulting engineer, Staff is recommending approval of the Conditional Use Permit and variance requests.

GENERAL INFORMATION:

Applicant: Verizon Wireless, 10801 Bush Lake Rd, Bloomington, MN 55438

Property Owners: City of Lake Elmo

Location: 11351 Upper 33rd Street North (PID# 13.029.21.31.0018)

Request: Conditional Use Permit – Wireless Communications Facility

Existing Land Use: Stormwater Pond, Wooded Area

Existing Zoning: PF – Public Facility

Surrounding Land Use: East: Northern Natural Gas parcel (vacant) PF – Public Facilities, West: Single Family Residential; South: Reid Park (PF – Public Facilities); North

Comprehensive Plan: Public/Park

Proposed Zoning: No Change

History: The property was previously vacant land and was bought by the City

Deadline for Action: Application Complete – 6/4/2018

60 Day Deadline – 08/03/2018
Extension Letter Mailed – No
120 Day Deadline – N/A

Applicable Regulations: 150.110 – Wireless Communications Facilities
154.106 – Conditional Use Permits

REQUEST DETAILS/ANALYSIS:

CONDITIONAL USE PERMIT

Request. The City of Lake Elmo has received a request from Verizon Wireless Communications for a Conditional Use Permit to construct a new 125-foot high wireless communications tower with a 9-foot lightning rod on the property located at 11351 Upper 33rd Street North. The proposed location is owned by the City, and a large portion of it is used for stormwater purposes to serve the Village Downtown area. The tower site is proposed to be located approximately 520 feet from the north property line (620 feet from Upper 33rd Street North), approximately 45.5 feet from the east property line, and approximately 400 feet from the south property line.

Lease Agreement Required. If approved by Council, the applicant will enter in to a lease agreement to lease a 36 by 32 piece of land in the location described above. This space would provide room for the tower itself, an equipment platform, generator, and future LP tank. Access to the site would be gained via the private drive from Upper 33rd Street. The applicant has indicated a 20-foot wide access and utilities easement on the site plan.

Third Party Review. The applicant has provided detailed drawings depicting the location of the tower and accessory equipment in addition to a statement concerning compliance with the City's Wireless Communications Facility ordinance. Because this statement of compliance includes nearly all of the text from the ordinance, Staff has not attached the City's regulations as a separate document for review by the Council. Under the ordinance, the City may request assistance in reviewing the tower proposal by a third-party expert, which was done in this case. The City has hired Garrett Lysiak of OWL Engineering, which is a communications consulting engineering firm, to review the proposal for compliance with the City's requirements. The consultant's report is attached to this memorandum with his associated attachments and supporting documentation.

Federal Aviation Administration (FAA) and Federal Communications Commission (FCC)

Authorization. It is required per ordinance that the applicant provide FAA approval or documentation that FAA approval is not required. The applicant has provided a determination of no hazard to air navigation, attached to this report. The applicant is also required to provide and has provided radio station authorization from the FCC.

Structural Compliance Letter. The applicant has submitted a letter of structural compliance that indicates that the tower is designed for a Basic Wind Speed of 85 miles per hour (mph) (115 mph Ultimate) with no ice and 50 mph with 3/4" radial ice and is designed to support three carriers. This letter indicates that if the wind speed were to increase beyond the design wind speed, it is highly unlikely to fail, and if it did, the most likely location of the failure would be within the upper portion of the wind shaft. The letter also indicates that the fall radius for the monopole design is less than 41 feet.

Design. The applicant has provided photo simulations of the tower from both Upper 33rd Street North and adjacent residential properties. It is of monopole design as required in ordinance and is grey in

color. The applicant has shown that the monopole is designed to accommodate two additional providers as required by Code.

Proof of Need. The applicant is required to submit a coverage/interference analysis and capacity analysis that demonstrates the need for a new facility, in addition to other information as noted in the ordinance. This documentation and analysis has been reviewed by the City's consultant, and his opinion is that the applicant has met the threshold for documenting the need for a new tower. The consultant's report is attached to this memorandum.

Verizon has indicated in its application that they have seen tremendous growth in network data usage due to 4G or LTE technology. The proposed site's objectives are to improve the levels of coverage in the City of Lake Elmo, as the area has limited coverage and is currently served by Verizon Wireless sites that are located over four miles outside of town, and to provide capacity offload to the existing Verizon Wireless site called Northdale (its east-facing sector), which is currently in exhaust. Attached maps show that Lake Elmo is situated in an area with very poor coverage currently. The applicant has also provided a Best Server coverage plot, which shows that a new site will overtake an existing high traffic area and offload the existing sector.

Alternate Locations. One of the key provisions in the Wireless Communications Facility ordinance is a section that establishes location requirements for new facilities, which also includes a site ranking analysis that must be observed. In order of preference, new facilities are encouraged to be located: 1) on existing towers, 2) on existing structures, 3) on existing buildings four stories or higher, 4) on utility poles over 75 feet in height, 5) on public lands and facilities, and finally 6) on private property in the City.

The applicant has addressed these preferences by trying the following alternatives:

- 1) Co-locate on the existing water tower at Langly Court North.
 - After discussing with the City, it was determined that the water tank is at full capacity and would not provide sufficient room for Verizon's equipment. Verizon also considered placing a monopole next to the existing water tower, but due to the proximity to the water tower, the antenna orientations on the proposed site would be very restrictive and pointed in such a way that reflections coming from the tower would be minimized, and this would prevent the monopole from serving in certain areas that were targeted for coverage.
- 2) VFW Ballfield.
- 3) "City Hall Clock Tower"
 - Would provide less benefit to the network and a lower coverage footprint than a location downtown and would require a higher tower height
- 4) "Soccer Field Light Pole."
 - Would provide less benefit to the network and a lower coverage footprint than a location downtown and would require a higher tower height.

Co-Location Requirements. The Wireless Communications Facilities ordinances states that wireless communications services shall be located on existing towers or structures which exceed 35 feet in height and which are located within the potential service area for the site being proposed by the applicant. In the event that co-location is not possible, the applicant must demonstrate that a good faith effort to co-locate on existing towers and structures was made but an agreement cannot be made. Due to the aforementioned efforts to determine alternate sites by Verizon Wireless, Staff believes that a good faith effort was in fact made. Co-location requirements may be waived by Council if it is determined that antennae and/or tower accessory equipment would cause the

structural capacity of an existing or approved tower or structure to be exceeded; if the antennae and/or tower equipment would cause interference materially impacting the usability of existing antennae or tower accessory equipment; if existing or approved towers and buildings within the applicant's search radius cannot or will not accommodate the antennae and/or tower accessory equipment at a height necessary to function reasonably as documented by a qualified radio frequency engineer; and/or other unforeseen reasons make it infeasible to locate the antennae and/or tower accessory equipment upon an existing or approved tower or building.

Prohibited Areas. This section of the code prohibits towers from being located on smaller residential parcels, within open space or conservation easements, within airport impact zones, or in any open space preservation district. The proposed site does not fall within any of these prohibited areas.

Application and Review Procedures. An applicant for a new tower must submit specific information as required by this section of the code. Of these requirements, the applicant has not presented a five-year plan for facilities in the community, and has not submitted a landscape plan that provides screening from the accessory equipment building. Staff is not recommending that either of these be required with the present application because Verizon has also submitted an additional wireless communications facilities application to place six 96" panel antennas on top of the water tank located at Ideal Avenue and 34th Street North and for reasons explained below in the Landscaping section of this report.

Adverse Effects. Although the tower will be visible to adjacent properties, it is in an area that is heavily wooded and is surrounded by screening. Easton Village as well as a larger parcel with a single family parcel is to the east.

Landscaping. Although required as part of the code, the applicant is not proposing additional landscaping, and Staff is recommending that this not be required. The site is heavily wooded, and as shown in the proposed images attached to this report, the tower would be well screened from Upper 33rd Street North and adjacent residential properties.

Wireless Communications Tower Agreement. The applicant will need to enter into an agreement with the City concerning the proposed tower consistent with this section of the code. This agreement will be required before construction may begin.

Minimum Conditions. The City Code includes several conditions as listed in the code that must be met by the applicant. The applicant has already met a number of these items through the application process.

Recommended Findings. The proposed use will be subject to the recently revised required findings for conditional uses, which include the following:

- 1) The proposed use will not be detrimental to or endanger the public health, safety, comfort, convenience or general welfare of the neighborhood or the city. *The tower has been engineered to withstand high winds and has a fall zone that will not cause it to fall on an adjacent property.*
- 2) The use or development conforms to the City of Lake Elmo Comprehensive Plan. *The property is guided for and zoned for public facilities, in which wireless communication facilities are an allowed use.*
- 3) The use or development is compatible with the existing neighborhood. *The wireless communication facility will be screened with existing trees.*

- 4) The proposed use meets all specific development standards for such use listed in Article 7 of this Chapter. ***The proposed use meets almost all requirements of the City's Wireless Communications Facilities ordinance except for the required height and setback from property lines, for which the applicant has requested variances.***
- 5) If the proposed use is in a flood plain management or shoreland area, the proposed use meets all the specific standards for such use listed in Chapter 150, §150.250 through 150.257 (Shoreland Regulations) and Chapter 152 (Flood Plain Management). ***The proposed use is not in a flood plain management or shoreland area.***
- 6) The proposed use will be designed, constructed, operated and maintained so as to be compatible in appearance with the existing or intended character of the general vicinity and will not change the essential character of that area. ***The proposed tower will be heavily screened by existing trees and will not change the essential character of the neighborhood.***
- 7) The proposed use will not be hazardous or create a nuisance as defined under this Chapter to existing or future neighboring uses. ***The proposed use will be setback further from the property line than the fall zone and so will not be hazardous. It will be well screened and fenced so as to not create a nuisance and discourage climbing.***
- 8) The proposed use will be served adequately by essential public facilities and services, including streets, police and fire protection, drainage structures, refuse disposal, water and sewer systems and schools or will be served adequately by such facilities and services provided by the persons or agencies responsible for the establishment of the proposed use. ***The proposed use has adequate access, and the Fire Department has reviewed the application and does not see an issue, as access can be achieved if need be through the fence.***
- 9) The proposed use will not create excessive additional requirements at public cost for public facilities and services and will not be detrimental to the economic welfare of the community. ***The City will enter in to a lease agreement for which it will receive a negotiated amount.***
- 10) The proposed use will not involve uses, activities, processes, materials, equipment and conditions of operation that will be detrimental to any persons, property or the general welfare because of excessive production of traffic, noise, smoke, fumes, glare or odors. ***The proposed use will not create excessive production of traffic, noise, smoke, fumes, glare or odors.***
- 11) Vehicular approaches to the property, where present, will not create traffic congestion or interfere with traffic on surrounding public thoroughfares. ***There is an existing access road that will be utilized until such time the cul-de-sac providing connection from Easton Village is constructed.***
- 12) The proposed use will not result in the destruction, loss or damage of a natural or scenic feature of major importance. ***The proposed use will not result in in any destruction, loss or damage or a natural or scenic feature of major importance.***

Recommended Conditions. In reviewing this list, Staff finds that the applicant will be able to comply with the required findings in order to issue a conditional use permit. Please note that the Staff recommendation includes the following conditions of approval:

- 1) The applicant shall enter into a wireless communications tower agreement that addresses all items listed in Section 150.121 of the Lake Elmo City Code addressing wireless

communications facilities with the City prior to the issuance of a building permit for the proposed facility.

- 2) The applicant must submit proof of liability and worker's compensation insurance.
- 3) Monopole shall be constructed of, or treated with, corrosive resistant material.
- 4) An agreement providing for co-location and 6-month removal of unused and/or obsolete towers shall be attached and become part of the permit.
- 5) The addition of antennas and associated equipment of an additional provider to an existing permitted tower shall be considered co-location and shall require a zoning permit and site plan approval. An amendment to a conditional use permit shall typically not be required.
- 6) All towers shall be reasonably protected against unauthorized climbing. The area around the base of the tower and guy wire anchors shall be enclosed by a fence with a minimum height of 6 feet with a locked gate.
- 7) All obsolete or unused towers and accompanying facilities shall be removed within 6 months of the cessation of operations at the site unless a time extension is approved by the City. After the facilities are removed, the site shall be restored to its original or an improved state which includes removal of all concrete to 6 feet below normal grade and surrounding area returned to normal grading. Electronic equipment shall not be removed in advance of removal of obsolete or unused towers. To ensure compliance, the applicant must submit a performance bond or letter of credit in an amount sufficient to cover all removal costs as determined by the city prior to the issuance of a building permit for the facility. Failure to remove the structure shall be cause for the city to remove the tower and associated equipment and assess the cost against the required bonding or letter of credit instrument.
- 8) The city shall conduct a final inspection of the site to ensure that all requirements of the City Code and all conditions of approval attached as part of the wireless communications permit are met prior to the start of operation of the facility.
- 9) For installations of a facility in an area that could potentially be accessed by the public (including rooftop installations or other locations that would be considered public versus occupational) a radio frequency hazard analysis and a yearly report must be submitted before December 31 of each year showing the results of on-site measurements at the site. A registered professional engineer hired by the provider must sign these measurements and report. At a minimum, the report must document any changes to the site over the course of the previous year.
- 10) All lighting associated with the facility shall comply with the City's lighting ordinance. The wireless communications tower shall not be illuminated by artificial means, as it is not required by the Federal Aviation Administration.
- 11) The area around the base of the tower and guy wire anchors shall be enclosed by a fence with a minimum height of six feet with a locked gate.
- 12) Building permits shall be applied for and issued before any construction is started.
- 13) The applicant shall be compliant with all other minimum conditions outlined in Section 150.123 of the Lake Elmo City Code addressing wireless communications facilities.
- 14) The applicant shall enter in to a lease agreement approved by Council for both this site and the water tower site at the corner of Ideal Avenue North and 34th Street North.
- 15) The applicant shall design the accessory equipment building to accommodate any additional equipment that may be needed by additional carriers on the tower.

VARIANCE REQUESTS

Requests. The applicant is requesting three variances:

1) Maximum height

- The maximum allowed tower height in the PF – Public Facilities District is 125 feet. The applicant is proposing a 125-foot tower with a 9-foot lightning rod. The applicant has indicated that if the tower and lightning rod did not exceed 125 feet, the tower height would decrease the antenna's centerline and its effectiveness. The lightning rod is for safety reasons to divert lightning during a lightning event. Visually, the rod is not generally not visible against the sky. The wireless communications facilities ordinance states that Council may increase the maximum height of a wireless communications facility by 50 feet within the public facilities district provided that an applicant is able to demonstrate a need for a higher facility and/or the additional height will serve a public interest in allowing fewer towers to serve a given area. Staff believes that this provision has been met.

2) Setback from property line

- Towers are required to be setback a distance equal to the tower height from all property lines, and all accessory structures are required to be setback at least twenty feet from all side yards and rear property lines. The center of the tower to the property line to the east is setback 45.5 feet and so does not meet this standard by 88.5 feet. This standard is met from all other property lines, as the tower is setback approximately 520 feet from the north property line, 400 feet from the south property line, and 680 feet from the west property line. As noted earlier in the report, the fall zone for this tower is 41 feet, and so this setback should not pose a safety hazard. Additionally, the existing house on the property to the east is setback approximately 245 feet from the western property line. As for accessory structures and equipment, the pad mounted transformer is setback approximately 16 feet from the property line, the generator is setback 24 feet from the property line, and the equipment platform is setback approximately 23 feet from the property line.

3) Expiration date of conditional use permit and variance

- The applicant has indicated on the application that there is a lengthy construction process involving ordering of materials, procuring general contractors, and constraints with construction seasons and so is requesting a variance from the standard in the Zoning Code which states that a variance shall expire if work does not commence within twelve months of the date granting such variance. While there is a provision that allows extension requests for up to one year after this expiration date, the applicant would like to ensure that this extension will be granted and so is requesting this variance. The Zoning Code also states that if substantial construction has not taken place within 12 months of the date on which the conditional use permit was granted, the permit is void except that, on application, the Council, after receiving recommendation from the Planning Commission, may extend the permit for such additional period as it deems appropriate.

Recommended Findings. An applicant must establish and demonstrate compliance with the variance criteria set forth in Lake Elmo City Code Section 154.017 before an exception or modification to city code requirements can be granted. These criteria are listed below, along with comments from Staff regarding applicability of these criteria to the applicant's request.

- 1) Practical Difficulties.** A variance to the provision of this chapter may be granted by the Board of Adjustment upon the application by the owner of the affected property where the strict enforcement of this chapter would cause practical difficulties because of circumstances unique to

the individual property under consideration and then only when it is demonstrated that such actions will be in keeping with the spirit and intent of this chapter. Definition of practical difficulties - "Practical difficulties" as used in connection with the granting of a variance, means that the property owner proposes to use the property in a reasonable manner not permitted by an official control. ***A majority of the site is used for the City for stormwater ponding, and so this is the only site on the parcel that would be suitable to construct the monopole. The applicant has reviewed a number of alternatives to the site and found this to be the most suitable.***

- 2) **Unique Circumstances.** The plight of the landowner is due to circumstances unique to the property not created by the landowner. ***The parcel is unique in that most of it is being used for stormwater ponding for the downtown area. The property became a stormwater pond prior to it being considered a location for a monopole. Lowering the height of the tower would decrease its effectiveness, and the lightning rod is needed for safety reasons.***
- 3) **Character of Locality.** The proposed variance will not alter the essential character of the locality in which the property in question is located. ***The monopole will be well screened from the public right-of-way and adjacent properties. The additional height of the lightning rod will not be visible against the sky.***
- 4) **Adjacent Properties and Traffic.** The proposed variance will not impair an adequate supply of light and air to properties adjacent to the property in question or substantially increase the congestion of the public streets or substantially diminish or impair property values within the neighborhood. ***The proposed monopole will not effect the supply of air and light, increase congestion or impair property values within the neighborhood.***

Planning Commission Review. The Planning Commission held a public hearing and considered the requests for a conditional use permit and variances at their July 9, 2018 meeting. No one from the public spoke at the public hearing, and a written comment from the John Lenzmeier and Vicky Rehak, property owners of 11178 Upper 33rd Street North, provided written comment contesting the requests. Garrett Lysiak, P.E., OWL Engineering and EMC Test Labs, Inc., was there to provide testimony, explaining the need for the tower in order to provide sufficient coverage. The Planning Commission questioned if there were in fact other alternate locations that the wireless communications facility could go, and Garrett explained that it would be difficult for the City to determine alternate locations and reminded the City that even if there were alternate locations, a property owner must still be willing to sell or lease a parcel in order to erect the wireless communications facility. There was also question about the setback variance request and if the facility could go elsewhere on the property. The applicant explained that the other areas are being utilized for stormwater ponding purposes, and the proposed location is ideal due to the elevation and to avoid tree removal in other areas of the parcel. Finally, there was concern about the request for a variance from the expiration requirements of a conditional use permit and variance. It was decided, however, that the City should not be concerned with this, as the applicant is entering in to a lease agreement with the City, and with the time and effort put in to analysis for selecting this site, it would be highly likely that the applicant will begin construction as soon as possible. The Planning Commission recommended approval of the requests with a vote of 6-1. Commissioner Johnson had the dissenting vote for the reason that there may be alternate locations for the tower to go.

OPTIONS:

- Adopt Resolution 2018- and Resolution 2018- approving the conditional use permit and variances with recommended conditions of approval.

- Adopt Resolution 2018- approving the conditional use permit and deny some or all of requested variances with the condition that the plans be amended to conform to appropriate standards, providing findings for denial.
- Prepare findings for denial of the conditional use permit and variance requests and direct Staff to prepare a Resolution to bring to a future meeting to deny the conditional use permit and variance requests.

RECOMMENDATION:

Staff and the Planning Commission recommend approval of the request from Verizon Wireless for a Conditional Use Permit to install a new 125-foot telecommunications tower with 9-foot lightning rod on the site property located at 11351 Upper 33rd Street North with recommended conditions of approval.

“Move to adopt Resolution 2018-083 approving the request from Verizon Wireless for a Conditional Use Permit to install a new 125-foot telecommunications tower with 9-foot lightning rod on the site property located at 11351 Upper 33rd Street North with recommended conditions of approval.”

Staff and the Planning Commission recommend approval of the requests from Verizon Wireless for a variance from the maximum height requirement, minimum setback requirement, and conditional use permit and variance expiration dates.

“Move to adopt Resolution 2018-084 approving the request from Verizon Wireless for a variance from the maximum height requirement, minimum setback requirement, and conditional use permit and variance expiration dates.”

ATTACHMENTS:

1. Report from OWL Engineering (Garrett Lysiak) with Attachments
2. Application and Cover Letter
3. Narrative
4. Plans
5. Topo Map
6. Site Analysis
7. Photo Simulations
8. FAA Approval
9. FCC Approval
10. Resolution 2018-083 approving the Conditional Use Permit
11. Resolution 2018-084 approving the variance requests



CONSULTING COMMUNICATIONS ENGINEERS • EMC TEST LABORATORIES

**5844 Hamline Avenue North, Shoreview, MN 55126
651-784-7445 • Fax 651-784-7541**

**REPORT REGARDING CONSTRUCTION
OF A 134-FOOT COMMUNICATIONS TOWER**

AT 33RD CIRCLE NORTH

LAKE ELMO, MINNESOTA

FOR VERIZON WIRELESS

PREPARED BY:

GARRETT G. LYSIAK, P.E.

JUNE 27, 2018



OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS • EMC TEST LABORATORIES

5844 Hamline Avenue North, Shoreview, MN 55126
651-784-7445 • Fax 651-784-7541

EXECUTIVE SUMMARY

The City of Lake Elmo Ordinance for wireless telecommunications towers requires the demonstration of a need (gap in coverage) or a showing of need for the proposal. This analysis demonstrates the proof of need requirement is satisfied. This new tower will eliminate both coverage and capacity problems. It would provide the required Personal Communication System ("**PCS**") coverage to eliminate the present existing poor coverage area for the expanded service.

There are no existing towers identified that could provide the required coverage and eliminate the predicted coverage gap. All towers in the nearby area were examined and none were found that could be used. Due to the lack of any existing towers or support structures in the vicinity, the new site would need to locate very near to the proposed location in order to fill the coverage gap.

There is no evidence to show this new tower will cause interference to the present frequencies and any Public Safety or City communications systems. There is no demonstrated RF Radiation hazard to the public, even when other additional PCS systems are added to the study.

As required by the ordinance, this tower will accommodate additional communications systems, and it complies with all the structural requirements of the ordinance.

The required drop zone on 100% of the height of the proposed tower to the property boundary lines is not met. However, the applicant has requested a variance of the requirement. They submitted an engineering report that shows the predicted failure height would be approximately 41-feet and I concur with this analysis.



OWL ENGINEERING & EMC TEST LABS, INC.

CONSULTING COMMUNICATIONS ENGINEERS • EMC TEST LABORATORIES

5844 Hamline Avenue North, Shoreview, MN 55126
651-784-7445 • Fax 651-784-7541

TABLE OF CONTENTS

ENGINEERING STATEMENT

FIGURE 1	SITE MAP
FIGURE 2	AERIAL VIEW
FIGURE 3	PROXIMITY TO AIRPORT
FIGURE 4	AIRSPACE MAP
FIGURE 5	EXISTING TOWERS SEARCH
FIGURE 6	EXISTING TOWERS MAP
FIGURE 7	ENGINEERING FALL ZONE REPORT
FIGURE 8	COVERAGE MAPS
	A) PREDICTED COVERAGE
	B) EXISTING COVERAGE
	C) TOWER HEIGHT REDUCED
FIGURE 9	VERIZON SUPPLEMENTAL EXHIBIT

Engineering Statement

The documents submitted by TechScape Wireless on behalf of Verizon to The City of Lake Elmo for a new 134-foot tower were reviewed for compliance with the technical requirements of the zoning ordinance. The site is located at 33rd Circle North, Lake Elmo, MN. The site location was plotted on a USGS 7.5 minute map (Figure 1 "Site Map"). In addition, an aerial photograph is included to show the proposed site location and the surrounding area (Figure 2 "Aerial Site Map").

Airspace Study

Figure 3 shows the proximity to the Lake Elmo Airport. The proposed tower site was examined for any impact on the local airspace and airports. The tower height is proposed to be under 200-feet and is therefore not usually required to get Federal Aviation Administration (FAA) or Federal Communications Commission (FCC) approval, unless it is located near an airport. The proposed tower is less than one-mile from Lake Elmo Airport runways, and therefore an FAA study is required. Verizon applied for an aeronautical study and was granted an approval by the FAA. Since the FAA has already approved the monopole, the impact on private airport facilities was examined since they are not normally protected by them.

Figure 4 shows the airspace map and shows that there was no impact since there are no private facilities in the area.

Existing Tower Sites

A search of both FCC and FAA databases was performed to determine the location of any potential alternate locations for the proposed monopole. Figure 5 shows the results of this search. The four nearest towers were reviewed as possible substitutes for the proposed tower. They are:

1. STC Management site is 2.7, outside search area.
2. State of MN tower is only 40-feet high.
3. Existing Verizon site already used.
4. Site was never constructed, cancelled.

Figure 6 shows the location of the identified nearby towers. All of the above towers are outside of the Search Ring and they would not provide the required signal levels to eliminate the coverage gap.

Site Construction

The site construction plans show the tower that is planned for this project. The tower drawings supplied show compliance with the requirements of ANSI¹/TIA²-222-G standard which requires loading for:

1. Exposure C to the standard.
2. 90 mph basic wind, with no radial ice.
3. 50 mph basic wind with 1/2" of radial ice. (ice is considered to increase in thickness with height)
4. The tower is designed to withstand the Ultimate Wind Speed for this area of 115 mph

§150.120(D) (setbacks) requires at least a 100% setback or 134-feet from the nearest property line. The proposed tower is approximately 46-feet from the nearest property line. Verizon submitted a structural engineering study in support of a variance request to this setback requirement. This engineering, shown in Figure 7, states "minimum overall safety factor of 25%" is designed with the proposed loading on the tower."

It also states, "Should the wind speed increase beyond the capacity of the built-in safety factors, to the point of failure of one or more structural elements, the most likely location of the failure would be within the upper portion of the monopole shaft. Assuming that the wind pressure profile is similar to that used to design the monopole, the monopole will buckle at the location of the highest combined stress ratio within the upper portion. This is likely to result in the portion of the monopole above leaning over and remaining in a permanently deformed condition." My review concurs with this analysis.

The proposal shows that the tower is currently designed to accommodate two additional antenna systems antennas. This will eliminate the need for an additional new tower in the vicinity for some time.

Coverage Study

In reviewing the submitted data it was determined that (Verizon) has designed its communications facilities in the Lake Elmo area with several surrounding sites providing area wide coverage. During my initial inspection of the application, it was determined that several keys pieces of information were missing and were required to analyze the predicted and existing coverage of the Verizon system. The information was provided and

¹ American National Standards Institute

² Telecommunications Industry Association

I was able to complete my analysis of the application. Figure 8a shows the predicted coverage area with the new monopole. Figure 8b shows the area with the proposed monopole removed from the analysis and the predicted coverage gap is identified. Figure 8c shows the coverage with the tower height reduced to 80-feet and will not eliminate the predicted coverage gap.

Interference Study

A search was performed using the FCC frequency database³ to determine the frequency and location of any city or county public safety facilities within one-mile from the proposed tower location. Using all the identified frequencies either utilized by the city or county, an intermodulation (interference) study was performed to determine if any predicted interference products would be generated by the proposed Verizon Wireless facility. The results of the study indicate that there are no interference products predicted to be generated that would cause interference to any of the identified protected frequencies.

The study shows that there are no predicted (low order) interference intermodulation products generated from combinations of existing and proposed channels at this site. When the proposed communications facility is constructed, antenna separation, antenna pattern directionality properties and equipment filtering will further reduce the potential of intermodulation induced interference. This analysis is a mathematical study and will not account for interference mitigation that will occur due to the differences in technologies and equipment configurations and filtering. This study assumes a worst-case scenario using as many as four transmitters operating simultaneously (which is a rare occurrence).

Additionally, due to the high frequencies used on this new facility there is no predicted interference to occur on any other communication devices such as televisions, personal computers, telephones, garage door openers, security systems, and other electronic equipment.

In summary, the use of good engineering and installation practices should mitigate any interference to any nearby existing communications systems or any additional future systems on the tower and it is my opinion that the Verizon Wireless system frequencies should not cause any harmful interference problems to any of the existing City or County communications systems and is in compliance with §150.120(i) of the ordinance.

RF Radiation Analysis

Using the data submitted by Verizon Wireless we performed a "Worst-Case" radiation analysis to determine the amount of RF energy that would be present at the base of the tower. In making our calculations, we assumed that all of the RF energy generated by the

³ Federal Communications Commission, Wireless Telecommunications Bureau – "Universal Licensing System"

facility would be directed downward and three separate antennas at maximum power levels were used for the calculations. This is not the real world situation since the antennas used by PCS systems are designed to radiate towards the horizon.

Additionally, calculations were performed including any future antenna systems on the tower and added to the total RF exposure level.


However, using this analysis method I was able to determine that the maximum level of RF radiation reaching the ground (head height) at the tower base is less than 20 percent of the ANSI standard value for the general public exposure limit and as such is not classified as an RF radiation hazard. This proposal satisfies the current Federal guidelines for RF Exposure⁴.

Summary

The review of the proposed Verizon tower indicates that:

- It would provide the required wireless system coverage to eliminate the present existing poor coverage area and provide enhanced existing coverage.
- The site is not predicted to cause any interference products to any protected frequency in the area and is not predicted to be an RF radiation hazard.
- The tower is designed to accommodate two additional communications systems.
- The proposal complies with the structural requirements of the ordinance.
- Due to the lack of any existing towers or adequate support structures in the vicinity, the site would need to locate very near to the proposed location to fill the coverage gap.

Respectfully submitted,



Garrett G. Lysiak, P.E.

⁴ FCC Office of Engineering and Technology Bulletin OET-65 Edition 97-01

(WHITE BEAR
LAKE EAST)

092° 53' 26.9164" W
045° 00' 56.6908" N

(STILLWATER)

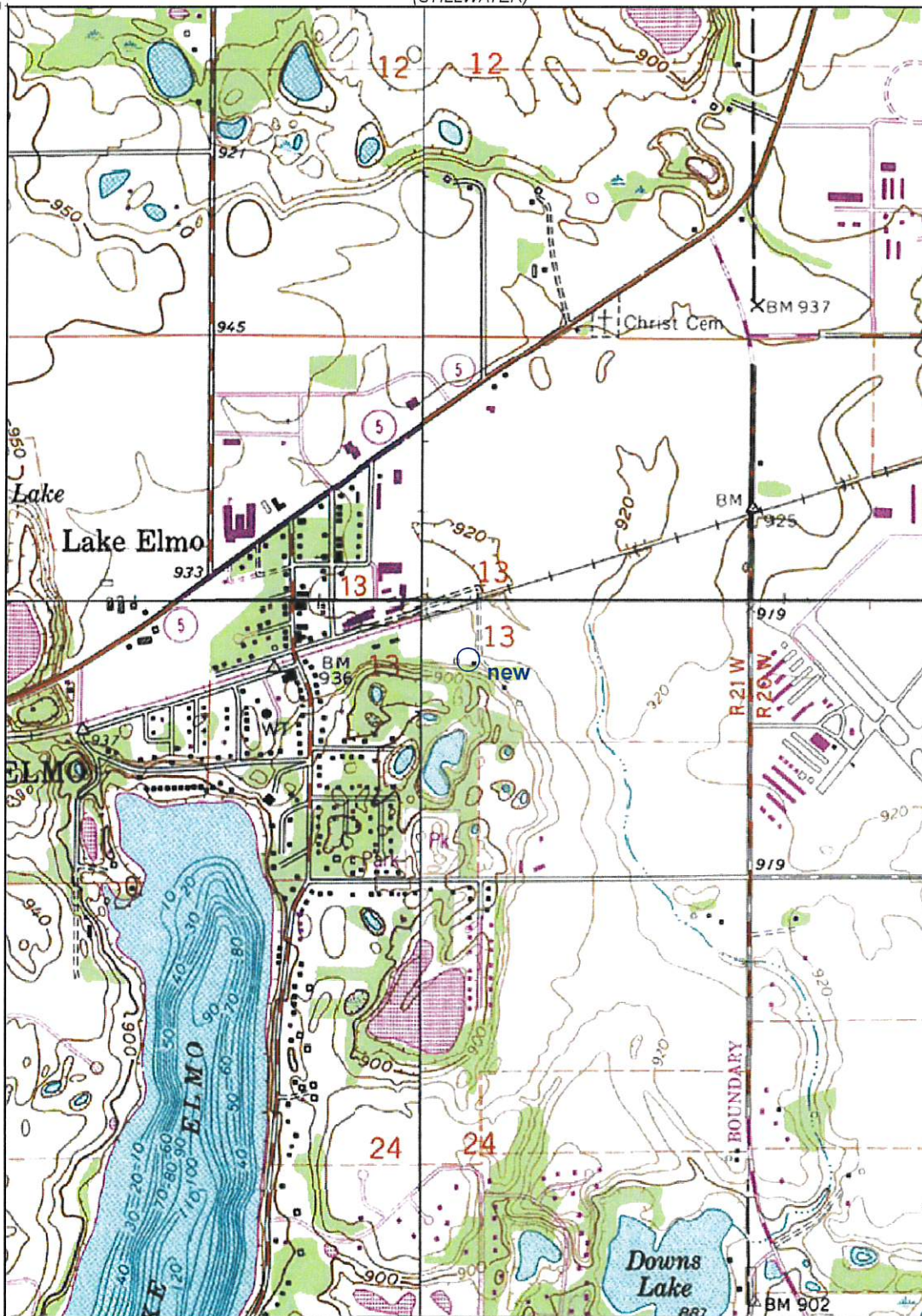
HUDSON QUADRANGLE
MINNESOTA
TOPOGRAPHIC SERIES

(SOMERSET
SOUTH)

092° 51' 21.0353" W
045° 00' 56.6908" N

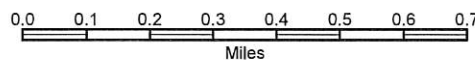
(ST PAUL PARK)

(RIVER FALLS
WEST)



Declination

SCALE 1:18056



GN 0° 05' E
MN 0° 07' W

CONTOUR INTERVAL 10 FT
[BASE MAP VERTICAL DATUM]

HUDSON, MN
JAN 1, 1993

FIGURE 1 - SITE MAP

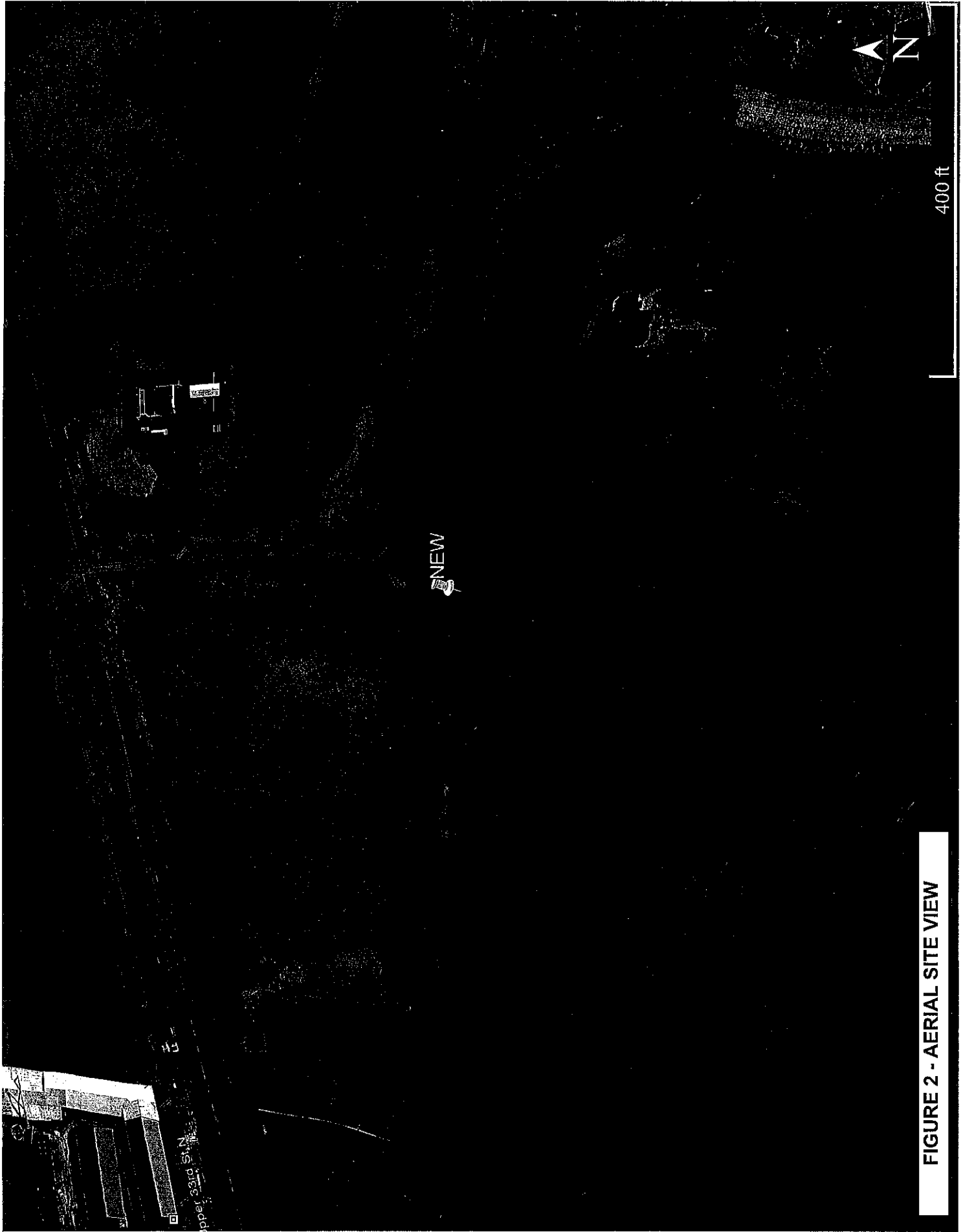


FIGURE 2 - AERIAL SITE VIEW



FIGURE 3 - PROXIMITY TO AIRPORT

FIGURE 4 - AIRSPACE MAP

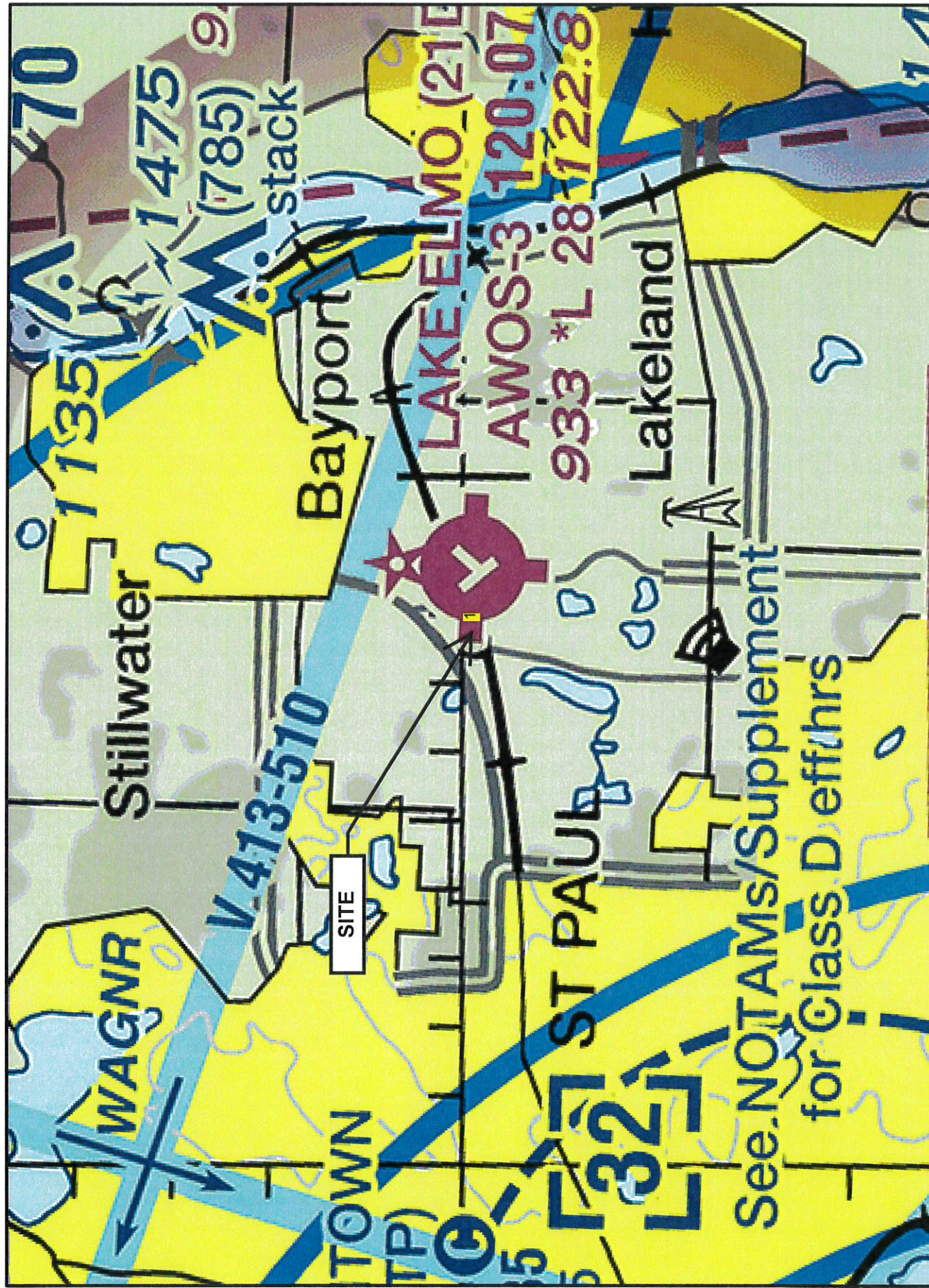


FIGURE 5 - EXISTING TOWER SEARCH

ASR Registration Search

Registration Search Results

Displayed Results

PA = Pending Application(s)

Specified Search

Latitude='44-59-54.3 N', Longitude='92-52-23.5 W', Radius=4.8 Kilometers

	Registration Number	Status	File Number	Owner Name	Latitude/Longitude	Structure City/State	Overall Height Above Ground (AGL)
1	1004586	Constructed	A1025229	STC Five LLC	45-00-11.1N 092-49-03.0W	BAYTOWN, MN	33.2
2	1261231	Constructed	A0618383	Minnesota, State of	45-00-00.5N 092-51-17.5W	Lake Elmo, MN	11.3
3	1291646	Constructed	A0989054	Verizon Wireless (VAW) LLC	44-57-41.7N 092-51-53.8W	Lake Elmo, MN	39.0
4	1295513	Cancelled	A0941024	Verizon Wireless (VAW) LLC	44-59-13.1N 092-49-08.6W	Stillwater, MN	39.3

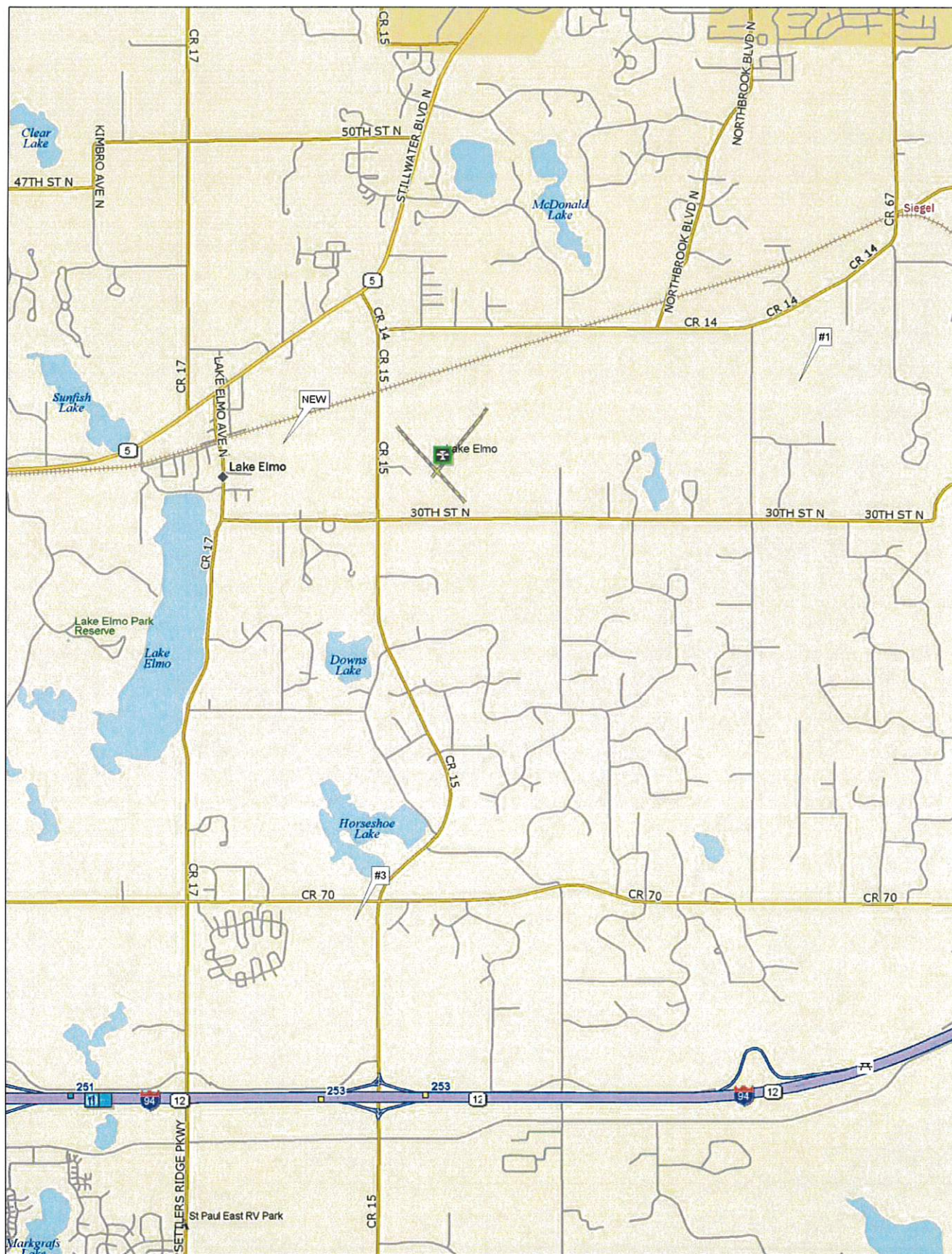


FIGURE 6 - EXISTING TOWERS

FIGURE 7 - ENGINEERING FALL ZONE REPORT

Sabre Industries™
Towers and Poles

February 28, 2018

Mr. Brian Schriener
Design 1 of Eden Prairie
9973 Valley View Road
Eden Prairie, MN 55344

RE: Proposed 125' Sabre Monopole for MIN Tickle, MN

Dear Mr. Schriener,

Upon receipt of order, we propose to design and supply the above referenced Sabre monopole for a Basic Wind Speed of 89 mph (115 mph Ultimate) with no ice and 50 mph with 3/4" radial ice, Structure Class II, Exposure Category C and Topographic Category 1 in accordance with the Telecommunications Industry Association Standard ANSI/TIA-222-G, "Structural Standard for Antenna Supporting Structures and Antennas". The monopole is to be designed to support three carriers, as shown on Design 1 drawing T-1, Revision F dated 12-6-17. The design will account for the two future carriers consisting of the same equipment as the initial carrier (Verizon).

When designed according to this standard, the wind pressures and steel strength capacities include several safety factors, resulting in an overall minimum safety factor of 25%. Therefore, it is highly unlikely that the monopole will fail structurally in a wind event where the design wind speed is exceeded within the range of the built-in safety factors.

Should the wind speed increase beyond the capacity of the built-in safety factors, to the point of failure of one or more structural elements, the most likely location of the failure would be within the upper portion of the monopole shaft. Assuming that the wind pressure profile is similar to that used to design the monopole, the monopole will buckle at the location of the highest combined stress ratio within the upper portion. This is likely to result in the portion of the monopole above leaning over and remaining in a permanently deformed condition. ***Please note that this letter only applies to the above referenced monopole designed and manufactured by Sabre Towers & Poles.*** The fall radius for the monopole design described above is less than 41 feet.

Sincerely,

Keith J. Tindall, P.E.
Vice President of Engineering

PROFESSIONAL ENGINEER

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the Laws of the State of Minnesota.

Print Name KEITH J. TINDALL

Signature [Signature]

Date 2/28/18 License # 26342

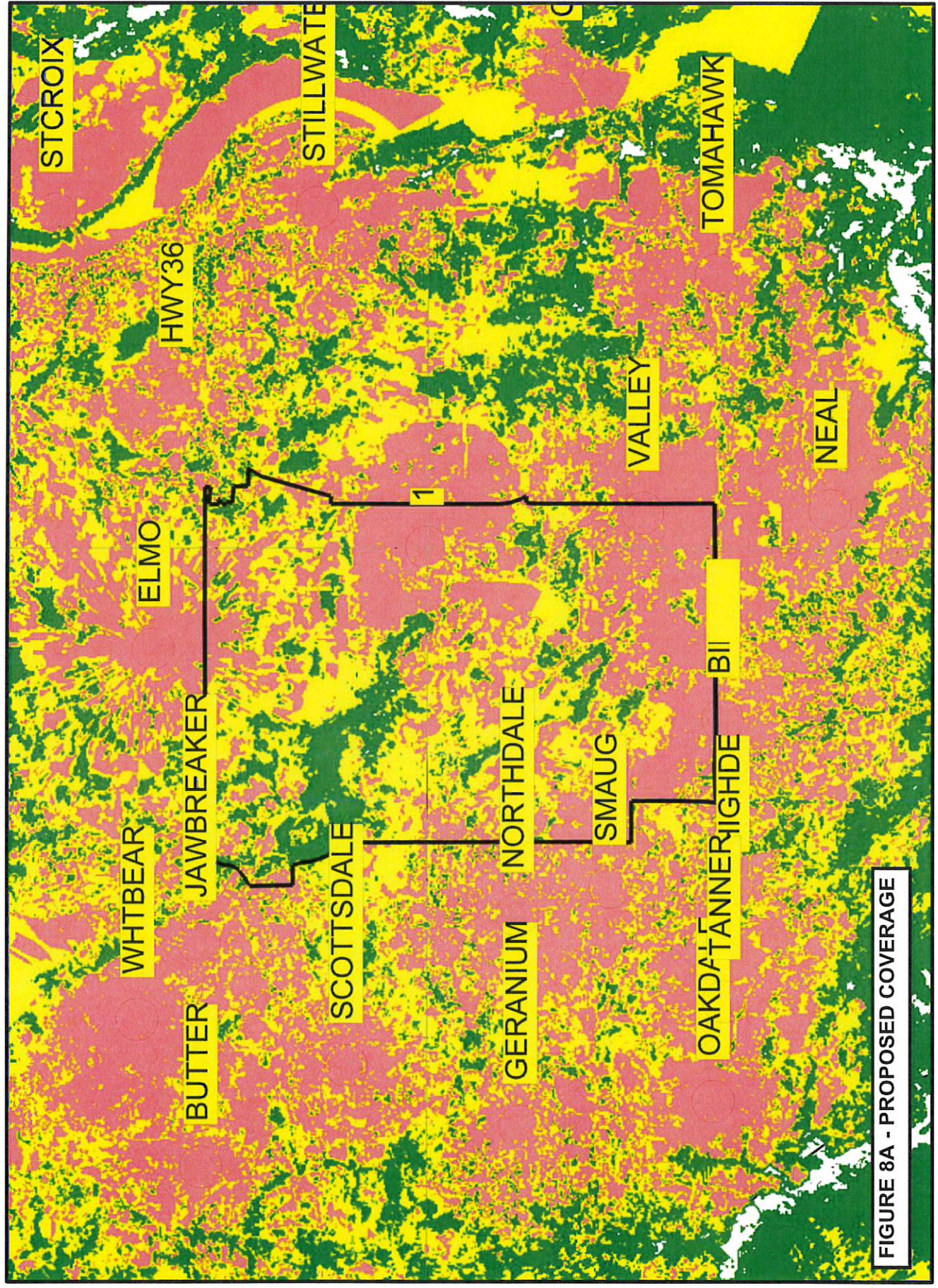


FIGURE 8A - PROPOSED COVERAGE

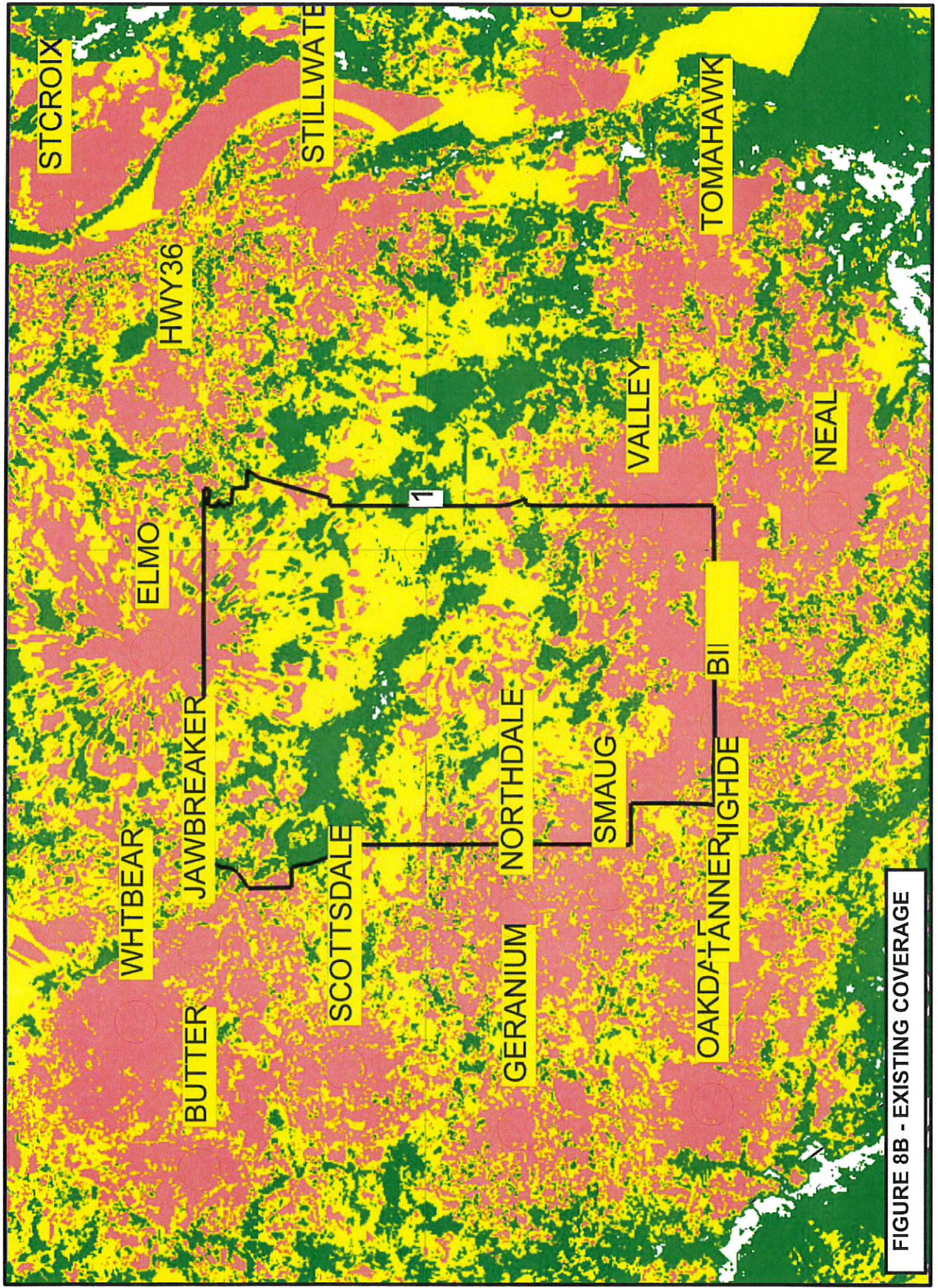


FIGURE 8B - EXISTING COVERAGE

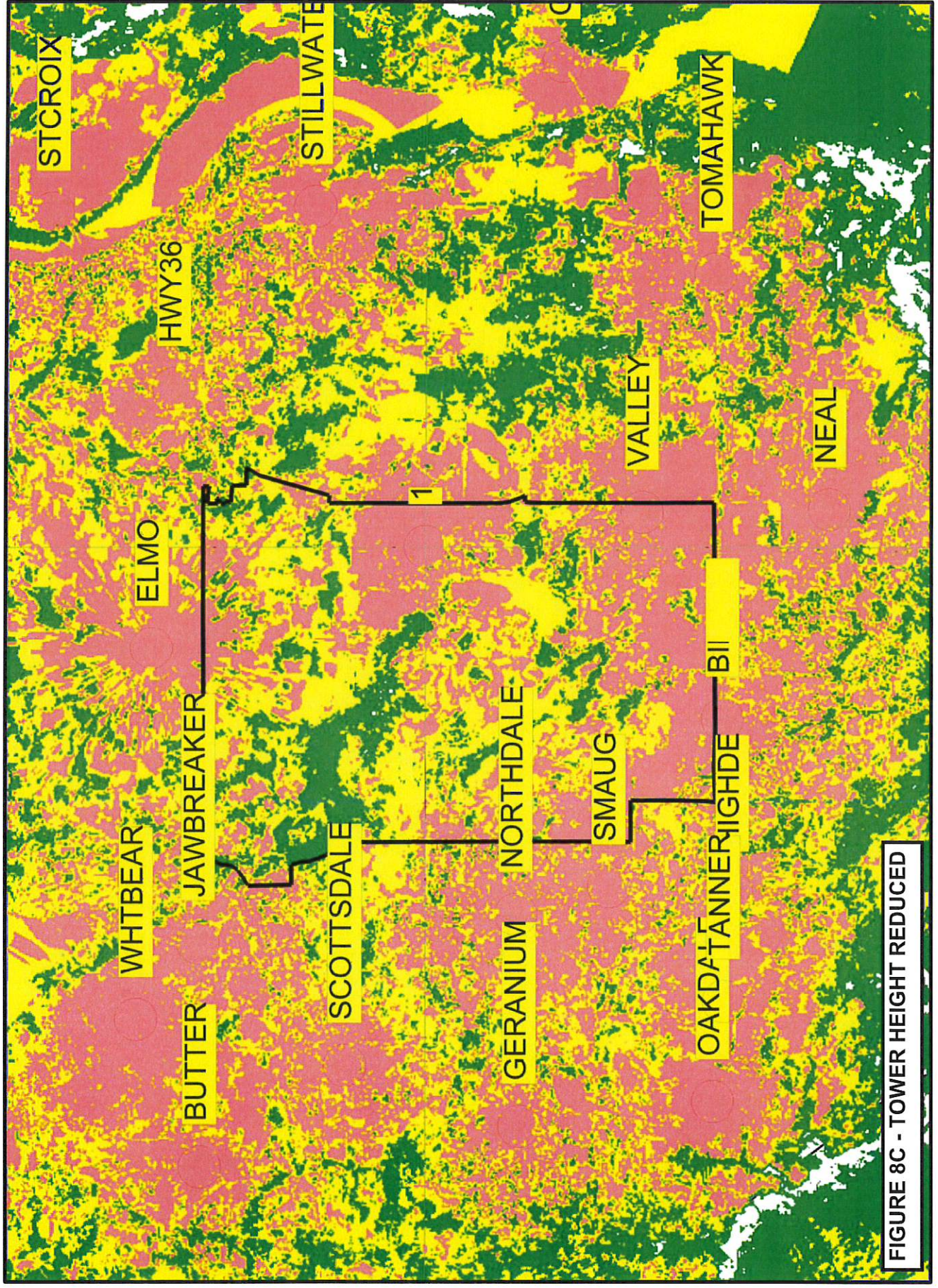


FIGURE 8C - TOWER HEIGHT REDUCED

Verizon Wireless Communications Facility Engineering Necessity Case – MIN TICKLE

Prepared by: Mihaela Oxley, RF Engineer

June 13, 2018



Project Need Overview:

The primary objective for this project is to improve service quality for residences and businesses in the city of Lake Elmo, MN along Highway 5. High inter site distances and the combined effect of varying terrain elevation and vegetation in the area prevent effective propagation of a signal with newer technologies. Detail is provided on slides 7-8 supporting this issue.

Our engineering data shows that the target area is also experiencing 4G data overloads. The existing MIN NORTHDALE site is located 4.5 miles West from the proposed project and its coverage area is shown in red on the map on page 9. The existing MIN VALLEY RANCH site is located 2.5 miles South from the proposed project and its coverage area is shown in green on page 9. These existing sites need to have some of the area they cover moved onto another site to allow it to keep performing well. The proposed project would provide capacity offload to the existing sites by taking over their cell edge coverage in the city center along Highway 5, as well as the residential area along the highway.

Additional details and explanations follow in this presentation.



Introduction:

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

Coverage describes the existence or lack of wireless service in an area. The request for improved service often comes from our customers or emergency services personnel that have no service or poor service. Coverage used to refer to the ability to make or place a call in vehicles, however, as usage patterns have shifted, coverage is now determined based on whether or not sufficient WCF exist to provide a reliable signal inside of buildings and residential areas, as well. Historically, when wireless was still in its infancy, coverage was the primary means to measure the effectiveness of the network in a given area.

Capacity is the metric used to determine if sufficient wireless resources exist and is now the primary means to measure how a community's wireless needs are being addressed. "Five bars" no longer means guaranteed coverage and capacity because each WCF has a limited amount of resources to handle voice calls, data connections and data volume. When these limits are reached and the WCF becomes overloaded (meaning there is more demand than signal to service it), the user experience quickly degrades preventing customers from making/receiving calls or getting applications to run. A WCF short on capacity could also make internet connections time out or delay information to emergency response personnel.



Explanation of Wireless Coverage



Coverage is best shown via coverage maps. RF engineers use tools that take into account terrain, vegetation, building types, and WCF specifics to model the existing coverage and prediction what we expect to see with the addition of a proposed WCF.

Coverage also changes depending on which frequencies are used. Most phones today use 3G at 800 MHz or 4G at 700 MHz spectrum which are considered low frequencies. Low frequencies can travel further distances than the higher 1900 MHz and 2100 MHz frequencies now being employed due to increased capacity demands. Operating at higher frequencies makes it necessary for carriers to install substantially more wireless facilities to achieve the same coverage as one tower operating on the lower frequencies.



Explanation of Wireless Capacity



Capacity is the amount of resources that a WCF has to service customer demand. Verizon utilizes sophisticated programs and customer feedback to monitor current usage trends and to forecast future needs. Because it takes an average of 2-3 years to complete a WCF, we have to start the process of adding a new WCF several years in advance of when the WCF will be needed.

Location, Location, Location. A good capacity WCF needs to be in the center of a user population which insures that traffic is evenly distributed around the WCF. A typical WCF is configured into three sectors (like a pie cut into three pieces), with each slice (sector) having 33% of the WCF resources. If one sector is under-utilized, it's resources can not necessarily be diverted to another sector. Therefore, optimal performance is only obtained when all three sectors have an even traffic distribution.



Explanation of Wireless Data Growth

Wireless Data Growth

Each year Verizon sees large increases in how much data its customers need. As the resolution of the pictures we send increases, the quality of the video we watch improves and the complexity of the applications grow, we commonly see tremendous growth year-over-year. A few examples below:

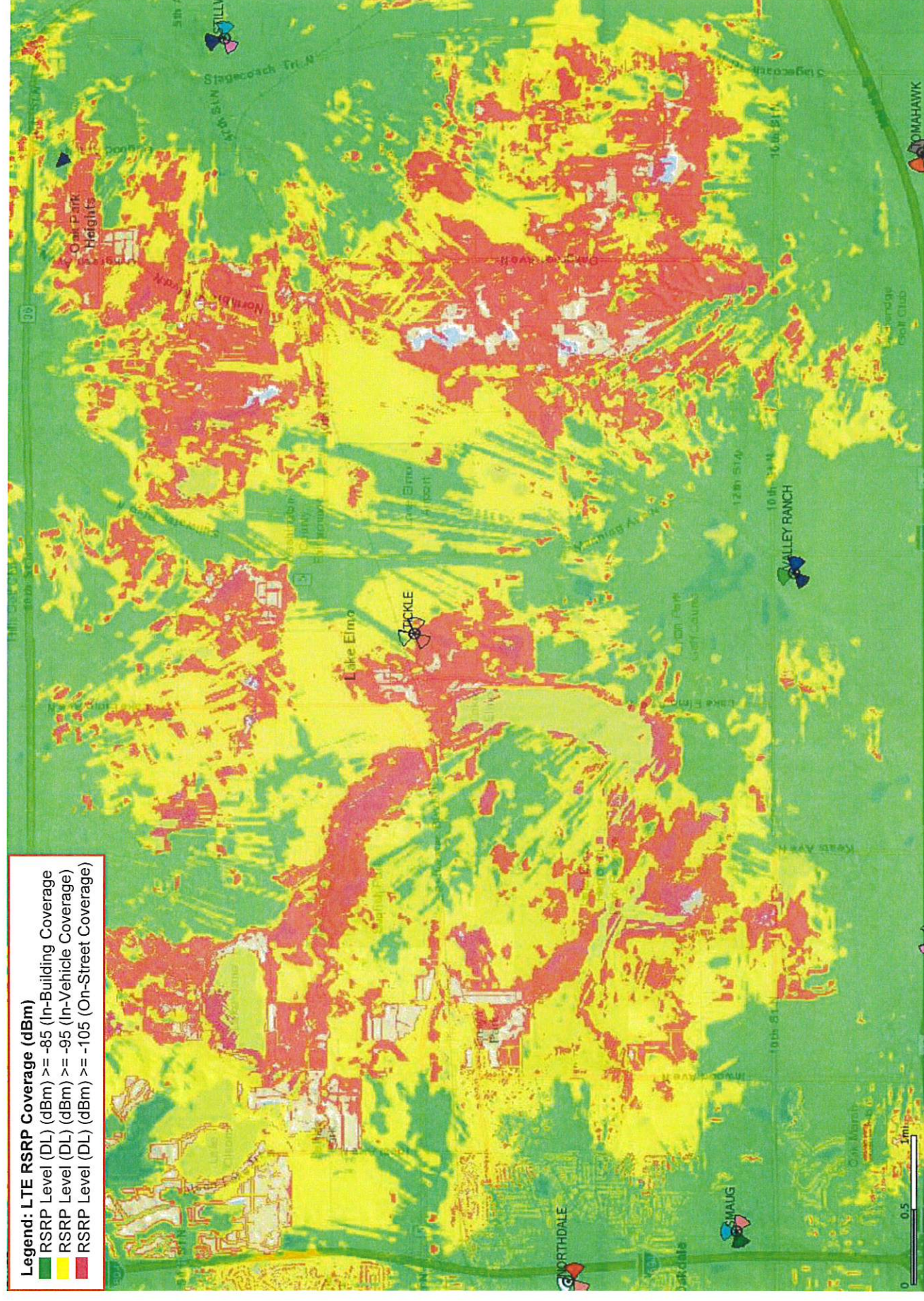
- "The average North American smartphone user will consume 48 GB of data per month in 2023, up from just 5.2 GB per month in 2016 and 7.1 GB per month in 2017" (*Ericsson Mobility Report, November 2017*)
- "Data traffic grew 6% between Q3 2016 and Q3 2017" (*Ericsson Mobility Report, November 2017*)
- "Around 52 percent of American households are now wireless only for voice service." (*CDC's 2016 Wireless Substitution: Early Release of Estimates from the National Health Interview Survey, July-December*)
- In 2016, wireless data traffic reached yet another record high. In all, traffic totaled 13.72 trillion MBs – the equivalent of 1.58 million years of streaming HD video – an increase of 4.07 trillion megabytes over 2015. Over the past two years, data use has increased 238 percent. (*2017 CTIA Wireless Snapshot, May 2017 & Based on estimates from U.S. Cellular Monthly Data Usage Estimate tool, available at <https://www.uscellular.com/data/data-estimator.html>*)

Machine to Machine communications will also increase the data burden on wireless networks, as over the next five (5) years more and more services that improve our safety and make our lives easier will be available over the wireless infrastructure, such as:

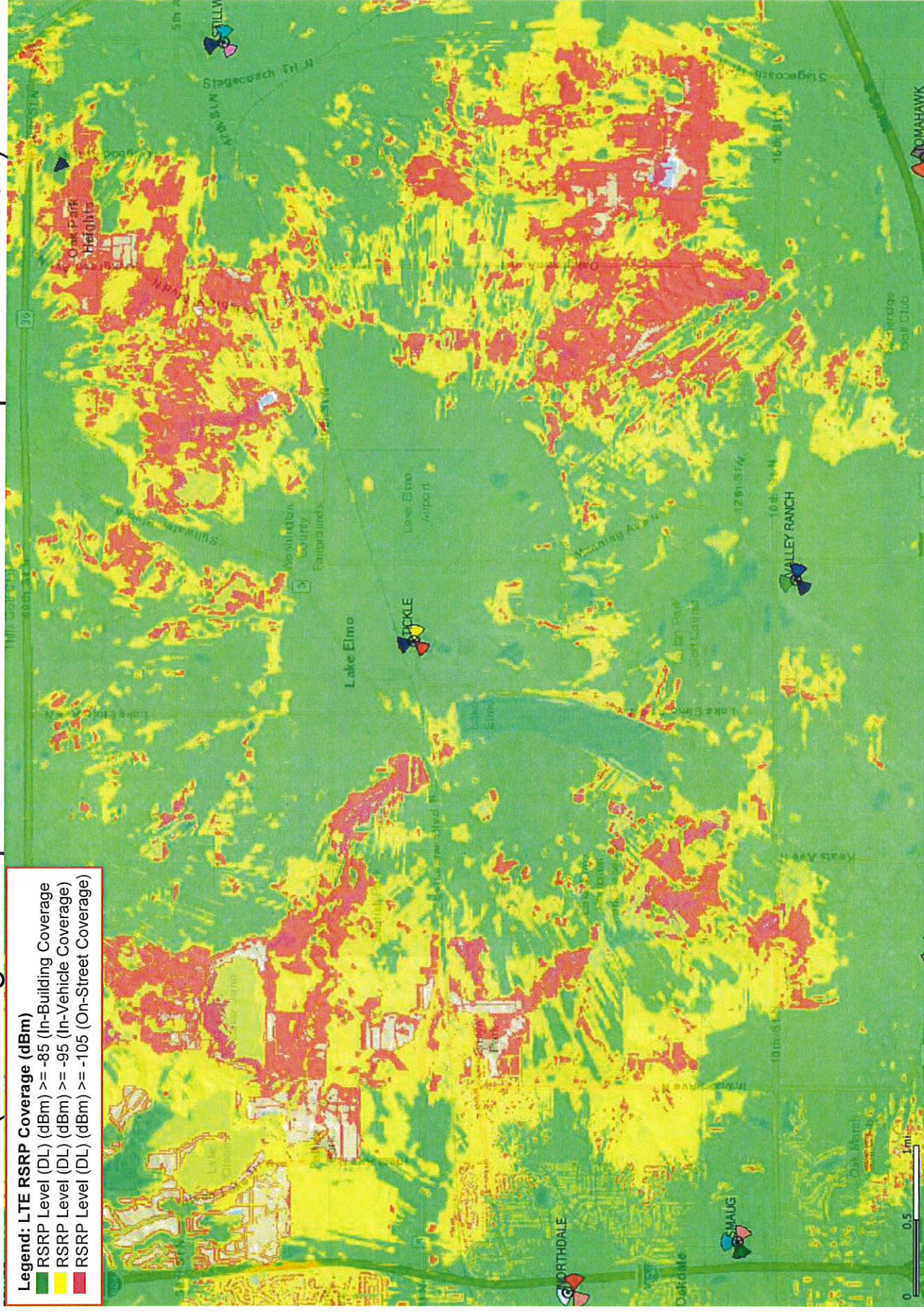
- Cars that notify 911 when an airbag deploys.
- "Driverless" cars needing traffic data and maps to reach your destination as quickly as possible.
- Medical monitors that will alert us should a loved one neglect taking their prescription drugs.
- Home alarms that notify you when your child arrives home 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 will aid in finding lost Alzheimer patients.



Existing Coverage Levels

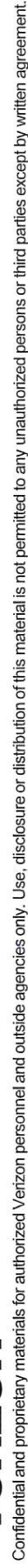


Expected Coverage Levels (Including the Impact of the MIN TICKLE Proposed Location)



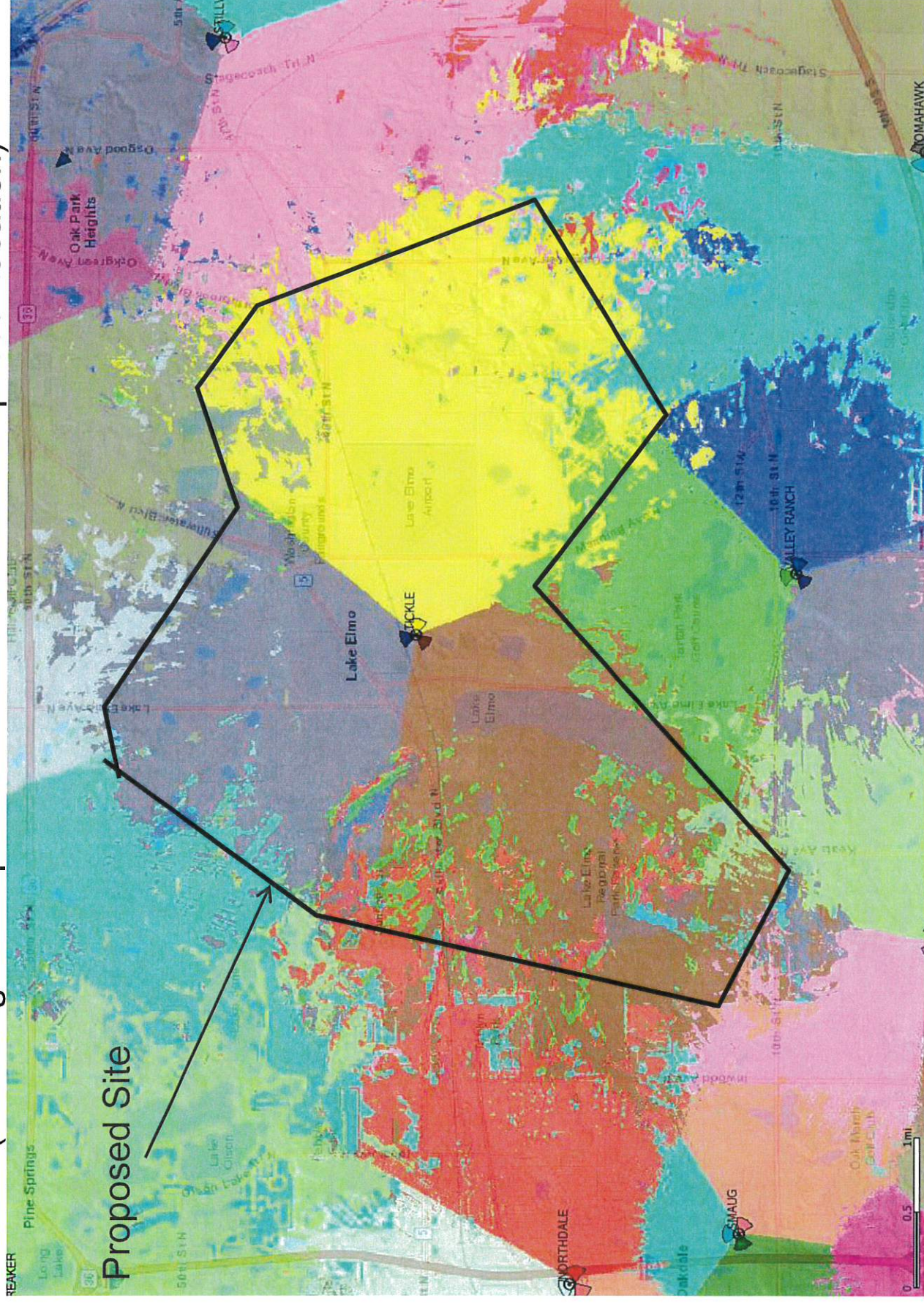
This is a detailed aerial map of the Lake Elmo area in Utah. The map is oriented with North at the top. Key features include:

- Geographical Features:** Lake Elmo is a large body of water in the center. To the west, there are several smaller lakes including Lake Oulton, Lake Ottum, and Lake Elmo. The terrain is a mix of green (vegetation) and brown (developed areas).
- Roads:** Major roads are labeled, including 30th St N, 40th St N, 50th St N, and 60th St N running north-south. East-west roads include Oak Creek Ave N, Stillwater Blvd N, and Manning Ave N.
- Landmarks and Facilities:**
 - Oak Park Heights:** Located in the northwest corner.
 - Lake Elmo:** The central body of water.
 - Valley Ranch:** Located in the northeast corner.
 - Stillwater Blvd N:** A major road running north-south through the center.
 - Manning Ave N:** A road running east-west through the center.
 - Oak Creek Ave N:** A road running north-south on the left side.
- Scale and Orientation:** A scale bar at the bottom right indicates distances of 0, 0.5, and 1 mile. A north arrow is located in the top right corner.



Expected Serving Sector Maps

(Including the Impact of the MIN TICKLE Proposed Location)



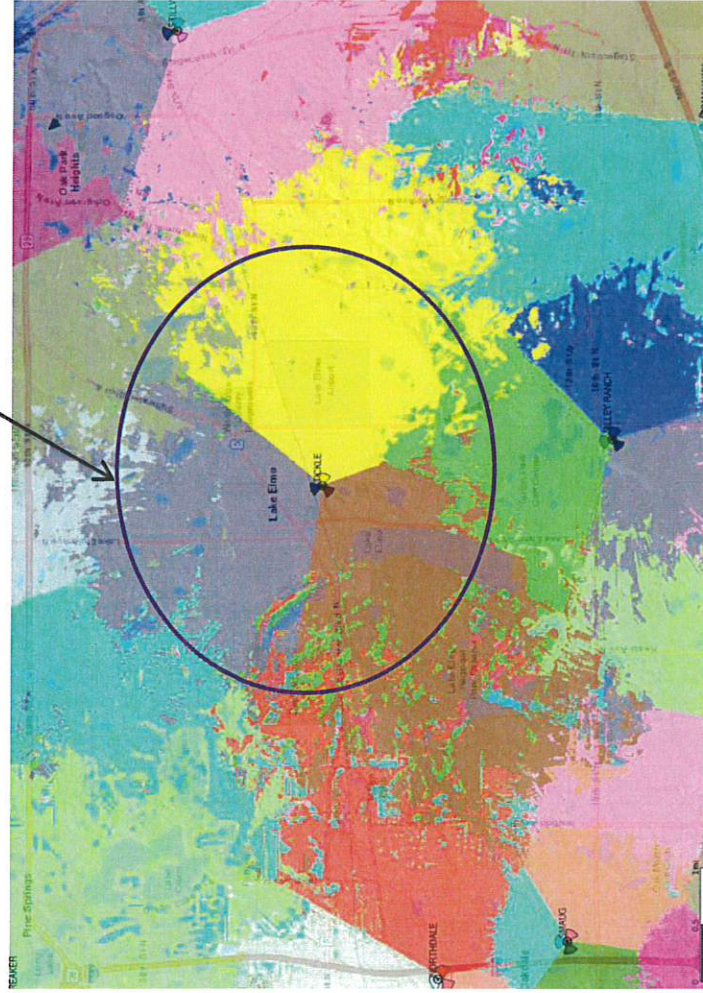
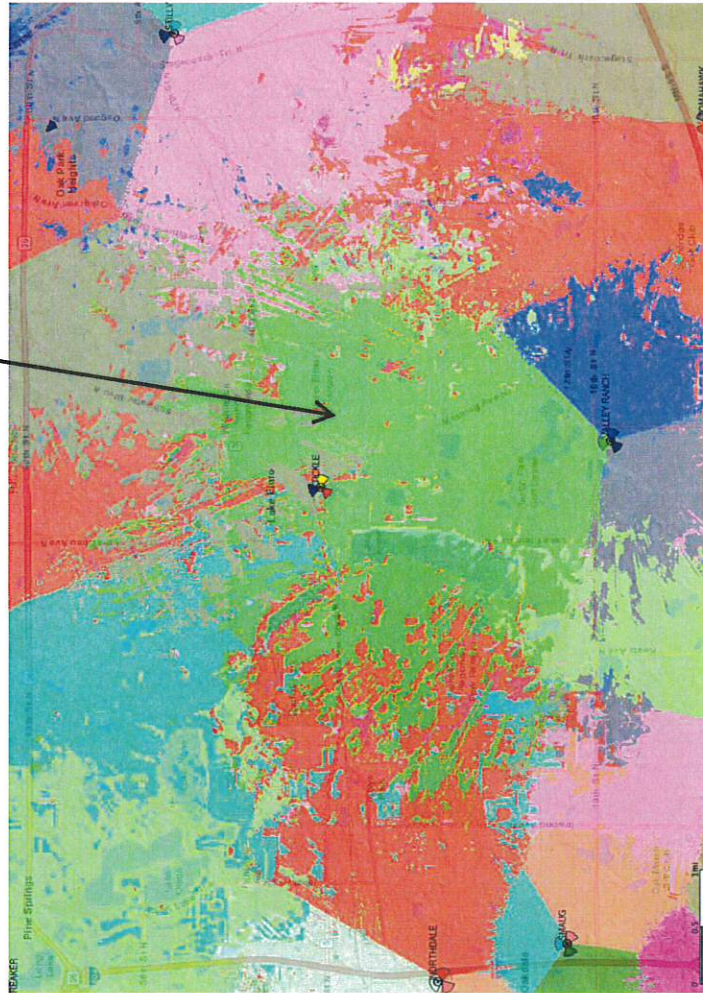
Serving Sector Maps - Before and After Side-By-Side

Proposed Site

Best Server without MIN TICKLE

Current server

Best Server with MIN TICKLE



The expected coverage footprint of the proposed MIN TICKLE site shown on the map on the right will improve both capacity and coverage for our customers in the highlighted area. The plots above show the best servers or sectors that cover this area, with each sector shown in a different color. The left map shows what sectors currently cover this area, with the overloaded sector of MIN NORTHDALE showing in red on the west and the northern sector of MIN VALLEY RANCH shown in green to the south. The right map shows the area the new proposed site will cover in grey, yellow and brown. This proposed site will improve service by providing the necessary capacity to support the growth we are seeing in 4G data traffic. The area around the proposed site will see much better service. If the site is not built in this area, customers will see data speeds and new 4G voice service start to quickly degrade as the existing sites overload.



Alternate Historical Candidates

- In November of 2015, two options were discussed for MIN Tickle, a light pole and a stealth tower on the ballfield grounds. The monopole was preferred, and both Site Sketches were submitted to the city for approval
- On January 15, 2016, the city notified KGI that the ballfield location would not work.
- On January 16, 2016, KGI was asked to attend and make a presentation at the 2/16/16 City Council meeting stating history of each proposed location along with an RF representative in attendance who could speak to network needs and RF data for each proposed location. Mihaela and Karyn attended the meeting and presented documentation to back up the ball field candidate and why that location was preferred by Verizon
- City Council confirmed they would not support the ball field location, and that they would prefer Verizon's tower to be located at the drainage field. KGI and the city discussed the current location, and a site walk was scheduled for 4/1/16
- Verizon then proceeded with FAA to determine whether or not the new proposed location would be suitable and would satisfy the antenna height requirement for adequate coverage
- On 6/17/16, FAA No Hazard Determination was received.

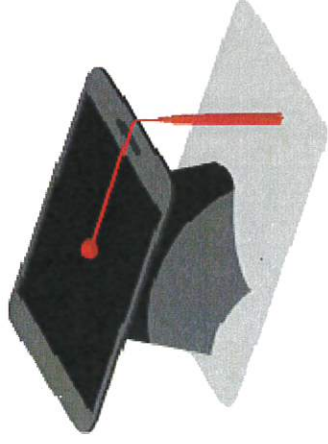


Verizon is part of your community. Because we live and work there too.

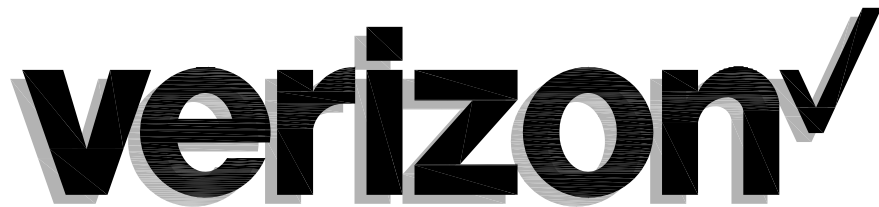
We believe technology can help solve
our biggest social problems.

We're working with innovators,
community leaders, non-profits,
universities and our peers to
address some of the unmet
challenges in education, healthcare
and energy management.

Learn more about our corporate social
responsibility at www.verizon.com.



verizon[✓]



MIN TICKLE NEW BUILD

PROJECT INFORMATION

SITE NAME:	MIN TICKLE
SITE ADDRESS:	33RD CIRCLE N. LAKE ELMO, MN 55042
COUNTY:	WASHINGTON
LATITUDE:	N 44° 59' 54.28" (NAD83)
LONGITUDE:	W 92° 52' 23.47" (NAD83)
DRAWING BASED ON SITE DATA FORM DATED:	07-12-17
BUILDING TYPE:	IIB
SITE AREA:	36' X 32' = 1152 S.F.

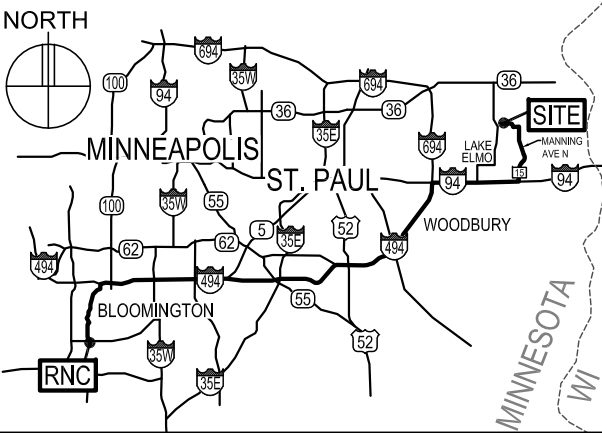
ISSUE SUMMARY

REV.	DESCRIPTION	SHEET OR DETAIL
A	ISSUED FOR REVIEW 07-10-17	ALL
B	ISSUED FOR OWNER APPROVAL 10-05-17	ALL
C	ISSUED FOR DIST. BOX REVISION 10-13-17	ALL
D	ISSUED FOR ACCESS REVISION 11-14-17	ALL
F	ISSUED FOR ACCESS ADJUSTMENT 12-06-17	ALL

SHEET INDEX

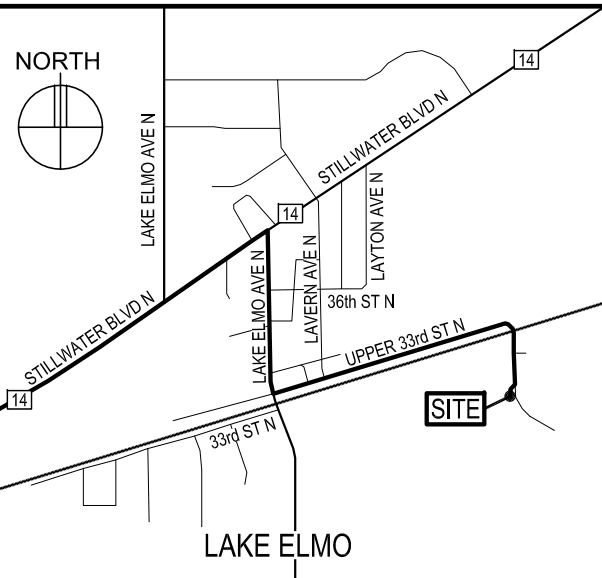
SHEET	SHEET DESCRIPTION
T-1	PROJECT INFORMATION, TOWER ELEVATION, & SHEET INDEX
A-1	SITE PLAN, DETAIL INDEX AND GRADING PLAN
A-2	ENLARGED SITE PLAN
A-3	ANTENNA & EQUIPMENT KEYS
A-4	CABLE BRIDGE PLAN, MOUNTING DETAILS , NOTES, & PHOTO
A-5	OUTLINE SPECIFICATIONS
G-1	GROUNDING NOTES
G-2	GROUNDING PLAN & GROUNDING DETAIL INDEX
U-1	UTILITY PLANS & PULLBOX LOCATION PLAN
-	SURVEY (2 SHEETS)

AREA MAP



DIRECTIONS FROM BLOOMINGTON RNC:
HEAD NORTH ON BUSH LAKE RD FOR 3.7 MILES, USE THE 2ND FROM THE LEFT LANE TO TURN LEFT ONTO E BUSH LAKE RD. TURN RIGHT TO MERGE ONTO I-494 E AND AFTER 6.7 MILES, KEEP LEFT AND STAY ON I-494 E FOR 16 MILES. TAKE EXIT 58B TO MERGE ONTO I-94 E AND GO 4.6 MILES. TAKE EXIT 253 AND TO TURN LEFT ONTO COUNTY RD 15/MANNING AVE N. AFTER 3.6 MILES, TURN LEFT ONTO 32ND ST N AND TURN LEFT TO STAY ON 32ND ST N, CONTINUE AROUND THE BEND AND TAKE ANOTHER LEFT ONTO 33RD CR N. SITE WILL BE AT THE END OF THE CUL-DE-SAC.

VICINITY MAP



DEPARTMENTAL APPROVALS

	NAME	DATE
RF ENGINEER	MIHEALA OXLEY	07-12-17
OPERATIONS MANAGER	JONATHAN FOWLER	07-10-17
CONSTRUCTION ENGINEER	STEVE COLLIN	07-11-17

LESSOR / LICENSOR APPROVAL

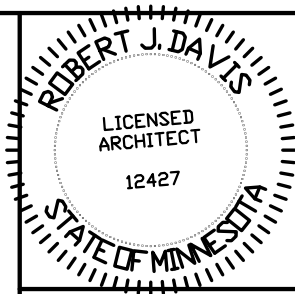
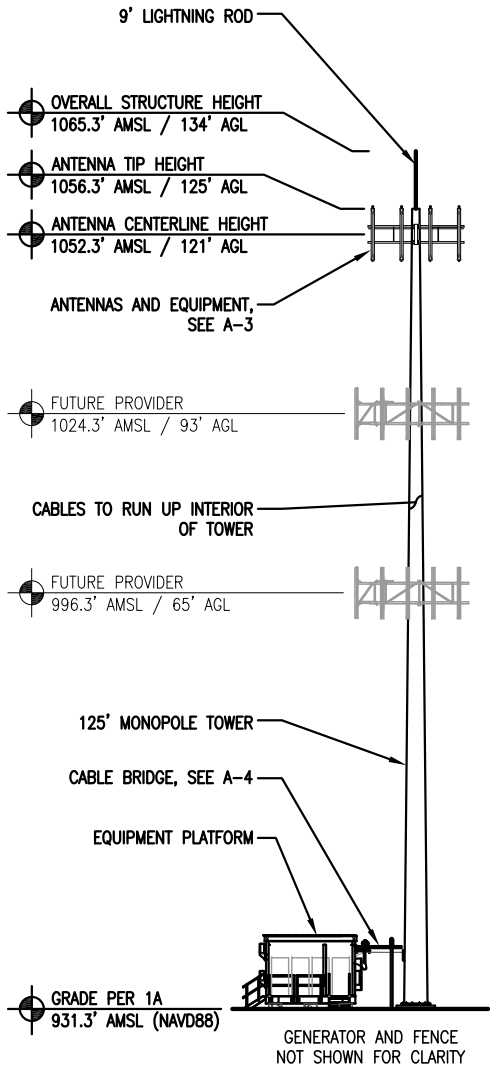
SIGNATURE	PRINTED NAME	DATE
LESSOR / LICENSOR: PLEASE CHECK THE APPROPRIATE BOX BELOW		
<input type="checkbox"/> NO CHANGES.	<input type="checkbox"/> CHANGES NEEDED. SEE COMMENTS.	

CONTACTS

LESSOR / LICENSOR:	CITY OF LAKE ELMO 3800 LAVERNE AVE N LAKE ELMO, MN 55042 KRISTINA HANDT (651) 747-3905
LESSEE:	VERIZON WIRELESS 10801 BUSH LAKE ROAD BLOOMINGTON, MN 55438 RON REITER (612) 720-0052
POWER UTILITY COMPANY CONTACT:	XCEL ENERGY 1518 CHESTNUT AVENUE MINNEAPOLIS, MN 55403 KELSEY LOOMIS (651) 779-3154
TELCO UTILITY COMPANY CONTACT:	T.B.D.
ARCHITECT:	DESIGN 1 ARCHITECTS LLC 9973 VALLEY VIEW ROAD EDEN PRAIRIE, MN 55344 (952) 903-9299
SURVEYOR:	WIDSETH SMITH NOLTING 610 FILLMORE STREET - PO BOX 1028 ALEXANDRIA, MN 56308-1028 320-762-8149
STRUCTURAL ENGINEER:	N/A
GEOTECHNICAL ENGINEER:	T.B.D

TOWER ELEVATION

NOTE:
1.) TOWER TO BE ERECTED AND INSTALLED IN ACCORDANCE WITH TOWER MANUFACTURER'S DRAWINGS NOT INCLUDED WITH THIS PACKAGE. DISCREPANCIES BETWEEN TOWER DRAWINGS AND ARCHITECTURAL DRAWINGS TO BE REPORTED TO VERIZON WIRELESS AND THE ARCHITECT IMMEDIATELY.
2.) TOWER FOUNDATION, PLATFORM FOUNDATION, GENERATOR FOUNDATION, AND THE ACCESS DRIVE TO BE EXCAVATED AND CONSTRUCTED IN ACCORDANCE WITH RECOMMENDATIONS AND SPECIFICATIONS OF THE GEOTECHNICAL REPORT WHICH IS NOT INCLUDED IN THIS PACKAGE. DISCREPANCIES BETWEEN THE REPORT AND THE OTHER DOCUMENTS TO BE IMMEDIATELY REPORTED TO VERIZON WIRELESS AND THE ARCHITECT.
3.) CONTRACTOR TO ENSURE TIP OF ANTENNAS DO NOT EXCEED TOWER HEIGHT.



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered Architect under the laws of the State of Minnesota.
ROBERT J. DAVIS, Reg. No. 12427

Signed: *Robert J. Davis*
Date: 12-06-17

DESIGN 1
9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

verizon
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

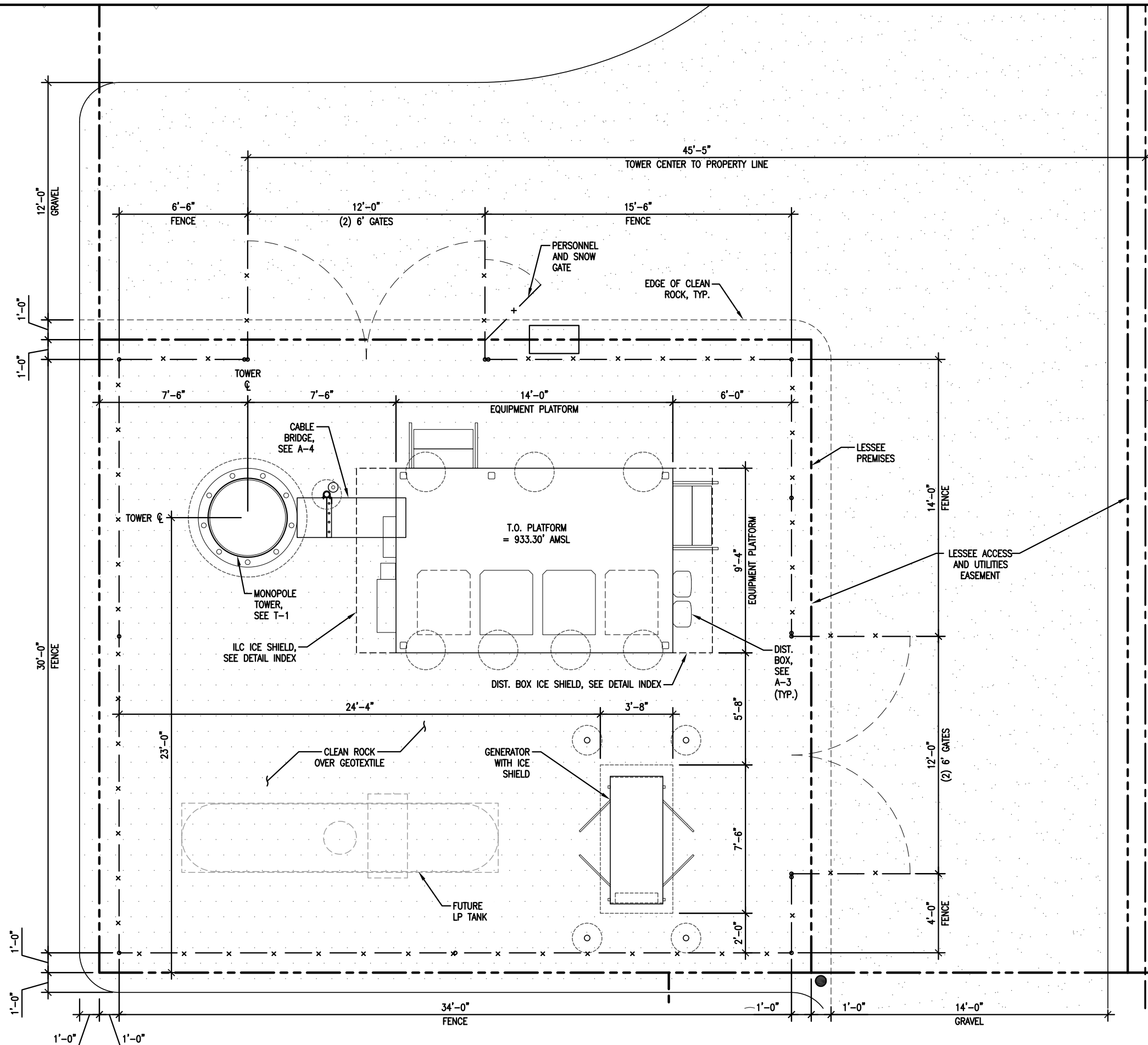
MIN
TICKLE

33RD CIRCLE N.
LAKE ELMO, MN 55042

SHEET CONTENTS:
CONTACTS
ISSUE SUMMARY
SHEET INDEX
DEPARTMENTAL APPROVALS
LESSOR APPROVAL
PROJECT INFORMATION
AREA & VICINITY MAPS
GENERAL NOTES

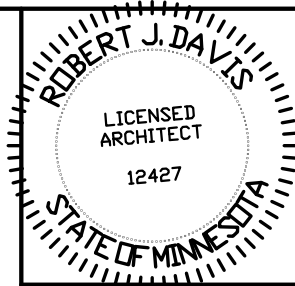
DRAWN BY:	DJS
DATE:	06-29-17
CHECKED BY:	MJS
REV. A	07-10-17
REV. B	10-05-17
REV. C	10-13-17
REV. D	11-14-17
REV. E	12-01-17
REV. F	12-06-17

T-1



NOTE:
CONTRACTOR TO COORDINATE PUBLIC AND PRIVATE UTILITY LOCATES PRIOR TO CONSTRUCTION START. NOTIFY THE ARCHITECT AND THE VZW CONSTRUCTION ENGINEER IMMEDIATELY OF ANY UTILITY LINE ISSUES.

NOTE:
EQUIPMENT PLATFORM PROVIDED ASSEMBLED WITH GUARD RAILS, ILC (INTEGRATED LOAD CENTER), CANOPY AND LIGHT FIXTURE. CONTRACTOR TO PROVIDE ADEQUATE LIFTING EQUIPMENT FOR PICKING AND SETTING ON FOUNDATION.



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered Architect under the laws of the State of Minnesota.
ROBERT J. DAVIS, Reg. No. 12427

Signed: *Robert J. Davis*
Date: 12-06-17

DESIGN 1
9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

verizon
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

MIN
TICKLE

33RD CIRCLE N.
LAKE ELMO, MN 55042

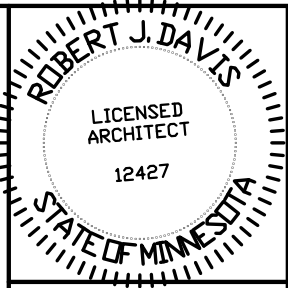
SHEET CONTENTS:
ENLARGED SITE PLAN

DRAWN BY:	DJS
DATE:	06-29-17
CHECKED BY:	MJS
REV. A	07-10-17
REV. B	10-05-17
REV. C	10-13-17
REV. D	11-14-17
REV. E	12-01-17
REV. F	12-06-17



1 ENLARGED SITE PLAN
SCALE: 3/16" = 1'-0"

GRAPHIC SCALE
0 2'-8" 5'-4"



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered Architect under the laws of the State of Minnesota, ROBERT J. DAVIS, Reg. No. 12427


Signed:

12-06-17

Date:



9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM



10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

MIN
TICKLE

33RD CIRCLE N.
LAKE ELMO, MN 55042

SHEET CONTENTS:
ANTENNA KEY
EQUIPMENT KEY

DRAWN BY:	DJS
DATE:	06-29-17
CHECKED BY:	MJS
REV. A	07-10-17
REV. B	10-05-17
REV. C	10-13-17
REV. D	11-14-17
REV. E	12-01-17
REV. F	12-06-17

A-3

ANTENNA KEY													EQUIPMENT KEY			
	AZIMUTH	POSITION	FUNCTION	QTY	MANUFACTURER	MODEL	MOD TYPE	ANTENNA LENGTH	ANTENNA TIP	ANTENNA CENTER	ELEC DOWNTILT	MECH DOWNTILT	QTY	MANUFACTURER	MODEL	RRU PORT
"X" SECTOR	340°	2.1	TX/RX0	1	COMMSCOPE	NHH-65C-R2B	700 +45	96.0"	125'	121'	0°	0°	1	ERICSSON	4449	1
	-	2.2	TX/RX1	-	-	2ND PORT	700 -45	-	-	-	-	-	-	-	-	2
	-	2.3	TX/RX0	-	-	3RD PORT	AWS +45	-	-	-	0°	-	1	ERICSSON	8843	1
	-	2.4	TX/RX1	-	-	4TH PORT	AWS -45	-	-	-	-	-	-	-	-	4
	-	2.5	TX/RX2	-	-	5TH PORT	AWS +45	-	-	-	0°	-	-	ERICSSON	8843	1
	-	2.6	TX/RX3	-	-	6TH PORT	AWS -45	-	-	-	-	-	-	-	-	4
	340°	3.1	TX/RX2	1	COMMSCOPE	NHH-65C-R2B	700 +45	96.0"	125'	121'	0°	0°	-	ERICSSON	4449	3
	-	3.2	TX/RX3	-	-	2ND PORT	700 -45	-	-	-	-	-	-	-	-	4
	-	3.3	TX/RX0	-	-	3RD PORT	PCS +45	-	-	-	0°	-	1	ERICSSON	8843	1
	-	3.4	TX/RX1	-	-	4TH PORT	PCS -45	-	-	-	-	-	-	-	-	4
	-	3.5	TX/RX2	-	-	5TH PORT	PCS +45	-	-	-	0°	-	-	ERICSSON	8843	1
	-	3.6	TX/RX3	-	-	6TH PORT	PCS -45	-	-	-	-	-	-	-	-	4
"Y" SECTOR	100°	2.1	TX/RX0	1	COMMSCOPE	NHH-65C-R2B	700 +45	96.0"	125'	121'	0°	0°	1	ERICSSON	4449	1
	-	2.2	TX/RX1	-	-	2ND PORT	700 -45	-	-	-	-	-	-	-	-	2
	-	2.3	TX/RX0	-	-	3RD PORT	AWS +45	-	-	-	0°	-	1	ERICSSON	8843	1
	-	2.4	TX/RX1	-	-	4TH PORT	AWS -45	-	-	-	-	-	-	-	-	4
	-	2.5	TX/RX2	-	-	5TH PORT	AWS +45	-	-	-	0°	-	-	ERICSSON	8843	1
	-	2.6	TX/RX3	-	-	6TH PORT	AWS -45	-	-	-	-	-	-	-	-	4
	100°	3.1	TX/RX2	1	COMMSCOPE	NHH-65C-R2B	700 +45	96.0"	125'	121'	0°	0°	-	ERICSSON	4449	3
	-	3.2	TX/RX3	-	-	2ND PORT	700 -45	-	-	-	-	-	-	-	-	4
	-	3.3	TX/RX0	-	-	3RD PORT	PCS +45	-	-	-	0°	-	1	ERICSSON	8843	1
	-	3.4	TX/RX1	-	-	4TH PORT	PCS -45	-	-	-	-	-	-	-	-	4
	-	3.5	TX/RX2	-	-	5TH PORT	PCS +45	-	-	-	0°	-	-	ERICSSON	8843	1
	-	3.6	TX/RX3	-	-	6TH PORT	PCS -45	-	-	-	-	-	-	-	-	4
"Z" SECTOR	220°	2.1	TX/RX0	1	COMMSCOPE	NHH-65C-R2B	700 +45	96.0"	125'	121'	0°	0°	1	ERICSSON	4449	1
	-	2.2	TX/RX1	-	-	2ND PORT	700 -45	-	-	-	-	-	-	-	-	2
	-	2.3	TX/RX0	-	-	3RD PORT	AWS +45	-	-	-	0°	-	1	ERICSSON	8843	1
	-	2.4	TX/RX1	-	-	4TH PORT	AWS -45	-	-	-	-	-	-	-	-	4
	-	2.5	TX/RX2	-	-	5TH PORT	AWS +45	-	-	-	0°	-	-	ERICSSON	8843	1
	-	2.6	TX/RX3	-	-	6TH PORT	AWS -45	-	-	-	-	-	-	-	-	4
	220°	3.1	TX/RX2	1	COMMSCOPE	NHH-65C-R2B	700 +45	96.0"	125'	121'	0°	0°	-	ERICSSON	4449	3
	-	3.2	TX/RX3	-	-	2ND PORT	700 -45	-	-	-	-	-	-	-	-	4
	-	3.3	TX/RX0	-	-	3RD PORT	PCS +45	-	-	-	0°	-	1	ERICSSON	8843	1
	-	3.4	TX/RX1	-	-	4TH PORT	PCS -45	-	-	-	-	-	-	-	-	4
	-	3.5	TX/RX2	-	-	5TH PORT	PCS +45	-	-	-	0°	-	-	ERICSSON	8843	1
	-	3.6	TX/RX3	-	-	6TH PORT	PCS -45	-	-	-	-	-	-	-	-	4

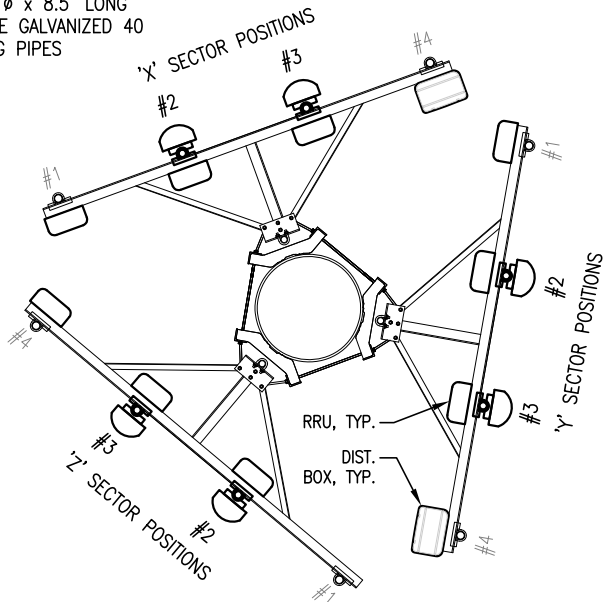
PROPOSED ADDITIONAL:
(2) DISTRIBUTION BOXES, #DB-C1-12C-24AB-OZ (ON PLATFORM)
(3) 6-12 HYBRID CABLE, ROSENBERGER #HL-9612150
(2) DISTRIBUTION BOXES, #DB-C1-12C-24AB-OZ (ON TOWER)
(36) RET JUMPER CABLE, ERICSSON #AISG 2.0 RET (12 EACH PER SECTOR)
(12) COMMSCOPE HYBRID JUMPER, MODEL HFT412-4S29-15 (DIST. BOX TO RRU)
(36) COMMSCOPE JUMPER, MODEL LDF4-50A, FOAM 1/2 DIA (RRU TO ANTENNA)

CABLE LENGTHS
RAD CENTER = 121'
CABLE BRIDGE = 6'
PLATFORM = 14'
EXTRA = 9'
TOTAL = 150'

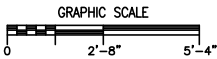
2 EQUIPMENT KEY
SCALE: NONE

1 ANTENNA KEY
SCALE: NONE

NOTE:
T-FRAME MAKE AND MODEL
T.B.D. CONTRACTOR TO SUPPLY:
(12) 2.5"Ø x 8.5' LONG
SCHEDULE GALVANIZED 40
MOUNTING PIPES



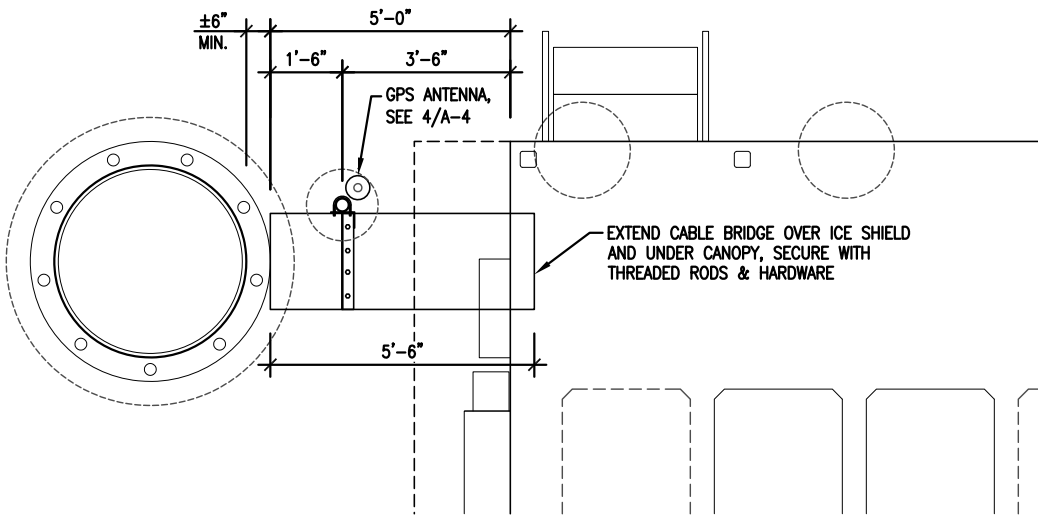
1 ANTENNA MOUNTING DETAIL
SCALE: 3/16" = 1'-0"



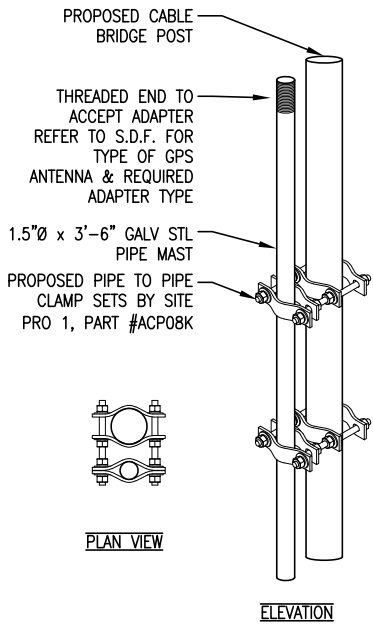
2 SITE PHOTO
SCALE: LOOKING SOUTH

NOTE:
CONTRACTOR TO ENSURE CABLES DO
NOT ENTER THE FRONT OF CABINET
TOP HAT TO ACCOMMODATE VZW
OPERATIONS TENT DEPLOYMENT,
COORDINATE WITH VZW CE.

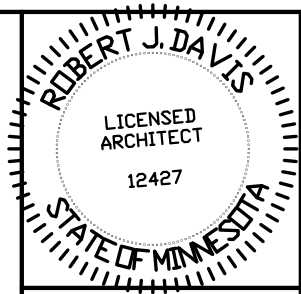
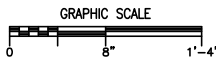
NOTE:
CABLE BRIDGE SUPPORTS ARE REQUIRED
AT INTERVALS NOT TO EXCEED 6'-0" WITH
OVERHANG EXTENSIONS NOT TO EXCEED 1'-6"



3 CABLE BRIDGE PLAN
SCALE: 1/4" = 1'-0"



4 GPS MOUNTING DETAIL
SCALE: 3/4" = 1'-0"



I hereby certify that this plan,
specification or report was
prepared by me or under my direct
supervision and that I am a duly
registered Architect under
the laws of the State of Minnesota,
ROBERT J. DAVIS, Reg. No. 12427

Signed: *Robert J. Davis*

12-06-17

Date:

DESIGN 1

9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

verizon

10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

MIN
TICKLE

33RD CIRCLE N.
LAKE ELMO, MN 55042

SHEET CONTENTS:
SITE PHOTO
CABLE BRIDGE PLAN
ANTENNA MOUNTING DETAIL
GPS MOUNTING DETAIL

DRAWN BY:	DJS
DATE:	06-29-17
CHECKED BY:	MJS
REV. A	07-10-17
REV. B	10-05-17
REV. C	10-13-17
REV. D	11-14-17
REV. E	12-01-17
REV. F	12-06-17

A-4

GENERAL CONDITIONS

00 0001 PERMITS
Construction Permit shall be acquired by, or in the name of, Verizon Wireless, to be hereinafter referred to as the OWNER. Other permits shall be acquired by the Contractor.

00 0002 SURVEY FEES
Survey shall be furnished by the Architect. Layout Staking shall be coordinated with the Surveyor per "Request For Quote", (RFQ).

01 0010 INSURANCE & BONDS
Contractor is to furnish Insurance certificates for themselves and subcontractors. Contractor will provide any required Bonding. Contractor agrees to warranty the project for (1) one year after completion.

01 0400 SUPERVISION & COORDINATION
Contractor shall provide supervision throughout the Project, coordinating the work of the Subcontractors, and delivery & installation of Owner–furnished items. Contractor’s responsibilities include arranging & conducting of Underground Utilities Locates. Contractor shall comply with municipal, county, state and/or federal codes, including OSHA.

01 0600 TESTING
Contractor is responsible for providing Agencies with sufficient notice to arrange for Test Samples (i.e.: Concrete Cylinders), and for Special Inspections.

01 2000 MEETINGS
Contractor shall make themselves aware of, and attend, meetings with the Owner and/or Architect. Contractor is to attend a Pre–Construction Meeting of all parties involved, prior to the start of construction.

01 5100 TEMPORARY UTILITIES
Contractor shall maintain the job site in a clean and orderly fashion, providing temporary sanitary facilities, waste disposal, and security (fence area or trailer module).

01 5300 EQUIPMENT RENTAL
Contractor shall furnish equipment necessary to expedite work.

01 5900 FIELD OFFICES & SHEDS
Contractor shall provide security (fence area or trailer module) for tools and materials that remain overnight on site.

01 7000 CLEAN UP & CLOSE OUT
Contractor shall clean up the Site to the satisfaction of Owner. Contractor shall complete the items listed on the Owner’s Punch List, and shall sign and return the List to the Owner. Contractor shall maintain a set of drawings during the job, on which changes shall be noted in red ink. A full set of redlined drawings (As–Built(s)) are to be given to the Architect at Job completion and submit "construction work complete memo" to Construction Engineer.

01 8000 TRUCKS & MILEAGE
Contractor shall provide transportation for their own personnel.

01 8300 TRAVEL TIME & PER DIEM
Contractor shall provide room and board for their own personnel, and reasonable time for traveling to & from job site.

01 9200 TAXES
Contractor shall pay sales and/or use tax on materials and taxable services.

SITework

02 1000 SITE PREPARATION
Contractor is to mobilize within 7 calendar days of the Owner issuing a 'START' document. Contractor will immediately report to Architect if any environmental considerations arise. Trees to be trimmed/removed as indicated on drawings, and remaining stumps to be removed. Site shall be scraped to a depth of 3" minimum to remove vegetative matter, and scrapings shall be stockpiled on site. Excess material to be disposed of in accordance with RFQ. A Perimeter Silt Fence is to be maintained for the duration of the work.

02 1100 ROAD IMPROVEMENT & CONSTRUCTION
Contractor shall furnish materials for, and install, a twelve foot (12') wide gravel driveway from the road access to the work area, for truck and crane access to site. Base course shall be 6" deep, 3"+ crushed rock, topped with 3" deep, 1½" crushed rock, topped with 3" deep MN Class 5 (3/4" minus with binder) or Driveway Mix. Contractor shall furnish & install culverts as necessary to prevent ponding or washing–out from normal surface runoff. Road shall be graded smooth, and edges dressed, at job completion.

02 2000 EARTHWORK & EXCAVATION
Excavation material shall be used for surface grading as necessary; excess to be stockpiled on site. Grading of site as shown on drawings. Excess material to be disposed of in accordance with RFQ. For dewatering excavated areas, contractor shall utilize sock or sediment filter for filtering of water discharge.

02 5000 PAVING & SURFACING
Gravel paving shall be as described in 02 8000.

02 7800 POWER TO SITE
Contractor shall coordinate the electrical service to the platform with the Utility Provider. Conduits shall include pull strings. Underground conduits shall be 2–1/2" Schedule 40 PVC. (schedule 80 PVC under roads and drives) Cable to be 3/0 THWN CU. Trenches shall be backfilled in a timely fashion, using a compactor, and including two (2) detectable ribbons; one each at 3" and 15" above conduit. Service shall be 200 amp, single phase, 120/240 volt. Service type shall be "General Time–Of–Day" if available, and meter base shall be approved by utility provider.

02 7900 TELCO TO SITE
Contractor shall provide 2" schedule 40 PVC conduit, (schedule 80 PVC under roads and drives) with 'large sweep' elbows or 2" SDR–11 HDPE conduit for directional boring, & pull string for TELCO service as noted on plans. Cable to be fiber optic lines, source and provider T.B.D. Trenches shall be as in 02 7800.

02 8000 SITE IMPROVEMENTS
Areas bounded by fence and adjacent to Equipment Platform shall receive polyethylene geotextile, 200 mesh woven, topped with 3" deep 3/4" to 1 1/2" clean rock (no fines), raked smooth.

02 8001 FENCING
All fence materials and fittings shall be galvanized steel. Fence shall be 6'–0" high x 9 ga. X 2" chain link fabric, w/ 7 ga. bottom tension wire. Corner and Gate posts shall be 2 7/8" O.D. sch 40 steel pipe, driven 60" below grade. Line posts shall be 2 3/8" O.D. sch 40 steel pipe. Top Rails shall be 1 5/8" O.D. steel pipe. Gate frames shall be 1 5/8" O.D. welded pipe. Fence top shall be three (3) strands barbed wire to 7'–0" above grade, canted outward. Bracing shall be 3/8" truss rods and 1 5/8" O.D. pipe mid–rails at corners. Gate latch shall be commercial grade, "Cargo" or equal. Fabric shall extend to within 1" of finish grade. All fence materials shall be plastic black coated.

02 8500 IRRIGATION SYSTEMS
N/A

02 9000 LANDSCAPING
Contractor shall protect existing landscape elements that are not in the Scope of Work. Reasonable precautions shall be taken to assure the health of existing trees and shrubbery. If conflicts arise regarding the location of root systems, branch lines, etc., the Architect must be contacted prior to performing Work that may cause damage. Damage resulting from disregard of this Article shall be compensated by the Responsible Party and at a cost to be determined by the Property Owner, Architect, and Owner.

CONCRETE

03 1000 CONCRETE FORMWORK
Concrete forms shall be dimension lumber, modular, or steel.

03 6000 GROUT
N/A

03 8000 TOWER FOUNDATION
Contractor shall arrange for delivery of anchors, and shall furnish and install materials per Tower Manufacturer Plans. Tower foundation concrete and reinforcing to be per tower manufacturer’s specification, or 6% ±1% air entrained, 4,000 PSI @ 28 days, with Grade 60 (ASTM 615) reinforcing steel, whichever is greater. Contractor shall comply with the Owner’s Standard CONSTRUCTION SPECIFICATIONS MINIMUM CONCRETE STANDARDS.

03 8001 CATHODIC PROTECTION
N/A

03 9000 EQUIPMENT PLATFORM/GENERATOR FOUNDATION
Contractor shall furnish & install materials for Equipment Platform/Generator foundation. Concrete shall be 6% ±1% air entrained, and 4,000 psi at 28 days. All reinforcing steel is to be Grade 60 (ASTM 615). Anchor bolts are furnished by Contractor. Contractor shall comply with the Owner’s Standard CONSTRUCTION SPECIFICATIONS MINIMUM CONCRETE STANDARDS.

MASONRY
N/A

METALS

05 0000 METALS
Contractor will furnish and install structural and fabricated steel items not specifically furnished by Owner, and install Owner–furnished items. Structural steel shall be fabricated and erected per AISC specifications. Welding shall conform to AWS standards. Field welding shall be as shown on Shop Drawings, performed by AWS Certified Welders, and inspected as prescribed by the Structural Engineer. Steel shall be ASTM A992 OR A36, and 3/4" field bolts shall be A325. Temporary erecting bolts, clip hangers, and bracing shall be furnished by Contractor. Fabrications shall be shop welded if possible, and galvanized before delivery to site. Structural steel, and miscellaneous iron and steel, shall be hot dipped galvanized per ASTM A123 thickness grade 55. Fabricated iron and steel hardware shall be hot dipped galvanized per ASTM A153. Repair of damaged or uncoated galvanized surfaces shall be per ASTM A780.

WOOD & PLASTICS
N/A

THERMAL & MOISTURE
N/A

DOORS AND HARDWARE
N/A

FINISHES
N/A

SPECIAL CONSTRUCTION

13 1260 CABLE BRIDGE, CANOPY, & ICE SHIELDS
Contractor shall furnish & install materials for the Cable Bridge as indicated on the drawings and Verizon Wireless Standard Details. Platform canopies are supplied by Equipment Platform Manufacturer. Contractor shall install canopy components shipped loose with the Equipment Platform. Contractor shall furnish & install materials for the Ice Shields as indicated on the Drawings & Verizon Wireless Standard Details.

13 1400 ANTENNA INSTALL
Contractor shall install Owner’s antennas and feed lines during erecting. Contractor shall test and certify feed lines per current VZW standards.

13 3423 TRANSPORT AND SET EQUIPMENT PLATFORM/GENERATOR
Contractor shall provide crane(s) and/or truck for transporting, setting and erecting Equipment Platform/Generator per RFQ. Contractor shall install items shipped loose with the Equipment Platform/Generator including, but not limited to, the following: anchoring plates; exterior lighting; canopies; guardrails; and buss bar.

13 3613 TRANSPORT AND ERECT TOWER
Contractor shall schedule delivery of Owner–furnished Tower, and provide cranes for unloading and erecting. Contractor shall ensure the existence of a 3/8" cable safety climb (DBI/Sala or equal) on the Tower.

MECHANICAL

15 4000 PLUMBING
N/A

15 5000 HVAC
N/A

ELECTRIC

16 5000 LIGHTING AND ELECTRICAL
Contractor shall provide labor and materials as necessary to complete the work shown on Drawings including items shipped loose with the Equipment Platform/Generator assembly.

16 6000 GROUNDING
Contractor shall make themselves familiar with and follow the current GROUNDING STANDARDS of VERIZON WIRELESS. Contractor shall perform work as shown on Grounding Plans. Any site–specific grounding issues not covered by the GROUNDING STANDARD are to be addressed by the Contractor to the Owner.

OWNER–FURNISHED EQUIPMENT & FEES

EQUIPMENT PLATFORM
GENERATOR
MONOPOLE TOWER
CABINETS
COAX AND/OR CABLES
ANTENNAS & DOWNTILT BRACKETS
GPS
BUILDING PERMIT FEES
MATERIALS TESTING FEES
SPECIAL INSPECTIONS FEES

CONTRACTOR–FURNISHED EQUIPMENT

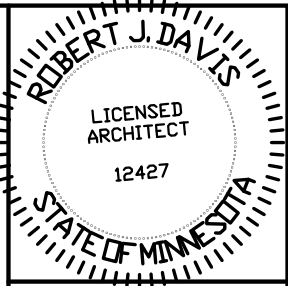
POWER TO SITE
TELCO TO SITE
CABLE BRIDGE & ICE SHIELDS
GPS MOUNTING
GROUNDING MATERIALS
GRAVEL/ROCK SURFACING & FENCING
CONNECTORS, BOOTS, & RELATED HARDWARE

SCOPE OF WORK:

CONTRACTOR SHALL PROVIDE MATERIALS, LABOR, TOOLS, TRANSPORTATION, SUPERVISION, ETC. TO FULLY EXECUTE WORK. WORK REQUIREMENTS ARE DETAILED ON THE DRAWINGS AND SPECIFICATIONS AND SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING ITEMS:

SITE PREPARATION
SITE WORK AND GRAVEL DRIVEWAY
EQUIPMENT PLATFORM, GENERATOR, & TOWER FOUNDATIONS
SET PLATFORM, SET GENERATOR, & ERECT TOWER
ROUTING OF GROUND, POWER, FIBER & ALARM
SITE GROUNDING
ELECTRICAL & TELEPHONE SERVICES
INSTALL ANTENNAS & CABLES
CABLE BRIDGE AND ICE SHIELDS
ROCK SURFACING & FENCING
GRADING AND TREE REMOVAL

Contractor to compare drawings against Owner’s "Request for Quote", (RFQ). If discrepancies arise, Contractor shall verify with Owner that the RFQ supersedes the drawings.



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered Architect under the laws of the State of Minnesota. ROBERT J. DAVIS, Reg. No. 12427

Signed: *Robert J. Davis*
12-06-17
Date:



9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

verizon
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

MIN
TICKLE

33RD CIRCLE N,
LAKE ELMO, MN 55042

SHEET CONTENTS:
OUTLINE SPECIFICATIONS

DRAWN BY:	DJS
DATE:	06-29-17
CHECKED BY:	MJS
REV. A	07-10-17
REV. B	10-05-17
REV. C	10-13-17
REV. D	11-14-17
REV. E	12-01-17
REV. F	12-06-17

A-5

GENERAL GROUNDING NOTES:

An external buried ground ring (Lead 1) shall be established around the equipment shelter and tower foundations. Lead 1 shall be kept 24" from foundations; if foundations are less than 48" apart, keep Lead 1 centered between them. If the tower base is over 20'-0" from the equipment shelter, a separate Lead 1 shall be established around each foundation, and the two Lead 1s shall be bonded with two parallel leads at least 6 feet apart horizontally. Connections between the two Lead 1s shall be bi-directional.

All subgrade connections shall be by exothermic weld, brazed weld, or gas-tight UL467-listed compression fittings pre-filled with anti-oxidant compound. Subgrade connections shall not be 'cold galvanize' coated.

Lead 1 shall be #2 solid bare tin-clad (SBTC) copper wire buried at local frost depth. Lead 1 bends shall be minimum 24" radius. 'Whip' lead bends may be of 12" radius.

Ground rods shall be galvanized steel, 5/8"Ø, spaced twenty feet apart, or as shown. Rods shall be kept min. 24 inches from foundations. Ground rods are required to be installed at their full specified length. Depth shall be as shown in Detail 11.1 in the Design 1 Standard Detail Booklet.

SPECIAL CONSIDERATIONS FOR GROUND RODS:

When ground rods are not specified to be backfilled w/ Bentonite Slurry: If boulders, bedrock, or other obstructions prevent driving of ground rods, the Contractor will need to have drilling equipment bore a hole for ground rod placement. Hole to be backfilled w/ Bentonite Slurry.

When specified with slurried Bentonite encasement, drilling equipment will be need to be used to be bore a hole for ground rod placement. Slurry shall be made from pelletized material ("Grounding Gravel"); powdered Bentonite is not allowed. If boulders, bedrock, or other obstructions are found, Contractor shall drill to the specified depth and provide Bentonite encasements.

Above-grade connections shall be by lugs w/ two-hole tongues unless noted otherwise, joined to solid leads by welding (*T&B 54856BE "BROWN"*), self-threading (*RECOGNIZED, EM 2522DH.75.312*), or 10,000psi crimping (*BURNDY YA3C 2TC 14E2*). Surfaces that are galvanized or coated shall have coating(s) removed prior to bolting. Bolts shall be stainless steel with flat washers on each side of the connection and a lock washer beneath the fastening nut. Star-tooth washers shall be used between lug & dissimilar metal (copper-to-steel, etc) but are not required between tin-clad CU lugs & tin-clad CU bus bars. Lug tongues shall be coated with anti-oxidant compound, and excess compound wiped clean after bolting. The connection shall then be coated with cold-galvanizing compound, or with color-matching paint.

Ground bars exposed to weather shall be tin-clad copper, and shall be clean of any oxidation prior to lug bolting.

Galvanized items shall have zinc removed within 1" of weld area, and below lug surface contact area. After welding or bolting, the joint shall be coated with cold galvanizing compound.

Ground Bar leads

Ground bars are isolated electrically from tower bottoms and equipment shelters by their standoff mounts. Leads from each ground bar to the ground ring shall be a pair of #2 SBTC, each connected to Lead 1 bi-directionally with #2 SBTC 'jumpers'. Pairs of #2 SBTC may be required between ground bars. Leads shall be routed to ground bars as follows:

- * The Main Ground Bar (MGB), typically mounted inside on the equipment shelter 'back' wall; or mounted to the equipment platform steel beam (location varies).
- * The Port Ground Bars (PGB), mounted inside and outside on the equipment shelter walls beneath the transmission line port. Note: Transmission line grounds also attach to the PGBs.
- * The Tower Ground Bar (TGB) mounted at the base of the tower. Note: Transmission line grounds also attach to the TGBs.

NOTE: Contractor shall confirm that TGBs exist at 75-foot vertical intervals on any guyed or self-support tower, and that transmission lines are grounded to each TGB. Only the bottom-most TGB is isolated from the tower steel frame; upper TGBs may use the tower steel frame as common ground, requiring no copper leads between TGBs.

#2 SBTC Whip leads

"Whip" leads shall connect the buried external ground ring to the following items:

Monopole Towers:
* Three whips to flanges on the monopole base, at least 90° apart. If none are provided, attach to the baseplate or consult tower manufacturer.

Self-Support Towers:
* Two whips to flange(s) on each tower leg base. If none are provided, attach to the baseplate or consult tower manufacturer.

Guyed Towers:
* Two whips to flange(s) on the tower base. If none are provided, attach to the baseplate or consult tower manufacturer.
* Establish a Lead 1 within the fence enclosure of each guy anchor, at least 40 foot perimeter and having 4 ground rods.
* #2 SBTC leads shall extend up, and be clamped (bronze clamshell or equal), to any two guy wires. NEVER weld leads to the guy wires. The lead to the guy anchor 'hand' plate may be welded.

Fences:
Metallic fence within 25 feet of tower Lead 1, or within 6 feet of shelter lead 1, shall have whip leads as follows:
* Each corner post.
* Each pair of gate posts.
* Any line post over 20'-0" from a grounded post.
* Each gate leaf to its respective gatepost using braided strap (3/4", tin-clad copper w/ lug ends).
* Fences around guy anchors shall be grounded in similar fashion.

Fuel tanks:
NEVER WELD to any fuel enclosure. NEVER penetrate the fuel containment. Metal tanks shall have one whip lead attached. Use an approved clamp or two-hole lug on an available flange.

- Equipment Shelter/Platform and Other General Requirements (including but not limited to):
- Extend new Lead 21B up to shelter halo, remaking two-way connections as needed. Generator-equipped shelters have 6 such connections. Connections within the shelter shall be by compression; NEVER weld inside the shelter.
 - Each vertical support pipe of the exterior cable bridge. Bridge end shall be kept at least 6" from the tower structure. The cable bridge shall be jumpered to the vertical support pipes with #2 SBTC at each vertical support pipe.
 - Opposite corners of the steel equipment platform.
 - Opposite corners of the roof shield over the equipment shelter.
 - Each HVAC unit shield, if separate (may be 'jumpered' to main roof shield).
 - Each HVAC package unit.
 - Commercial electric meter box.
 - Generator receptacle, if present.
 - Steel building skid, if shelter is metal frame.
 - Each air intake or exhaust fan vent louver.
 - Each generator vent hood or louver.
 - Generator exhaust stack, external.
 - Opposite corners of generator support frame, if separate from shelter.
 - Generator fuel tank, if separate from generator unit.
 - Host building rain gutter, downspouts, and roof flashings within 25 feet.
 - Telco MPOP (Main Point of Presence), if external to equipment shelter.
 - Within cable vaults, one each to the ladder and to the manhole rim.

Note: The door frame is connected to the interior ground halo, and need no separate connection to the external ground ring.

Inspection & Testing

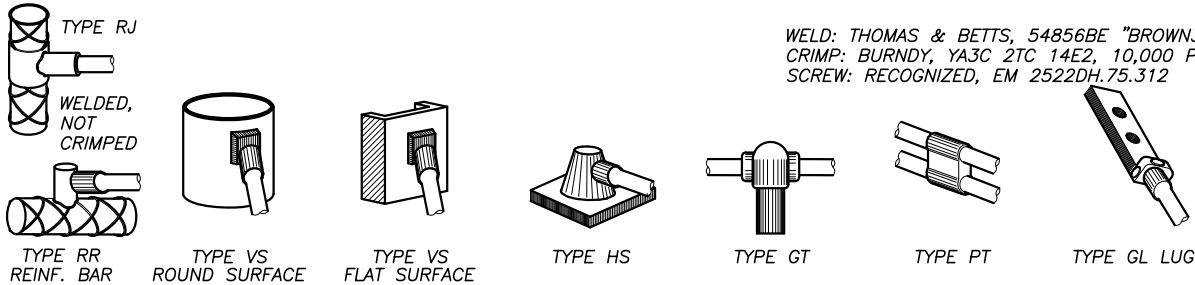
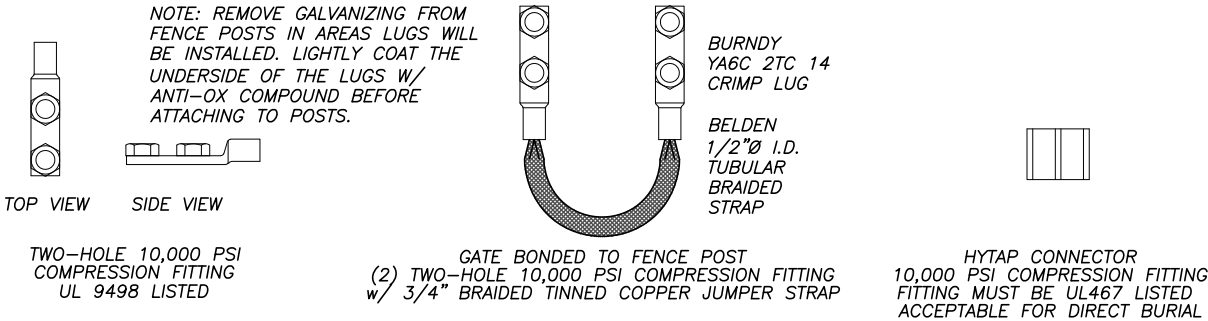
Test lead #1 and ground rods after installation but before backfilling or connecting to any other grounding, using the 3-point fall of potential method. Contractor to notify Verizon Wireless senior construction engineer at least 48 hours prior to testing. Document installation and test results with photographs.

SYMBOL AND NOTE LEGEND

- ①--- #2 SBTC AROUND SHELTER/PLATFORM, TOWER, OR GUY ANCHOR
- 5/8" X 10'-0" GALVANIZED STEEL GROUND ROD
- ⊙ TEST WELL PREFERRED LOCATION
- #2 SBTC 'WHIP' LEAD
- ⑤--- (2) #2 SBTC FROM MGB, PGB, OR TGB TO LEAD 1
- ⑥ AC HVAC UNIT
- ②1B BC BUILDING CORNER
- ⑥ BO BOLLARD
- ⑥ CBS CABLE BRIDGE SUPPORT POST
- ⑥ CL CAMLOK
- ④ EL ELECTRICAL SERVICE GROUND
- ④ EM COMMERCIAL ELECTRICAL METER
- ⑥ FAN GUY ANCHOR PLATE
- ⑥ FP FENCE POST
- ⑨0 GEN GENERATOR
- ⌒ GP GATE POST, 3/4" BRAID STRAP TO LEAF
- ⑥ GPS GPS UNIT
- ⑥ GUY GUY WIRE, MECH. CLAMP ONLY – NO WELDS
- ⑥ HL HOOD OR LOUVER
- ⑥ HB OUTSIDE OF HOFFMAN BOX
- ⑥ ILC INTEGRATED LOAD CENTER
- ⑤ MGB MAIN GROUND BAR
- ⑥ MU GENERATOR MUFFLER
- ⑤ PGB PORT GROUND BAR
- ⑥ RBR FOUNDATION REINFORCING
- ⑥ RS ROOF SHIELD
- ⑥ SB STEEL BEAM
- ⑥ SP STEEL POST
- ⑥ STP STEEL PLATFORM
- ⑥ TEL HOFFMAN BOX
- ⑤ TGB TOWER GROUND BAR
- ⑥ TWR TOWER BASE
- ⑥ VP DIESEL FUEL VENT PIPE

Note:

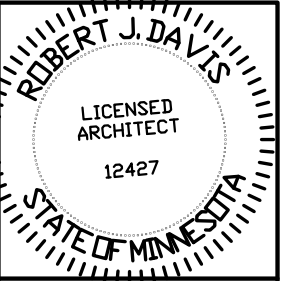
Contractor to provide #2 solid bare tin-clad (SBTC) copper wire lead from #1 ground ring to air conditioner & ice shield if provided by VZW.



LEAD IDENTIFICATION & DESCRIPTION:

- 1 RING, EXTERNAL BURIED w/ RODS #2 SBTC
- 1A RING, CONCRETE ENCASED #2 SBTC
- 2 DEEP ANODE (TO IMPROVE OHMS) ROD OR PIPE
- 3 RING TO BLDG STL FRAME #2 SBTC
- 4 MAIN AC PANEL NEUTRAL BUS TO (2) GROUND RODS, ISOLATED FROM LEAD #1 NEC 250.66
- 5 RING TO GROUND BAR (2) #2 SBTC
- 6 RING TO EXT MTL OBJECT #2 SBTC
- 7 DEEP ANODE TO MGB NSTD33-9
- 8 AC PANEL TO WATER METER NEC 250.66
- 9 EXT WATER TO INT WATER PIPES NSTD33-9
- 10 INT WATER PIPE TO MGB NSTD33-9
- 11-12 NOT USED
- 13 AC PANEL TO MGB NSTD33-9
- 14 MGB/FGB TO BLDG STL FRAME #2/0 I-STR
- 14C MGB/FGB TO ROOF/WALL MTL PNL #1/0 I-STR
- 15 MGB/FGB TO FGB-HE SAME FLOOR #2/0 I-STR
- 16 NOT USED
- 16A ECPGB TO CABLE ENTRY RACK #1/0 I-STR
- 17 MGB TO CABLE SHIELDING #6 I-STR
- 17A ECPGB TO CABLE SHIELDING #6 I-STR
- 17B MGB/FGB TO F-O SPLICE SHELF #1 I-STR
- 18 LOWEST MGB/FGB TO HIGHEST FGB #2/0 I-STR
- 19 LEAD 18 TO OTHER FGBs, <6' #2/0 I-STR
- 20 MGB/FGB TO BRANCH AC PNL #6 I-STR
- 20A NEAREST GRND TO DISCONNECT PNL NEC 250.66
- 20B GWB TO AC DISTR PNL #6 I-STR
- 21 MGB/FGB TO INT HALO #2 I-STR
- 21A INTERIOR 'GREEN' HALO #2 I-STR
- 21B INT HALO TO EXT RING #2 SBTC
- 21C INT HALO TO EQUIPMENT MTL #6 I-STR
- 22 ROOF TOWER RING TO ROOF GRND NFPA 780
- 23 MGB/FGB TO ECPGB, SAME FLOOR #1 I-STR
- 23A MGB/FGB TO CXR-HF LINR PROT #6 I-STR
- 24 ECPGB TO EACH PROTECTOR ASSEMBLY #6 I-STR
- 24A LOWER PROT ASSY TO UPPER #6 I-STR

- 25 RING TO NEAREST LIGHTNING ROD #2 SBTC
- 26 LGHTING ROD SYS TO NEARBY MTL NFPA 780
- 27 RING TO TOWER RING (2) #2 SBTC
- 28 RING TO SHELTER RING (2) #2 SBTC
- 29 BRANCH AC PNL TO BTTY CHG FRM NSTD33-11
- 30 BRANCH AC PNL TO OUTLETS NSTD33-11
- 31 MGB/FGB TO PWR, BTTY FRAMES #2/0 I-STR
- 32 #31 TO BATTERY CHARGER FRAME #6 I-STR
- 33 #31 TO BATTERY RACK FRAME #6 I-STR
- 34 #31 TO PCU FRAME #6 I-STR
- 35 #31 TO DSU FRAME #6 I-STR
- 36 #31 TO PDU FRAME #6 I-STR
- 37 MGB/FGB TO BTTY RETURN NSTD33-14.5
- 37A MGB/FGB TO RTN TERM CARR SUPP #6 I-STR
- 38 FGB TO PDU GB #750MCM I-STR
- 38A FGB TO PDU GB CARRIER SUPPLY #2/0 I-STR
- 39 DC BUS DUCT TO NEXT SECTION #6 I-STR
- 40 DC BUS DUCT TO MGB/FGB #6 I-STR
- 41A MGB/FGB TO #58 #2/0 I-STR
- 42-44 NOT USED
- 45 MAIN AC PNL TO BRANCH AC PNL NSTD33-11
- 46 BRANCH AC PNL TO DED OUTLET NSTD33-11
- 47 FGB TO INTEG FRM #2 I-STR
- 48 LEAD #31 TO INTEG FRM #6 I-STR
- 49 INTEG FRM TO EQUIP SHELF BY FASTENERS
- 50 PDU BTTY RET TO #51 #2/0 I-STR
- 51 #50 TO TRANS FRM ISO DC PWR #6 I-STR
- 52 TRANS FRM FUSE TO FRM OR BAR #8 I-STR
- 53A MGB/FGB TO PDF/BOFB NSTD33-22
- 54 MGB/FGB TO STATIC DEVICES #6 I-STR
- 55 MGB/FGB TO CABLE AT ENTRY #6 I-STR
- 56 MGB/FGB TO AC PWR RADIO XMTR #6 I-STR
- 57A MGB/FGB TO CBL GRID/RUNWAY #2/0 I-STR
- 58A #41A TO AISLE FRAME #2 I-STR
- 59A #58A TO EACH SGL FRAME GRND #6 I-STR
- 60-89 NOT USED
- 90 GENERATOR FRAME TO EXT RING #2 SBTC



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered Architect under the laws of the State of Minnesota. ROBERT J. DAVIS, Reg. No. 12427

Signed: Date: 12-06-17

DESIGN 1

9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

verizon

10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

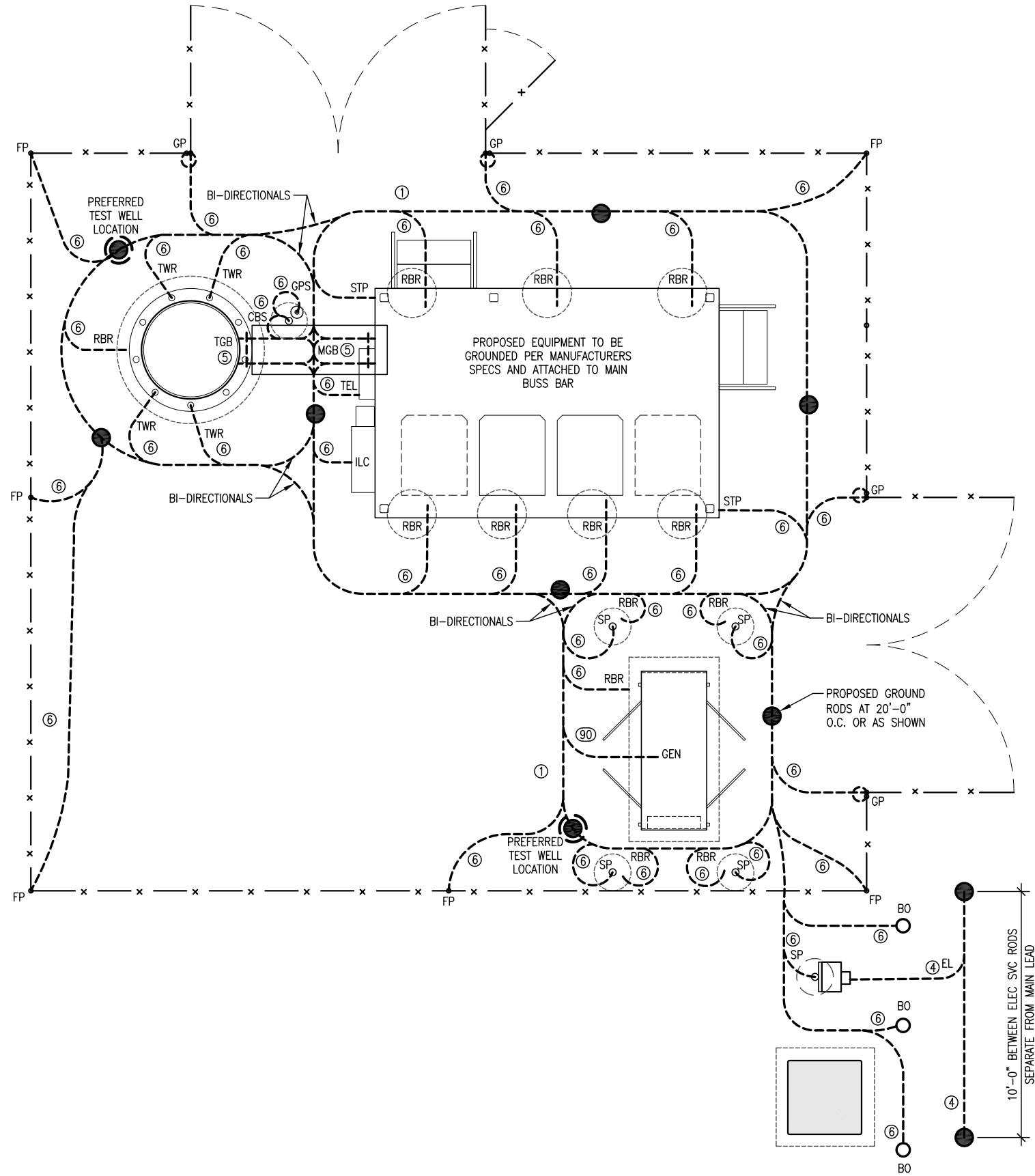
MIN
TICKLE

33RD CIRCLE N.
LAKE ELMO, MN 55042

SHEET CONTENTS:
GROUNDING NOTES

DRAWN BY:	DJS
DATE:	06-29-17
CHECKED BY:	MJS
REV. A	07-10-17
REV. B	10-05-17
REV. C	10-13-17
REV. D	11-14-17
REV. E	12-01-17
REV. F	12-06-17

G-1



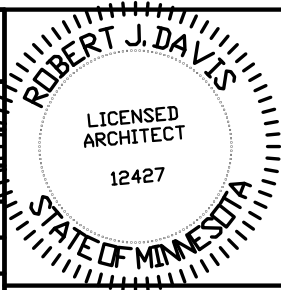
NOTE:
CONTRACTOR SHALL ENSURE THAT EACH WHIP IS
ROUTED TO LEAD 1 BY THE SHORTEST PATH, AND
BENDS SHALL NOT BE LESS THAN 12" RADIUS

1 **GROUNDING PLAN**
SCALE: NTS

NORTH

GROUNDING DETAIL INDEX

DETAIL	DETAIL DESCRIPTION
PLATFORM	9'-4" X 14'-0" PLATFORM W/ CANOPY GROUNDING ELEVATIONS
11.1	TEST WELL DETAIL, GROUND RING & ROD DETAIL
11.3	REBAR GROUNDING DETAIL
11.4	CONDUIT DETAIL
11.5	TYPICAL GROUNDING CABLE BRIDGE DETAIL
11.6	TYPICAL TOWER GROUNDING DETAIL



I hereby certify that this plan,
specification or report was
prepared by me or under my direct
supervision and that I am a duly
registered Architect under
the laws of the State of Minnesota.
ROBERT J. DAVIS, Reg. No. 12427

Signed: *Robert J. Davis*
Date: 12-06-17

DESIGN1

9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

verizon
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

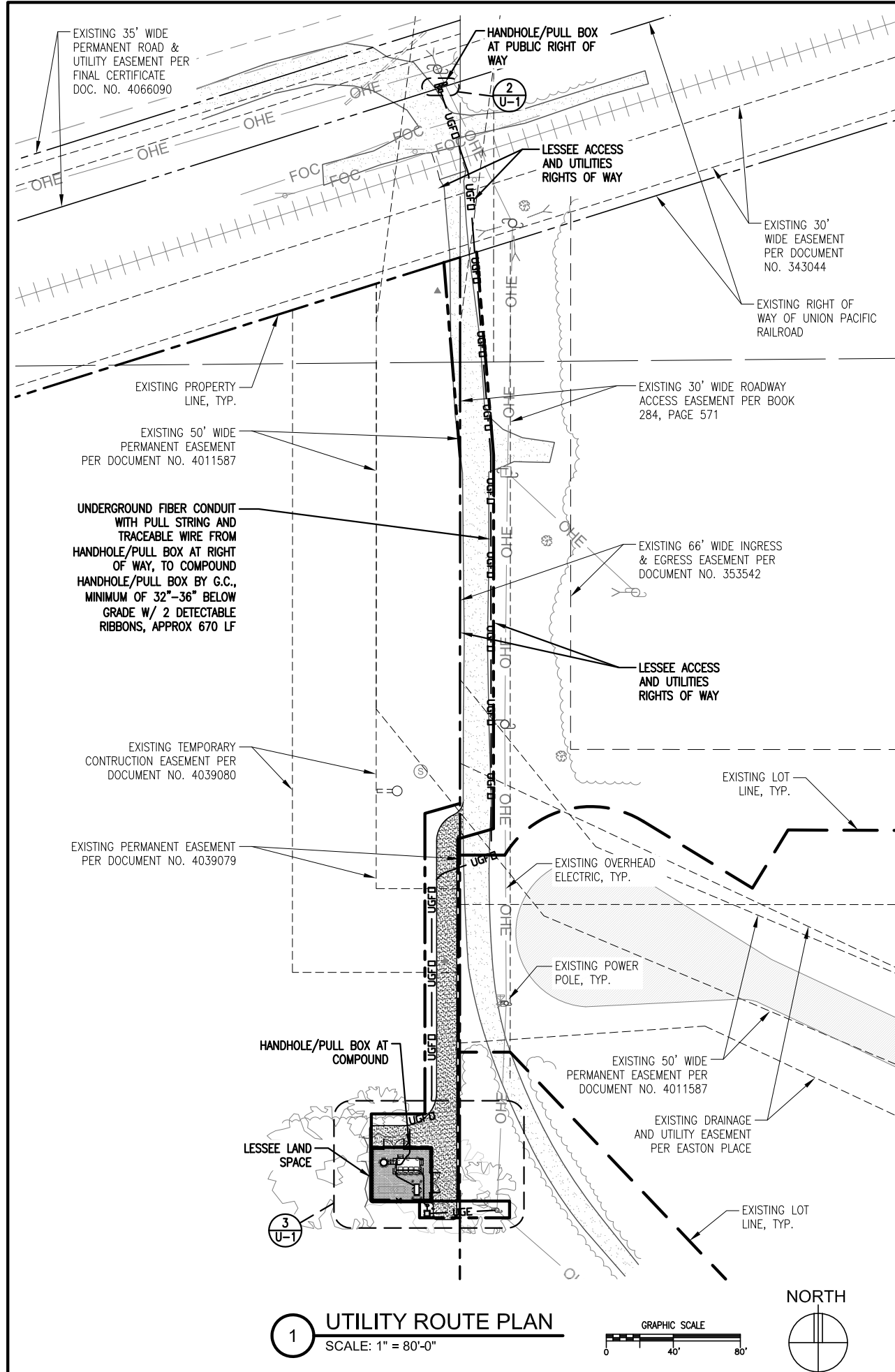
MIN
TICKLE

33RD CIRCLE N.
LAKE ELMO, MN 55042

SHEET CONTENTS:
GROUNDING PLAN
GROUNDING DETAIL INDEX

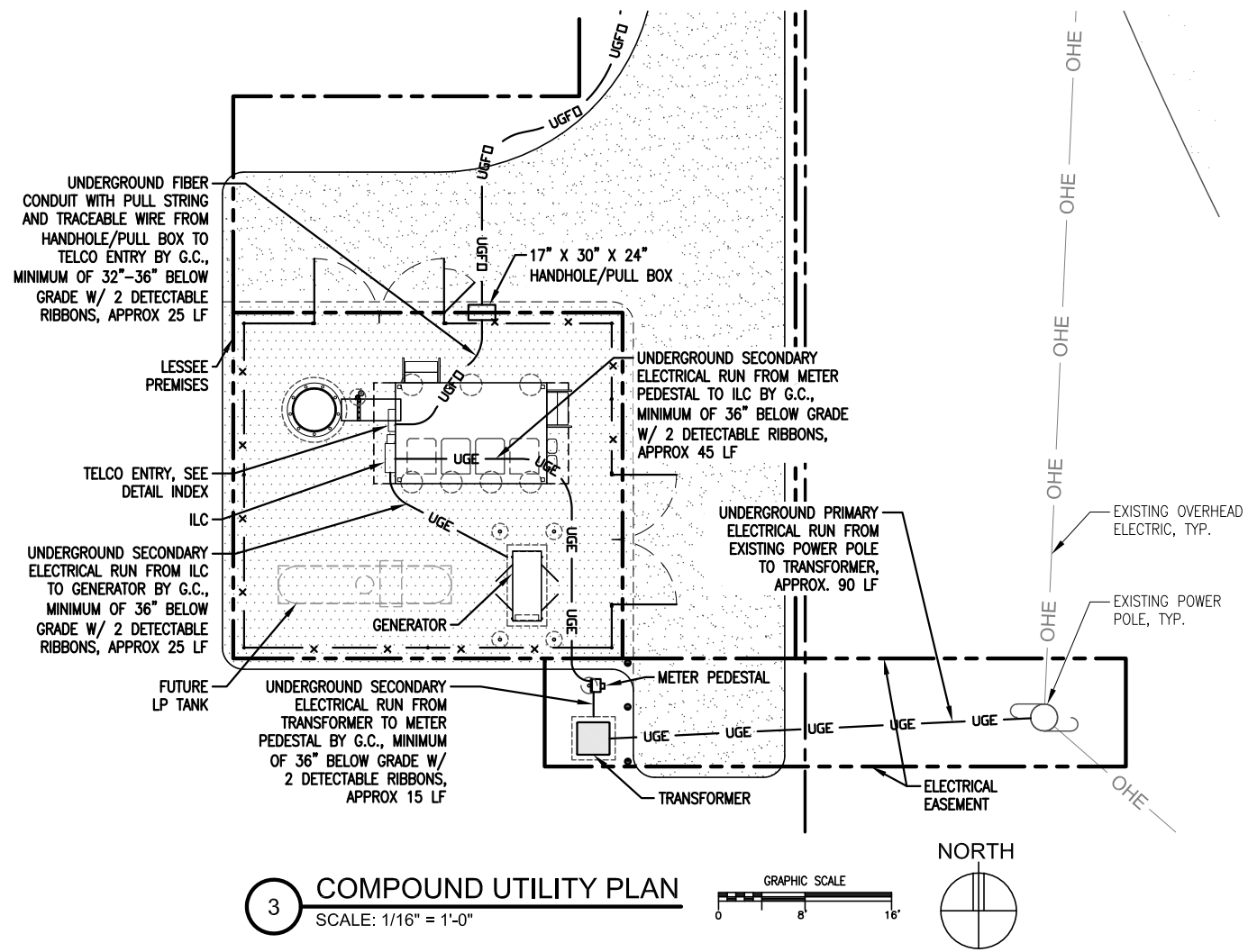
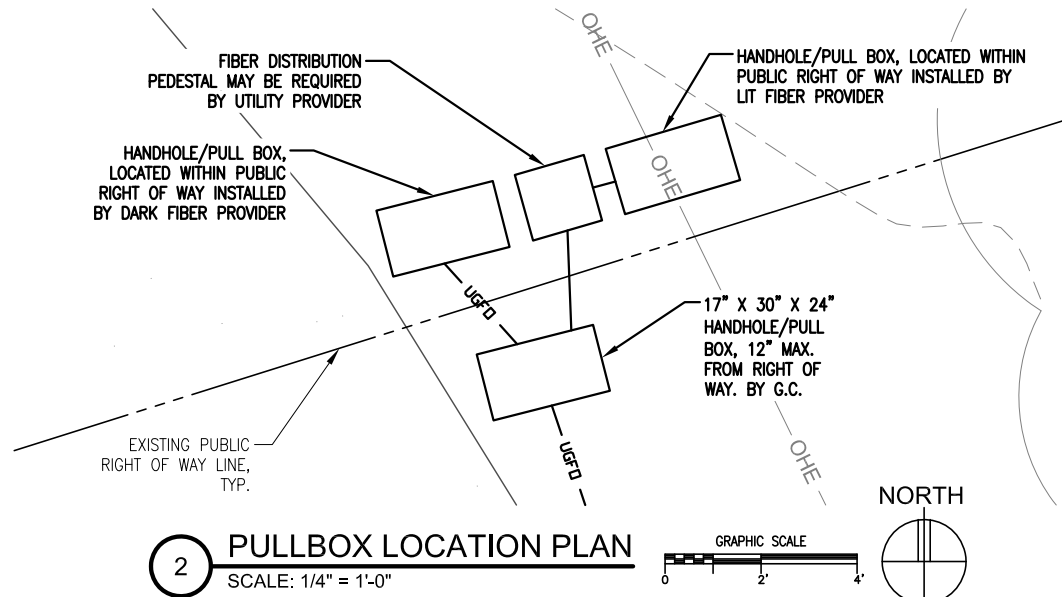
DRAWN BY: DJS
DATE: 06-29-17
CHECKED BY: MJS
REV. A 07-10-17
REV. B 10-05-17
REV. C 10-13-17
REV. D 11-14-17
REV. E 12-01-17
REV. F 12-06-17

G-2

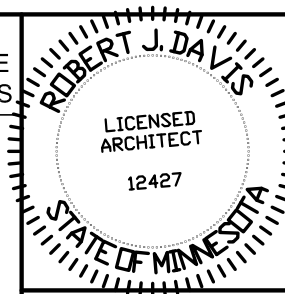


NOTE:

1. CONTRACTOR TO COORDINATE PUBLIC AND PRIVATE UTILITY LOCATES PRIOR TO CONSTRUCTION START. NOTIFY THE ARCHITECT AND THE VZW CONSTRUCTION ENGINEER IMMEDIATELY OF ANY UTILITY LINE ISSUES.
2. EXISTING UNDERGROUND UTILITY LOCATIONS ARE APPROXIMATE AND NOT ALL UTILITIES ARE SHOWN. CONTRACTOR IS RESPONSIBLE TO NOT DAMAGE UNDERGROUND UTILITIES AND MUST CONDUCT BOTH PUBLIC AND PRIVATE UTILITY LOCATES BEFORE EXCAVATING.
3. CONTRACTOR SHALL RESTORE ALL AREAS, INCLUDING LANDSCAPE, DISTURBED BY CONSTRUCTION TO PRE-CONSTRUCTION CONDITIONS.



POWER TYPE:
120/240V, SINGLE
PHASE, 200 AMPS



I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly registered Architect under the laws of the State of Minnesota.
ROBERT J. DAVIS, Reg. No. 12427

Signed: *Robert J. Davis*

Date:

12-06-17

Date:

DESIGN1

9973 VALLEY VIEW RD.
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

verizon

10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT
20141122104
LOC. CODE: 311232

MIN
TICKLE

33RD CIRCLE N.
LAKE ELMO, MN 55042

SHEET CONTENTS:
UTILITY ROUTE PLAN
PULLBOX LOCATION PLAN
COMPOUND UTILITY PLAN

DRAWN BY:	DJS
DATE:	06-29-17
CHECKED BY:	MJS
REV. A	07-10-17
REV. B	10-05-17
REV. C	10-13-17
REV. D	11-14-17
REV. E	12-01-17
REV. F	12-06-17

U-1

SITE SURVEY

PROPERTY DESCRIPTION: (per US Title Solutions File No. 54873--MN1608--5030, effective date September 6 2016.)

That part of the West half of Section Thirteen (13), Township Twenty--nine (29) North of Range Twenty--one (21), lying within the following boundaries, to-wit: Beginning at the quarter post in the center of the South line of said Section; thence running North along the Center Line of said Section to a point in the center of the Saint Paul & Stillwater Road; thence Southwesterly along the center of said road to a point forty--four (44) Rods West of the East Line of the Northwest Quarter of said Section; thence South on a line parallel with the West line of said Section to a point in the South line thereof Forty--four (44) Rods West of the center post in said line; thence East Forty--four (44) Rods to the place of beginning, excepting, however, a strip of land One Hundred (100) Feet in width, being Forty--four (44) feet on the north side and Fifty--six (56) feet on the South side of center line of St. P. S. & T. F. Ry. track as constructed over and across East Forty--four (44) Rods of West One--half (W1/2), and also excepting therefrom the East 726 feet of the South 1800 feet of the Southwest Quarter (SW1/4) of Section 13, Township 29 North, Range 21 West, Washington County, Minnesota, according to the United States Government Survey thereof, subject to the right of way of Minnesota Trunk Highway No. 5 (also known as Stillwater Boulevard North), and is also subject to a 20 foot road use easement recorded by Document Number 328273 in the Office of the County Recorder, Washington County, Minnesota, and is also subject to a Northern States Power Easement recorded in Book 136 of Deeds, Page 297, in the Office of the County Recorder, Washington

SCHEDULE "B" EXHIBITS: (per US Title Solutions File No. 54873--MN1608--5030, effective date September 6 2016.)

1--6.)Not related to the survey.

7.) Road Use Easement by Annabella Reid to Northern States Power Company, a Minnesota corporation, dated 9/13/1974 recorded 11/1/1974 in Instrument No :328273.
This document describes an easement for the use of NSP, its employees, agents and invitees for ingress and egress purposes. This easement is as shown on the survey.

8.) Easement by Chicago and North Western Transportation Company, a Delaware corporation to Northern States Power Company, a Minnesota corporation, dated 5/13/1975 recorded 3/23/1976 in Instrument No :343044.
This document describes a 30 foot wide easement for underground gas line purposes within the railroad right of way. This easement is as shown on the survey.

9.) Driveway Easement by Schiltgen Farms, Inc. to Robert W. Friedrich and Ardys H. Friedrich, husband and wife, dated 3/4/1986 recorded 4/2/1986 in Instrument No :504733.
This document describes an easement for driveway maintenance, ingress and egress purposes. This easement is as shown on the survey.

10.) Permanent Public Drainage and Utility Easement Agreement by Peter J. Schiltgen, an individual to City of Lake Elmo, a Minnesota municipal corporation, dated 8/19/2014 recorded 1/2/2015 in Instrument No :4011587.
This document describes a 50 foot wide easement for sanitary sewer trunk line purposes. This easement is as shown on the survey.

11.) Permanent Trunk Utility Line Easement Agreement by Peter J. Schiltgen and Muriel K. Schiltgen, individual owners to City of Lake Elmo, a Minnesota municipal corporation, dated 7/1/2015 recorded 8/26/2015 in Instrument No :4039079.
This document describes an easement for trunk utility line purposes. This easement is as shown on the survey.

12.) Temporary Construction Easement Agreement by Peter J. Schiltgen and Muriel K. Schiltgen, individual owners to City of Lake Elmo, a Minnesota municipal corporation, dated 7/1/2015 recorded 8/26/2015 in Instrument No :4039080.
This document describes a temporary easement for construction of trunk utility line purposes. This temporary easement is as shown on the survey.

13.) Petition and Waiver Agreement between Peter J. Schiltgen, individual and City of Lake Elmo, a Minnesota municipal corporation dated 8/5/2014 recorded 2/6/2015 in Instrument No. 4014948.
No specific easement descriptions were provided in this document. This document is not shown on the survey.

UTILITY PROPERTY DESCRIPTION: (per US Title Solutions File No. 57764--MN1707--5030, effective date July 28, 2017.)

All that part of the Southeast Quarter (SE 1/4) of Section Thirteen (13), Township Twenty--nine (29) North, Range Twenty--one (21) West, Washington County, Minnesota, described as follows, to-wit:

Commencing at the Southwest corner of Northwest Quarter of the Southeast Quarter (NW 1/4 of SE 1/4) of Section Thirteen (13), Township Twenty--nine (29) North, Range Twenty--one (21) West, Washington County, Minnesota; thence North along the West line of said Southeast Quarter (SE 1/4) of Section Thirteen (13) for Two hundred forty (240.0) feet to the point of beginning of this description; thence continuing North along said West line to the Southeast Quarter (SE 1/4) for Six hundred Sixty--seven and Eight--tenths (667.8) feet; thence East at right angles for Thirty (30.0) feet; thence Southeasterly by a deflection angle to the right 46 degrees 28 minutes for Two hundred twenty and Seven--tenths (220.7) feet; thence Southeasterly by a deflection angle to the left 20 degrees 35 minutes for Two hundred Eighty--six and Eight--tenths (286. 8) feet; thence South by a deflection to the right 64 degrees 07 minutes and parallel with said West line of Southeast Quarter (SE 1 / 4) for Three hundred Eighty--two and Seven--tenths (382.7) feet; thence West at right angle for Four hundred forty (440) feet to the point of beginning.

Together with a Thirty (30) foot road easement, the Westerly line of which is described as follows; Commencing at the Southwest corner of Northwest Quarter of Southeast Quarter (NW 1/4 of SE 1/4) of Section Thirteen (13), Township Twenty--nine (29) North, Range Twenty--one (21) West, Washington County, Minnesota, thence North along the West line of Southeast Quarter (SE 1/4) of Section Thirteen (13), being the North and South Quarter line of said Section Thirteen (13) for Nine hundred seven and Eight--tenths (907.8) feet to the point of beginning of this Thirty (30) foot road easement; thence continuing North along said North and South quarter line of Section Thirteen (13) for Four hundred Seventy--six and Two--tenths (476.2) feet, being along said Westerly line of this Thirty (30) foot road easement to its intersection with the Southerly right or way line of C. St. P.M.O. Railroad, being the end of this easement, and Together with a perpetual easement in and right of way along, over and across that part of the East 44 rods of the West 1/2 of Sec. 13, Township 29, Range 21 which lies Northerly of the Northerly right of way line of the Chicago Northwestern Railroad and which lies Southerly of the following described line; Commencing at the intersection of the East line of said West 1/2 of Sec. 13 with the Northerly right of way line of the Chicago Northwestern Railroad; thence Northerly along said East line of the West 1/2 Of Sec. 13, a distance of 28.49 feet to the point of beginning of said line to be described, thence Southwesterly to a point on the West line of said 44 rods of the West 1/2 of Sec. 13 which is 34. 85 feet Northerly of said Northerly right of way line of the Chicago Northwestern Railroad; as measured along said West line of the East 44 rods and described line there terminating, according to the United States Government Survey thereof. Washington county, Minnesota.

SCHEDULE "B" EXHIBITS: (per US Title Solutions File No. 57764--MN1707--5030, effective date July 28, 2017.)

1--6b.) Not related to the survey.

7b.) Driveway Easement. by Schiltgen Farms, Inc. to Robert W. Friedrich and Ardys H. Friedrich, husband and wife, dated 3/4/1986 recorded 4/2/1986 in Instrument No :504733.
This document describes an easement for driveway maintenance, ingress and egress purposes. This easement is as shown on the survey.

8b.) Quit Claim Deed by Willis S. Hutchinson and Katherine A. Hutchinson, husband and wife to Robert W. Friedrich and Ardys H. Friedrich, husband and wife, dated 3/8/1985 recorded 4/2/1986 in Instrument No :504732.
This document describes a 20' wide easement for road purposes in Sec. 13, Twp. 29 N, Rng. 21 W. This easement does affect the surveyed area and is as shown on the survey.

ACCESS PROPERTY DESCRIPTION: (per US Title Solutions File No. 57763--MN1707--5030, effective date July 28, 2017.)

Outlot F, Easton Village, according to the recorded plat thereof, Washington County, Minnesota.

LESS AND EXCEPT:

That Part of Outlot F, Easton Village, Washington County, Minnesota, according to the recorded plat thereof, lying southerly of the following described line:

Beginning at the northeast corner of Lot 14, Block 7, Easton Village, Washington County, Minnesota, thence North 00 degrees 27 minutes 34 seconds West, a distance of 205.25 feet; thence northwesterly 306.24 feet along a tangential concave curve to the west, radius 960.00 feet, central angle of 18 degrees 16 minutes 39 seconds; thence North 17 degrees 28 minutes 15 seconds West, a distance of 251.69 feet; thence North 66 degrees 27 minutes 31 seconds East, a distance of 751.17, more or less to the east line of said Outlot and there terminating.

SCHEDULE "B" EXHIBITS: (per US Title Solutions File No. 57763--MN1707--5030, effective date July 28, 2017.)

1--5a.) Not related to the survey.

6a.) First Supplemental Declaration of Easements, Covenants, Conditions and Restrictions for Easton Village by Chase Development, Inc. dated as of 6/13/2017 recorded 7/6/2017 in Instrument No. 4118515.
This document states that Outlot F is included in Additional Real Estate. No specific easements were described in this document. The easements as shown on the plat of EASTON VILLAGE are as shown on the survey.

7a.) Declaration of Easements, Covenants, Conditions and Restrictions for Easton Village by Chase Development, Inc., a Minnesota corporation dated as of 7/23/2015 recorded 8/10/2015 in Instrument No. 4037031.
This document states that Outlot F is included in Additional Real Estate. The easement areas described in this document are as shown on the plat of EASTON VILLAGE are as shown on the survey.

8a.) Easement by Ella I. Lohmann (widow) & Herbert Lohmann (single) et al to Northern Natural Gas Company, a Delaware corporation, dated 12/7/1955 recorded 2/2/1956 in Instrument No :184294. Pipeline Easement Modification in Instrument No. 3741707
This document describes an easement for pipeline purposes over the entire N 1/2 of the SE 1/4 of Sec. 13, Twp. 29 N, Rng. 21W. The centerline of the 86' wide easement is later described in Doc. No. 3741707. This easement does not affect the surveyed area and is as shown on the survey in the vicinity map.

9a.) Easement by Ella I. Lohmann, a widow, Raymond A. Lohman & Edna C. Lohman, his wife, Helen J. Busch & Carl Busch, her husband, Herbert Lohman, single, Alice Bahneman, a widow, a Jessie M. Richert & Edward Richert, her husband to Northern Natural Gas Company, a Delaware corporation, dated 8/17/1959 recorded 9/23/1959 in Instrument No:203591. Pipeline Easement Modification in Instrument No. 3741706
This document describes an easement for pipeline purposes over the SW 1/4 of the NE 1/4 of Sec. 13, Twp. 29 N, Rng. 21W lying south of the railroad. The centerline of the 86' wide easement is later described in Doc. No. 3741706. This easement does not affect the surveyed area and is as shown on the survey in the vicinity map.

10a.)Temporary Construction Easement Agreement by Easton Village, LLC to The City of Lake Elmo, a Minnesota municipal corporation, dated 11/18/2014 recorded 1/2/2015 in Instrument No: 4011585.
This document describes a 150' easement for temporary construction purposes for public utilities. The centerline of this temporary easement is centered on the 50' wide permanent public utility easement described below in Doc. No. 4011586. The temporary easement shall terminate upon completion of the public involvement of the project to install the public utility and the one year warranty period for the project has expired. This temporary easement is not shown on the survey.

11a.) Permanent Public Drainage and Utility Easement Agreement by The City of Lake Elmo, a Minnesota municipal corporation to Easton Village, LLC, a Minnesota limited liability company, dated 11/18/2014 recorded 1/2/2015 in Instrument No :4011586.
This document describes a 50 foot wide easement for sanitary sewer trunk line purposes. This easement does affect the surveyed area and is as shown on the survey.

12a.)Temporary Construction Easement Agreement by Easton Village, L.L.C., a Minnesota limited liability company to The City of Lake Elmo, a Minnesota municipal corporation, dated 8/6/2015 recorded 8/10/2015 in Instrument No :4037026.
This document describes an easement for temporary construction purposes for public utilities across Outlot F, EASTON PLACE. The easement lies southerly of the permanent public utility easement described below in Doc. No. 4037027. The temporary easement shall terminate upon completion of the public involvement of the project to install the public utility and the one year warranty period for the project has expired. This temporary easement is not shown on the survey.

13a.)Permanent Public Utility Easement Agreement by Easton Village, L.L.C., a Minnesota limited liability company to The City of Lake Elmo, a Minnesota municipal corporation, dated 8/6/2015 recorded 8/10/2015 in Instrument No :4037027.
This document describes a permanent easement for drainage and utility purposes across Outlot F, EASTON PLACE. This easement does affect the surveyed area and is as shown on the survey.

14a.)Temporary Access Easement by Easton Village, L.L.C., a Minnesota limited liability company to The Public, dated 8/6/2015 recorded 8/11/2015 in Instrument No :4037184.
This document describes two temporary access easements for cul--de--sac purposes for 32nd Street and Linden Avenue North. These temporary access easements do not affect the surveyed area and are not shown on the survey.

15a--20a.) Not related to the survey.

21a.)Easton Village Official Plat recorded 8/10/2015 in Instrument No. 4037022.
The easements as shown on the plat of EASTON VILLAGE for Outlot F are as shown on the survey.

22a.)Easton Village 2nd Addition Official Plat recorded 7/5/2017 in Instrument No. 4118393.
The plat of EASTON VILLAGE 2ND ADDITION does not affect the surveyed area and is not shown on the survey.

23a.)Development Agreement between The City of Lake Elmo, a Minnesota municipal corporation and Chase Development, Inc., a Minnesota Limited Liability Company dated 6/20/2017 recorded 7/6/2017 in Instrument No. 118514.
This document describes a development agreement for the plat of EASTON VILLAGE 2ND ADDITION. This document is not related to the survey.



SITE NAME:
MINC TICKLE

Washington County, MN

No.	Date	REVISIONS				By	CHK	APPD	
FIELD WORK: 5/30/17		CHECKED BY: SMK		DRAWN BY: SMK/JMB					

I HEREBY CERTIFY THAT THIS DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MINNESOTA.

PRELIMINARY

SHAWN M. KUPCHO, L.S.
DATE: 9/11/17 LICENSE # 49021

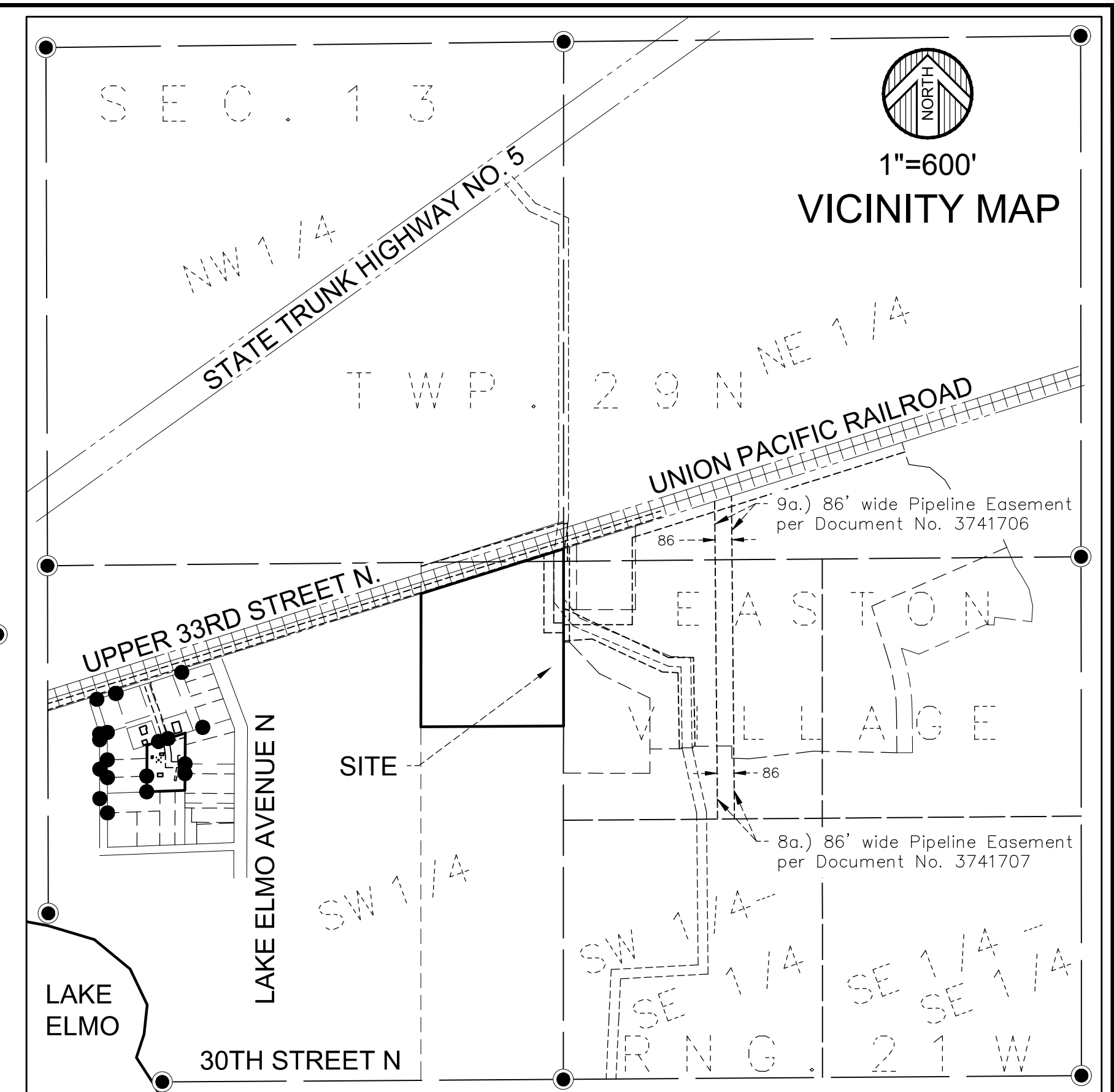
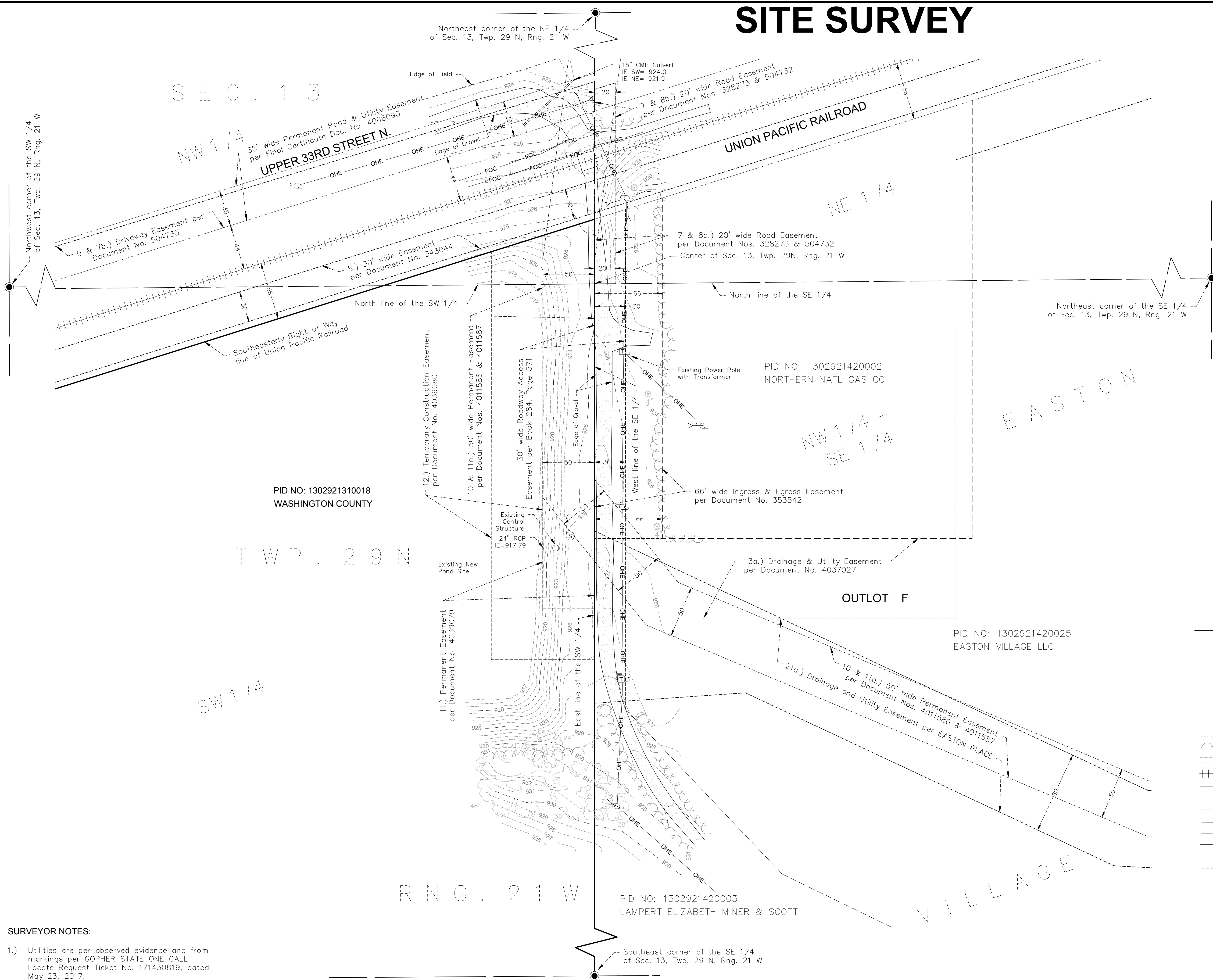
FULL SCALE ON 22"x34"
HALF SCALE ON 11"x17"
0494A1877.002















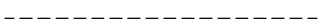
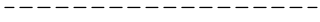





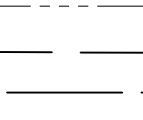
WIDSETH SMITH NOLTING
Engineering | Architecture | Surveying | Environmental

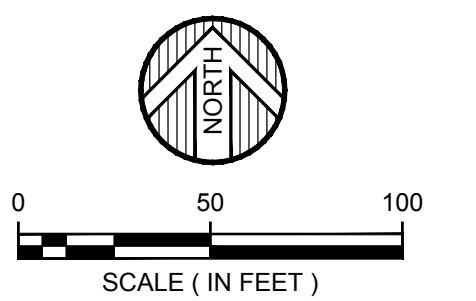
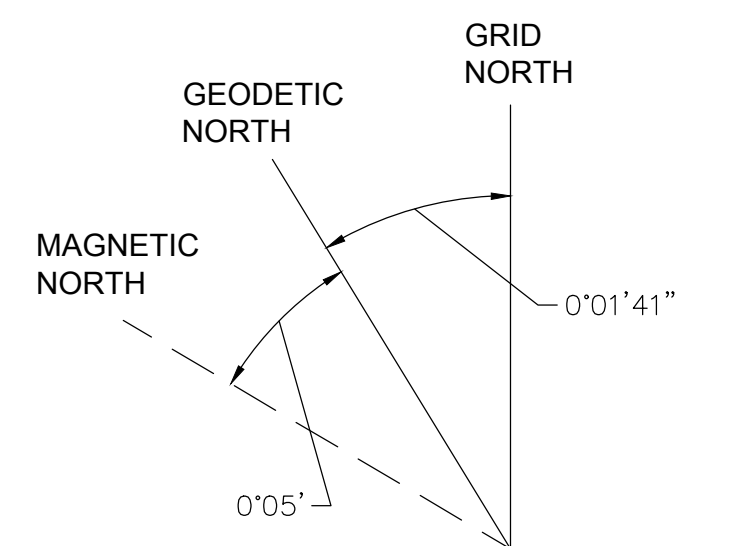
SHEET 1 OF 2 SHEETS

SITE SURVEY




LEGEND

	SIGN
	MAILBOX
	GUY ANCHOR
	ELEC POLE
	TELE PEDESTAL
	TREE DECIDUOUS
	SANITARY MANHOLE
	EDGE OF FIELD
	EDGE OF WOODS
	CULVERT
	CENTERLINE RAILROAD
	UNDERGROUND FIBER
	OVERHEAD ELEC
	RIGHT OF WAY LINE
	SECTION LINE
	QUARTER LINE
	SIXTEENTH LINE
	PARCEL LINE
	EASEMENT LINE
	GRAVEL SURFACE



ORIENTATION OF THIS BEARING SYSTEM IS
BASED ON THE WASHINGTON COUNTY
COORDINATE SYSTEM NAD83 (1986)

 = DENOTES A FOUND SECTION CORNER MONUMENT
 = DENOTES A FOUND IRON MONUMENT

SURVEYOR NOTES:

- 1.) Utilities are per observed evidence and from markings per GOPHER STATE ONE CALL Locate Request Ticket No. 171430819, dated May 23, 2017.

SITE NAME:
MINC TICKLE

Washington County, MN

No.	Date	REVISIONS						By	CHK	APP'D
FIELD WORK: 5/30/17				CHECKED BY: SMK		DRAWN BY:		SMK/JMB		

I HEREBY CERTIFY THAT THIS DOCUMENT WAS
PREPARED BY ME OR UNDER MY DIRECT SUPERVISION
AND THAT I AM A DULY LICENSED LAND SURVEYOR
UNDER THE LAWS OF THE STATE OF MINNESOTA.

SHAWN M. KUPCHO, L.S.
LICENSE # 49021

FULL SCALE ON 22"x34"
HALF SCALE ON 11"x17"
0494A1877.002



WIDSETH SMITH NOLTING

Engineering | Architecture | Surveying | Environmental

SHEET 2 OF 2 SHEETS

31 May 2018

City of Lake Elmo
Attn: Emily Becker, Planning Director
3880 Laverne Ave N
Lake Elmo, MN 55042

RE: Conditional Use Permit Application and variance for proposed 134' Telecommunications Tower
33rd Circle N., Lake Elmo, MN

Dear Ms. Becker,

On behalf of Verizon Wireless, I am submitting a Conditional Use Permit and Setback Variance application for a proposed 125' monopole telecommunications tower and 9' lightning rod for a total of 134' AGL.

PURPOSE:

Verizon Wireless seeks a Conditional Use Permit per the requirements of Zoning Code. The tower is proposed within a City-owned parcel located along 33rd Circle North, Lake Elmo, Washington County.

LOCATION SELECTION:

The proposed tower location was selected by Verizon due to its favorability in meeting the company's radio frequency objective, providing a capacity off-load serving the surrounding community. It is my hope that the Planning Commission and City Council members would approve this proposal, thus helping to provide a consistency of coverage and capacity to the community.

It should be noted that Verizon did seek out collocation opportunities, but there were no feasible existing structures identified within the RF search area.

It is my understanding that the proposed 134' monopole tower would comply with the provisions set forth in the Tower Ordinance of the City of Lake Elmo.

Enclosed please find:

- 1) Conditional Use Permit Application Form
- 2) Variance Application Form
- 3) Set of scaled construction drawings to include:
 - a. Land survey
 - b. Tower elevation
 - c. Site plan
- 4) Address Labels from Washington County
- 5) FCC Licensing Documentation
- 6) FAA Approval
- 7) Written Statement of Information
- 8) Photo Simulations
- 9) Exterior paint colors (see photo simulation)
- 10) Structural Compliance Letter / Fall Letter

- 11) Area Served / Proof of Need Documentation
- 12) Landscape Plan (not applicable)
- 13) Applicable fees

Written Statement of Information Regarding Proposal

Contact Information of Owner:

City of Lake Elmo
3800 Laverne Ave N
Lake Elmo, MN 55042
Attn: Kristina Handt, City Administrator
khandt@lakeelmo.org
651-747-3905

Verizon Wireless
10801 Bush Lake Road
Bloomington, MN 55438
Ron Reiter 612-720-0052

Agent: Karyn O'Brien
KGI Wireless / TechScape Wireless
323 N Cedar St
Chaska, MN 55318
952-288-8130
kobrien@techscapewireless.com

List of Site Data:

Along 33rd Circle N
Lake Elmo, MN 55042
Washington County
Coordinates: 44 59 54.28N, -92 52 23.47
PID 1302921310018
W1/2 Sec 13 Twp 29N Rge 21W

I appreciate your consideration of the Conditional Use Permit and Variance applications, as well as the opportunity to present optimal service for Verizon Wireless subscribers in the area. Please do not hesitate to contact me if you have any additional questions regarding the proposed tower or if you require any further items to thoroughly review this application.

Very Sincerely,

Karyn O'Brien
TechScape Wireless
952.288.8130
kobrien@techscapewireless.com

Date Received: _____
Received By: _____
Permit #: _____



651-747-3900
3800 Laverne Avenue North
Lake Elmo, MN 55042

LAND USE APPLICATION

- ☐ Comprehensive Plan ☐ Zoning District Amend ☐ Zoning Text Amend ☐ Variance*(see below) ☐ Zoning Appeal
- ☒ Conditional Use Permit (C.U.P.) ☐ Flood Plain C.U.P. ☐ Interim Use Permit (I.U.P.) ☐ Excavating/Grading
- ☐ Lot Line Adjustment ☐ Minor Subdivision ☐ Residential Subdivision Sketch/Concept Plan
- ☐ PUD Concept Plan ☐ PUD Preliminary Plan ☐ PUD Final Plan ☐ Wireless Communications

Applicant: **Verizon Wireless**

Address: **10801 Bush Lake Rd. Bloomington, MN 55438**

Phone # **952-288-8130**

Email Address: **kobrien@techscapewireless.com**

Fee Owner: **City of Lake Elmo**

Address: **3800 Laverne Ave N. Lake Elmo, MN 55042**

Phone # **641-747-3900**

Email Address: **khandt@lakeelmo.org**

Property Location (Address): **11351 Upper 33rd St. N. Lake Elmo, MN 55042**

(Complete (long) Legal Description: **That part of the W 1/2 of Sec 13, Twp 29N.**

Please see survey attached with construction drawings for full property description

PID#: **1302921310018**

Detailed Reason for Request: **To permit a 125' wireless communication tower with a 9' lightning rod for a total of 134' and associated ground equipment compound for Verizon Wireless.**

*Variance Requests: As outlined in Section 301.060 C. of the Lake Elmo Municipal Code, the applicant must demonstrate practical difficulties before a variance can be granted. The practical difficulties related to this application are as follows:
Verizon seeks a variance to the expiration date of the Conditional Use Permit, requesting an initial 12-month extension due to lengthy construction process involving ordering of materials, procuring general contractors and constraints typical with construction seasons

In signing this application, I hereby acknowledge that I have read and fully understand the applicable provisions of the Zoning ordinance and current administrative procedures. I further acknowledge the fee explanation as outlined in the application procedures and hereby agree to pay all statements received from the City pertaining to additional application expense.

Signature of applicant: _____

Date: _____

5/29/18

Signature of fee owner: _____

Date: _____

Date Received: _____
Received By: _____
Permit #: _____



651-747-3900
3800 Laverne Avenue North
Lake Elmo, MN 55042

LAND USE APPLICATION

- ☐ Comprehensive Plan ☐ Zoning District Amend ☐ Zoning Text Amend ☒ Variance*(see below) ☐ Zoning Appeal
- ☐ Conditional Use Permit (C.U.P.) ☐ Flood Plain C.U.P. ☐ Interim Use Permit (I.U.P.) ☐ Excavating/Grading
- ☐ Lot Line Adjustment ☐ Minor Subdivision ☐ Residential Subdivision Sketch/Concept Plan
- ☐ PUD Concept Plan ☐ PUD Preliminary Plan ☐ PUD Final Plan ☐ Wireless Communications

Applicant: Verizon Wireless
Address: 10801 Bush Lake Road, Bloomington, MN 55438
Phone #: 952-288-8130
Email Address: kobrien@techscapewireless.com

Fee Owner: City of Lake Elmo
Address: 3800 Laverne Ave N, Lake Elmo, MN 55402
Phone #: 651-747-3905
Email Address: khandt@lakeelmo.org

Property Location (Address): Along 33rd Circle N.
(Complete (long) Legal Description: W 1/2 Sec 13 Twp 29 Rge 21

PID#: 1302921310018

Detailed Reason for Request: Variance from side setback for proposed tower to 45'-5" from 134'

*Variance Requests: As outlined in Section 301.060 C. of the Lake Elmo Municipal Code, the applicant must demonstrate practical difficulties before a variance can be granted. The practical difficulties related to this application are as follows:
The proposed tower location is the only area on the parcel suitable for building. It is tucked
away in a treed area and on higher ground. The rest of the parcel is used by the City as drainage
overflow and therefore, it must remain unimpeded.

In signing this application, I hereby acknowledge that I have read and fully understand the applicable provisions of the Zoning ordinance and current administrative procedures. I further acknowledge the fee explanation as outlined in the application procedures and hereby agree to pay all statements received from the City pertaining to additional application expense.

Signature of applicant:  Date: 5/29/2018

Signature of fee owner: _____ Date: _____



RF Justification for Proposed Site – Project Name MIN TICKLE

A handwritten signature in black ink, appearing to read "Mihaela Oxley".

Mihaela Oxley
Radio Frequency Design Engineer

This document is intended to explain the need for the Verizon Wireless site named MIN TICKLE, proposed to be constructed at the drainage facility at 11351 Upper 33rd St. N. in the city of Lake Elmo, MN 55042. The first part of the document will provide an overview of what drives the need to expand the Verizon Wireless network and will describe the concepts of coverage and capacity including examples of how these concepts are used to identify the need for the MIN TICKLE project. The second part of this document will present alternate locations that were analyzed and the reasons why the proposed site is ultimately the best location for a new cell site.

Also included in this document are maps that will evidence the need for the proposed MIN TICKLE Verizon Wireless site. As shown in these maps as well as in the analysis, the network planning activities are thorough and the location of a new cell site is deliberate in such a way that it will guarantee a positive addition to the network by means of balancing traffic between existing and new cell sites as well as adding coverage in those areas that are most needed for our customers. Verizon Wireless is committed to improving our network so that we can provide our customers with the best possible network experience.

Introduction

Within the last years, Verizon Wireless has seen a tremendous growth in network data usage. With the birth of 4G or LTE technology, a cell phone has evolved from being just a voice communications device to being a portable mini-computer that can be used for both voice calls, as well as video calls, and that can also be used for email, social media, navigation, gaming, music and much more. With the availability of LTE networks, the applications have also evolved where having a reliable and fast network connection is key to the utilization of the specific application. Take for example any website or applications that provide video services. These demand high data throughput speeds in order to allow the user to download video in real time and not experience any delays or blocking while viewing the content.

The challenges that any mobile carrier encounters is to ensure that not only are the customers able to connect to the network, but also that their connections are reliable and fast. This results in two main drivers for new cell site installations: the first one is coverage, while the second one is capacity.

Network coverage is the most important concept in wireless communications as it relates to the ability of a user to connect to the network. There are a lot of factors that have an impact on the coverage signal strength experienced by an user such as the distance between the user and the cell site, terrain in the area between the user and the serving cell site or any obstructions in this path (man-made or natural). Verizon Wireless provides the most expansive network in the US covering more square footage with our LTE network than any other carrier. It is our priority to maintain this competitive advantage and keep expanding our coverage so that we can serve our customers anywhere they go. If there are areas identified as having insufficient coverage, a new cell site will be needed in the area. In this document the concept of network coverage will be illustrated by means of Received Signal Reference Power (RSRP) maps.

Network capacity is an important concept that relates to the user experience in terms of throughput speeds. Not only does Verizon Wireless want to guarantee that our customers are able to connect in as many areas as possible, but also that our customers connections are reliable and fast. When a user connects to the network, their device connects to one specific cell site (and more specifically to a certain sector of a cell site) that is located in their proximity. The user is allocated resources on the cell site as well as a specific frequency spectrum that will be available for the user's transmission and reception of data. The more frequency spectrum available, the faster the speeds that the user device will be experiencing. The user will share the serving site's resources and available spectrum with other users that are using their devices. The more and more users try connecting to the network and using their devices, the more resources are utilized at the serving site. If the number of users is high, the serving site can reach its capacity and will no longer be able to accept new user connections. Also, if the serving cell site is running at or near capacity, the users that did manage to connect will experience very slow data speeds or could even lose their connections. Verizon Wireless monitors each cell site's performance and if a cell site's sector speeds are below a certain threshold, the sector is considered exhausting and in need of capacity offload.

Capacity offload is achieved by building new cell sites that will take over some of the traffic on the exhausting cell site's sector. The location of the new cell site needs to be chosen carefully such that enough separation is maintained between the exhausting sector and the new site to minimize interference. At the same time the new cell site needs to be close enough to a specific identified area that is driving a high amount of traffic on the existing exhausting cell site's sector. This will guarantee that the new cell site will be able to take over that traffic and thus offload the existing exhausting site. The concept of network capacity will be illustrated in this document by means of best server maps.

MIN TICKLE Project

The MIN TICKLE project has two objectives: first is to improve the levels of coverage in the city of Lake Elmo. This area has limited coverage and is currently served by Verizon Wireless sites that are located over 4 miles outside of town. The second objective is to provide capacity offload to the existing Verizon Wireless site called Northdale, and more specifically its East-facing sector, which is currently in exhaust. By satisfying these two objectives we will ensure that Verizon Wireless users will have access to a high-quality connection. This document will illustrate how the proposed MIN TICKLE site will help meet the

two objectives. In the analysis, two types of maps will be shown, each using different metrics: Reference Signal Received Power (RSRP) and Best Server coverage plots.

Reference Signal Received Power (RSRP) is a metric used to measure the strength of a signal received by a device and it is measured in dBm. Different RSRP levels translate into different probabilities that a user will be able to connect and maintain a reliable connection to the network. Typically there are 3 levels of RSRP that are referred to as good, fair and poor coverage. Typical RSRP values corresponding to the three levels are: RSRP > -85 dBm is considered “good” coverage and correspond to areas where devices both outdoors and indoors will be able to establish and maintain reliable connections. RSRP between -85 and -95 dBm is considered “fair” coverage and corresponds to areas where users will be able to establish and maintain connections outdoors, but indoor connections may be compromised. RSRP between -95 and -105 dBm is where all connections may be unreliable, especially indoors, or in areas surrounded by obstructions and foliage. Areas where the RSRP is lower than -105 dBm usually corresponds to areas where connections will be highly unlikely indoors or in areas with a lot of foliage.

The following map shows the existing RSRP (**Figure 1**) in the area surrounding the proposed site without the simulated effect of the proposed site. As can be seen in the figure, the city of Lake Elmo is situated in an area with fair and poor coverage, with several pockets of unreliable (below poor) coverage.



1 AERIAL KEY
SCALE: 1" = 50'



DESIGN
9973 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

**VERIZON
WIRELESS**
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT: 20141112995
**MINC
BALROG**
IDEAL AVENUE
LAKE ELMO, MN 55042

v.1
DRAWN BY: MJS
DATE: 05-29-18

PS-0



1 EXISTING PHOTO
VIEWED SOUTHEAST

DESIGN 1
9973 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

**VERIZON
WIRELESS**
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT: 20141112995
**MINC
BALROG**
IDEAL AVENUE
LAKE ELMO, MN 55042

v.1
DRAWN BY: MJS
DATE: 05-29-18

PS-1A



1 PROPOSED IMAGE
VIEWED SOUTHEAST

DESIGN 1
9973 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

**VERIZON
WIRELESS**
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT: 20141112995
**MINC
BALROG**
IDEAL AVENUE
LAKE ELMO, MN 55042

v.1
DRAWN BY: MJS
DATE: 05-29-18

PS-1B



1 EXISTING PHOTO
VIEWED NORTHWEST

DESIGN 1
9073 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

**VERIZON
WIRELESS**
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT: 20141112995
**MINC
BALROG**
IDEAL AVENUE
LAKE ELMO, MN 55042

v.1
DRAWN BY: MJS
DATE: 05-29-18

PS-2A



1 PROPOSED IMAGE
VIEWED NORTHWEST

DESIGN 1
9973 VALLEY VIEW ROAD
EDEN PRAIRIE, MN 55344
(952) 903-9299
WWW.DESIGN1EP.COM

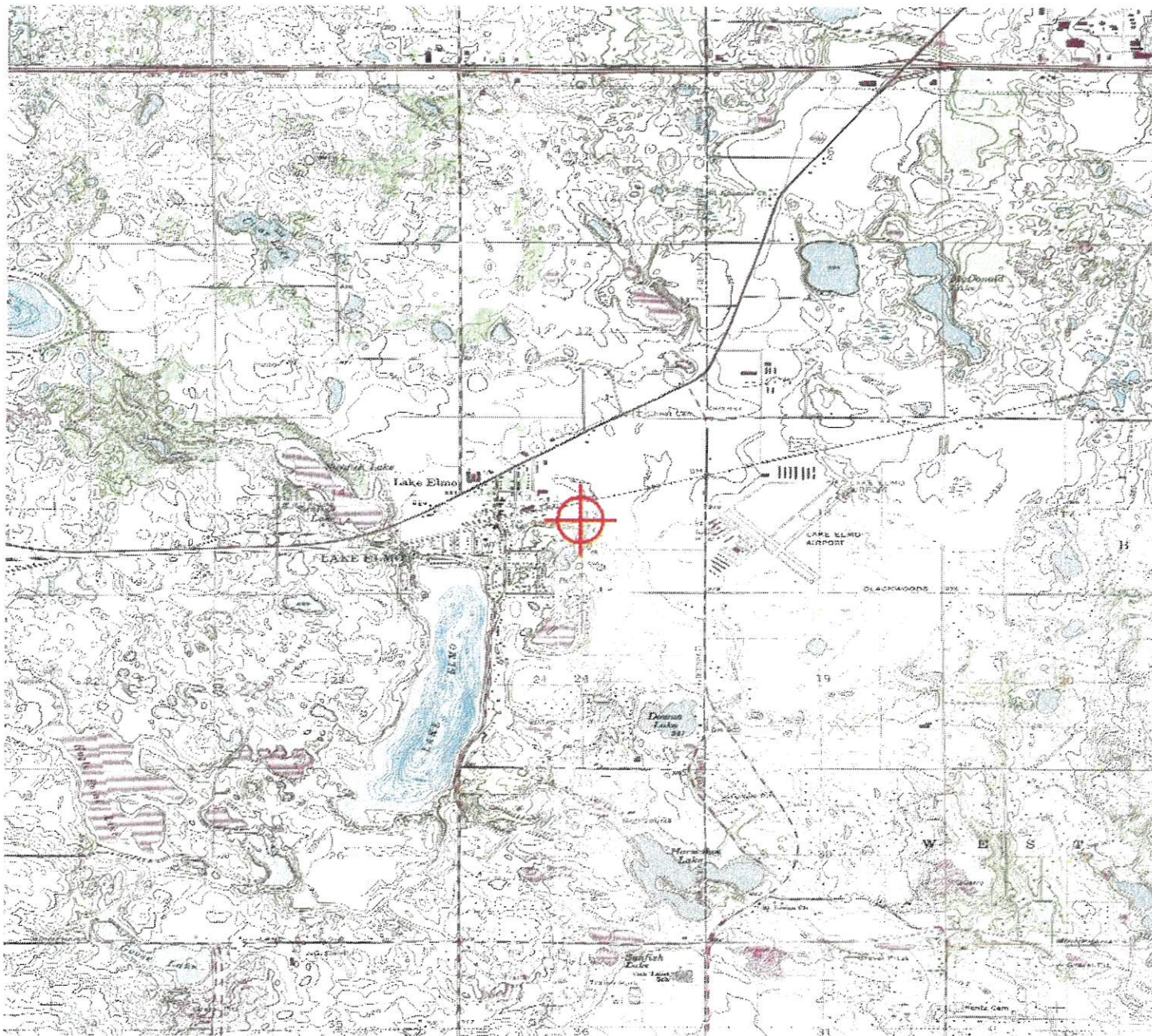
**VERIZON
WIRELESS**
10801 BUSH LAKE ROAD
BLOOMINGTON, MN 55438
(612) 720-0052

PROJECT: 20141112995
**MINC
BALROG**
IDEAL AVENUE
LAKE ELMO, MN 55042

v.1
DRAWN BY: MJS
DATE: 05-29-18

PS-2B

TOPO Map for ASN 2018-AGL-6010-OE



Existing RSRP Coverage in Area Surrounding Proposed Site (Cutoff > -105dBm)

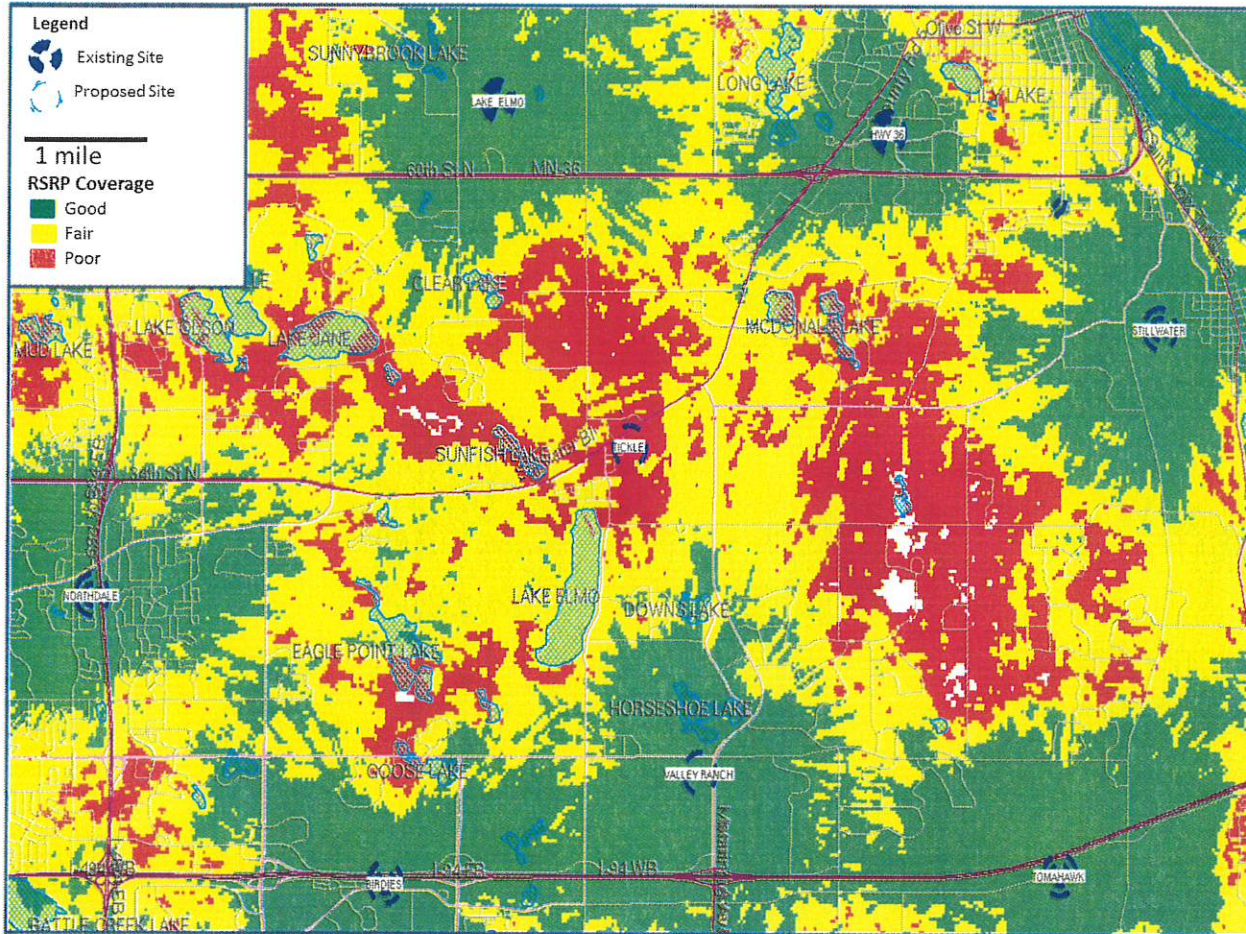


Figure 1: The above map shows the existing RSRP levels in the area surrounding the proposed MIN TICKLE site

Best server coverage plots are used in capacity analysis and show where each of the cell sites serving in the area are dominant (also referred to as serving sites), and it is used to determine the traffic levels experienced by each site. Each cell site is generally composed of 3 or more sectors, each of which can handle a certain amount of connections. If the area served by a specific sector of a site is large and covers several high traffic areas such as neighborhoods, commercial areas, sport centers, schools or highways, the experience of a user connected to that sector will generally be degraded. This is due to the fact that the server might be running at full capacity at the given time when the user is trying to connect and use its phone or smart device. Best server analysis allows us to pin point specific high data traffic areas in the serving footprint of a site's sector and propose a new cell site that will overtake the high traffic area and thus will offload the overloaded existing sector. The new cell site will serve mainly the high traffic area, while the existing site will be focused to still cover the remainder of its coverage footprint outside the high traffic area. In other cases, if an existing site is covering a large geographical area, expanding over several miles, a new site will be needed to allow the area to be divided amongst the existing and the new site. This will result in better coverage at the edge of the coverage footprint of the existing site, as well as better data speeds for our customers.

Figure 2 below shows the Best Server map for the area around the proposed site MIN TICKLE without the simulated effect of the new site. Of note is the East facing sector of NORTHDALE as well as the North facing sector of VALLEY RANCH where both sectors serve a large geographical area comprised of residential traffic, highways as well as lakes.

Existing Best Server Coverage Plot in Area Surrounding Proposed Site (Cutoff > -105dBm)

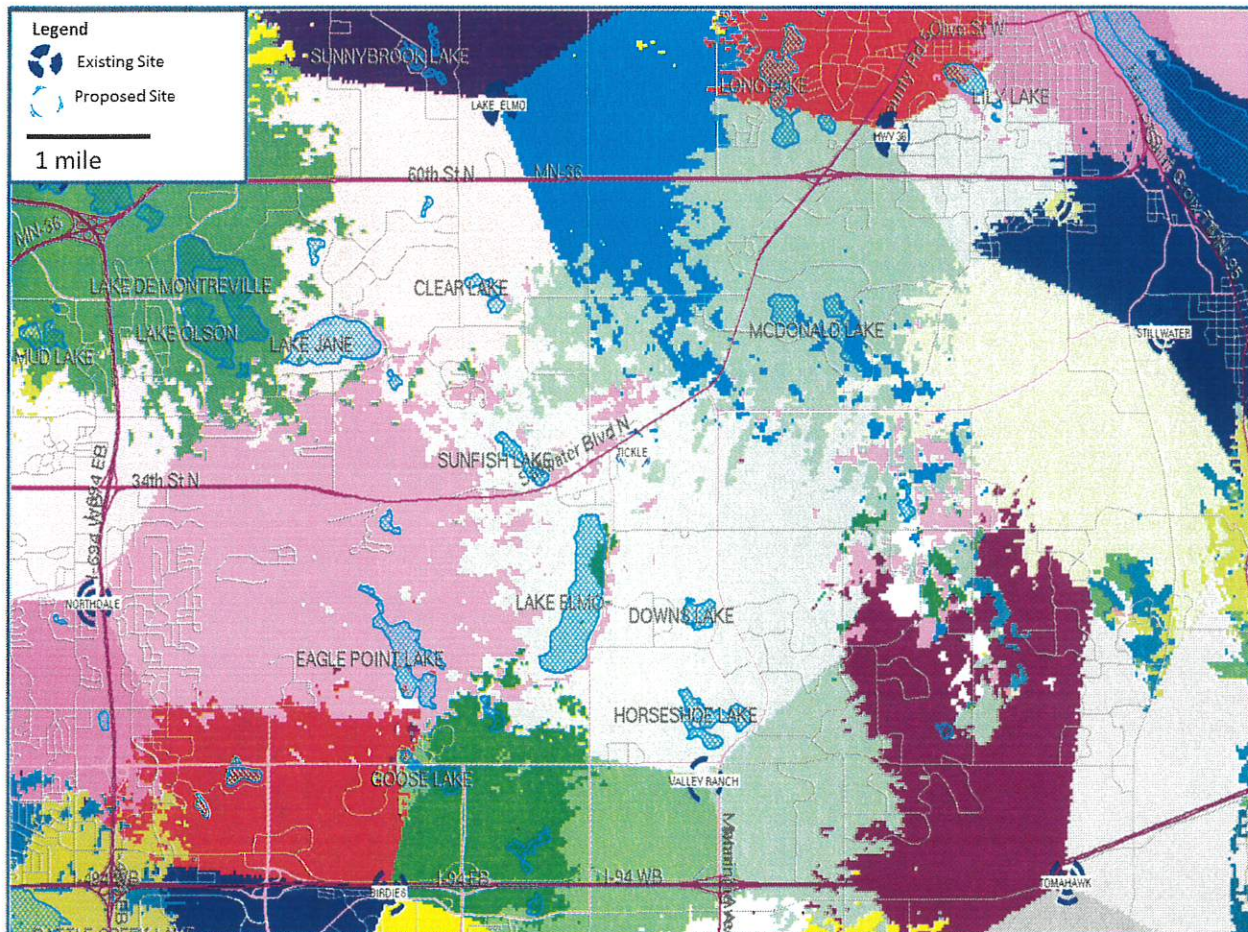


Figure 2: This map shows the existing Best Server coverage plot in the area surrounding the proposed site. Each color on the map is associated with a sector of a Verizon Wireless site, representing the serving area of that sector

The following two maps will show the effect of the proposed MIN TICKLE site. Figure 3 will show the expected effect on RSRP coverage, while Figure 4 will show the expected effect in terms of Best Server distribution. As can be seen with the addition of the MIN TICKLE site most of the areas in the city of Lake Elmo and especially downtown are expected to have good coverage, where now they are served with poor coverage levels. The entire Highway 5 will see a tremendous improvement in coverage from poor to good coverage levels which will have a positive effect on customers travelling along the highway.

In the Best Server map (Figure 4) we notice that the MIN TICKLE site will take over traffic in most of the city of Lake Elmo, and more specifically in the downtown area, the Lake Elmo Airport, Highway 5 and also the area surrounding Lake Elmo. This will have an effect on the data speeds and thus user experience for all users in the areas shown in the map and more specifically those users travelling on Highway 5, around Lake Elmo or in the city of Lake Elmo.

Expected RSRP Coverage in Area Surrounding Proposed Site (Cutoff > -105dBm)

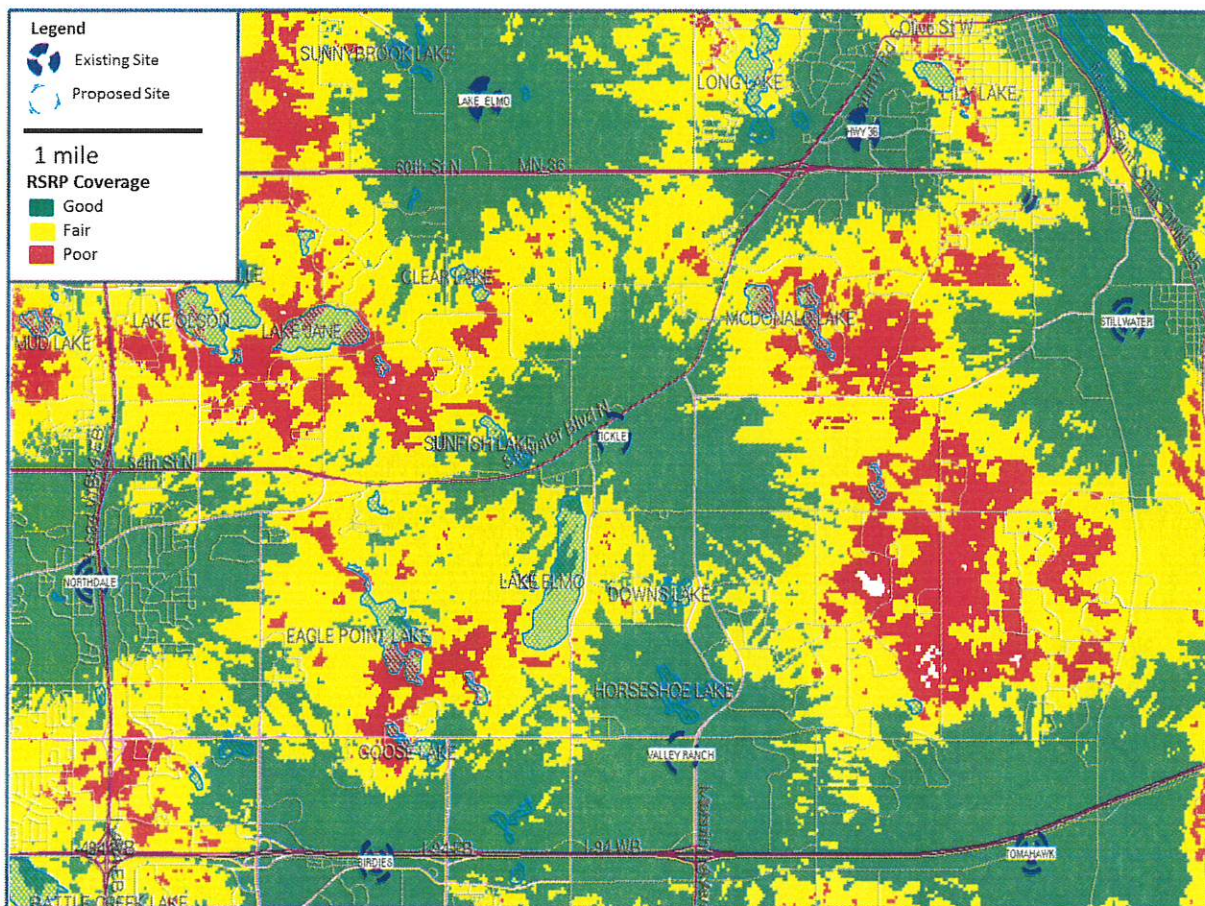


Figure 3: The above map shows the existing RSRP levels in the area surrounding the proposed MIN TICKLE site, including the simulated effect of the MIN TICKLE site

Expected Best Server Coverage Plot in Area Surrounding Proposed Site (Cutoff > -105dBm)

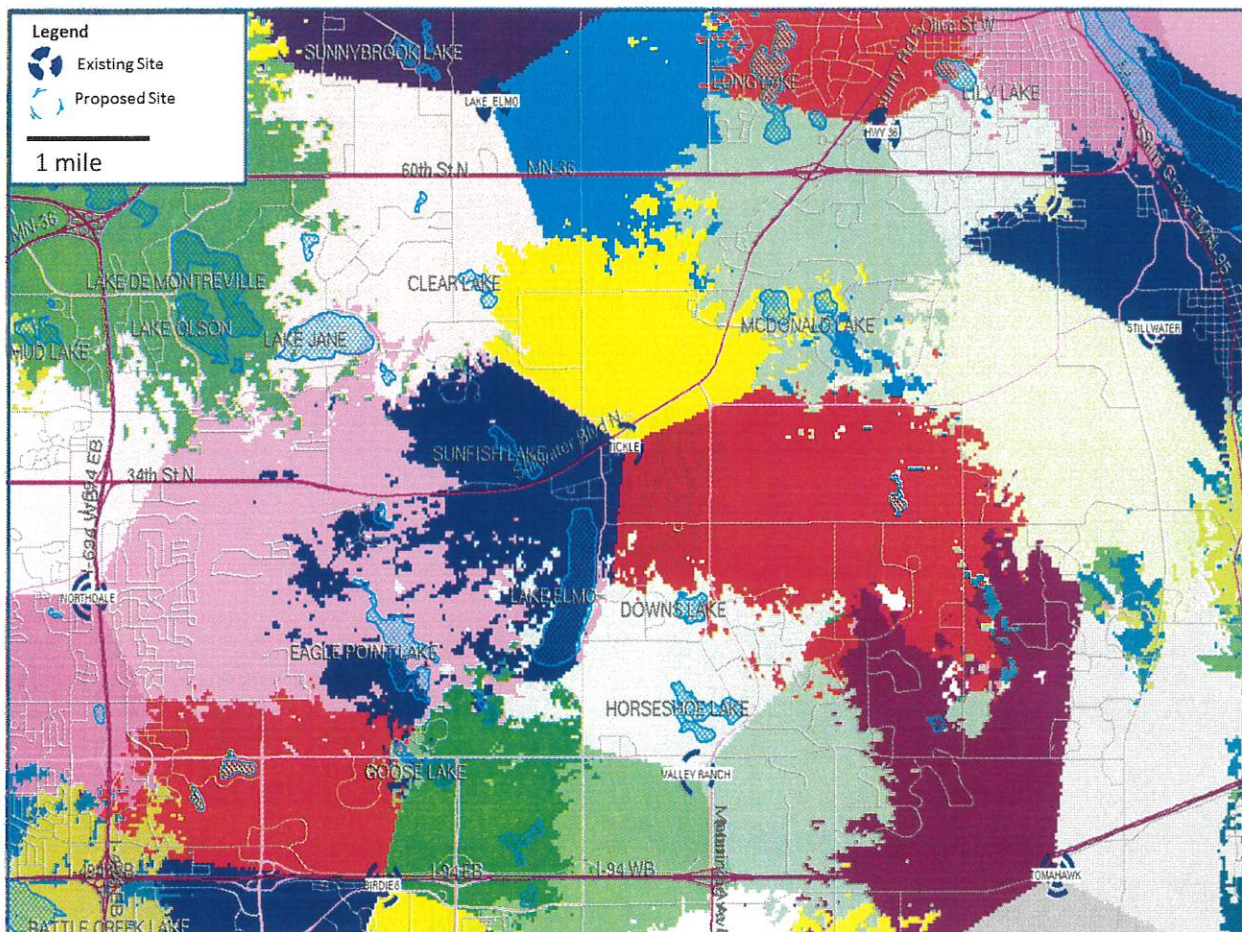


Figure 4: This map shows the existing Best Server coverage plot in the area surrounding the proposed site, including the simulated effect of the proposed site. Each color on the map is associated with a sector of a Verizon Wireless site, representing the serving area of that sector.

Alternate Locations

Verizon Wireless has been working since 2014 on a new site that will improve coverage in the City of Lake Elmo and especially in downtown. Verizon Wireless completes a thorough analysis of possible locations for a new cell site. In this analysis, Verizon Wireless also attempts to work with the communities and owners of existing cell sites or structure to co-locate if the location would help meet the objectives of the project. This has been the case with the MIN TICKLE project where an attempt was made to co-locate on the existing water tower at Langly Ct N. After discussing with the City, it was decided that the water tank is at full capacity and would not provide sufficient room for Verizon Wireless' equipment. Since this determination was made, Verizon has been working with the City to find a suitable alternative for a new tower.

The map in Figure 5 shows the alternate locations that were considered for a new cell tower.

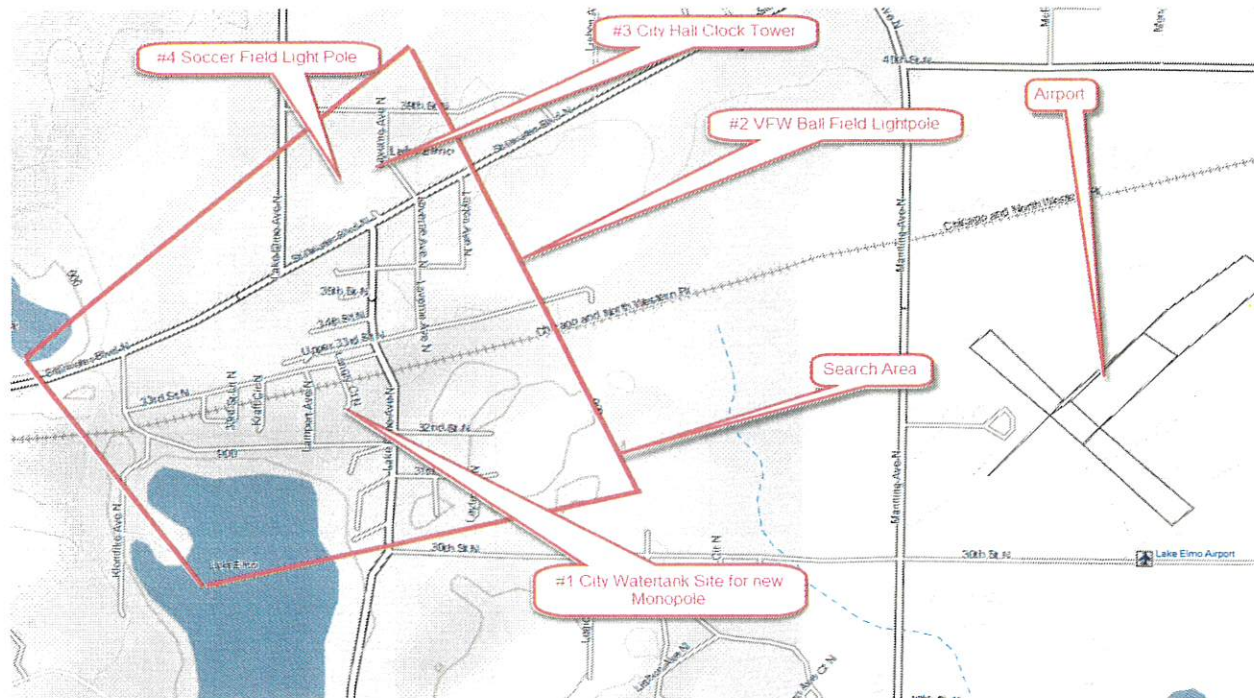


Figure 5: Search Area Map and Alternatives for New Cell Towers

The first alternate location ‘#1 City Water Tank Site for new Monopole’ was a monopole next to the existing water tower. While the location would work in terms of distance to existing Verizon Wireless towers and traffic distribution, because of the proximity of the water tower, the azimuths (antenna orientations) on the proposed site MIN TICKLE would be very restrictive and pointed in such a way that the reflections coming from the water tower can be minimized. The restrictive azimuths would also prevent MIN TICKLE from serving in certain areas that area targeted for coverage. In addition, similar sites that are in the close proximity of a water tower have shown degradation in performance of the site and thus degradation in customer experience.

Other alternative locations that were analyzed were Alternate #3 ‘City Hall Clock Tower’, as well as alternate #4 ‘Soccer Field Light Pole’. A tower located at either of Alternate #3 or Alternate #4 would provide less benefit to the network than the primary site candidate #2 VFW Ball Field Lightpole because of their location being further to the north at the edge of the City of Lake Elmo downtown. A tower at Alternate #3 or Alternate #4 of the same height as the primary Alternate #2 would provide a lower coverage footprint to the south of Highway 5 and around the lake of Lake Elmo. The expected best server map including the simulated effect of a tower at Alternate #3 is shown in Figure 6 below. As can be seen in the figure, if the MIN TICKLE site would be located at this location, it would not provide dominant coverage around the lake of Lake Elmo. This would also mean that less capacity offload would be provided to the existing Northdale and Valley Ranch sites. Similar behavior is expected of a tower that would be located at Alternate #4. Alternate #3 City Hall Clock Tower and Alternate #4 Soccer Field Light Pole would require a higher tower height (approximately 130’), in order to provide the same

coverage footprint south of Highway 5 and around Lake Elmo that alternate #2 VFW Ball Field Lightpole at an overall tower height of 100' would.

Moreover, if the proposed tower type at the Alternate #3 and Alternate #4 needs to be of stealth design such that the antenna would not be visible to the outside, the design would place the radio transmitters on the ground, increasing the distance from transmitter to the antenna. This means that the overall system line losses will be higher and the total transmission power out of the antennas will be lower. The direct result of this will be a decreased coverage footprint of the site.

Expected Best Server Coverage Plot in Area Surrounding Proposed Site at Alternate #3 (Cutoff > -105dBm)

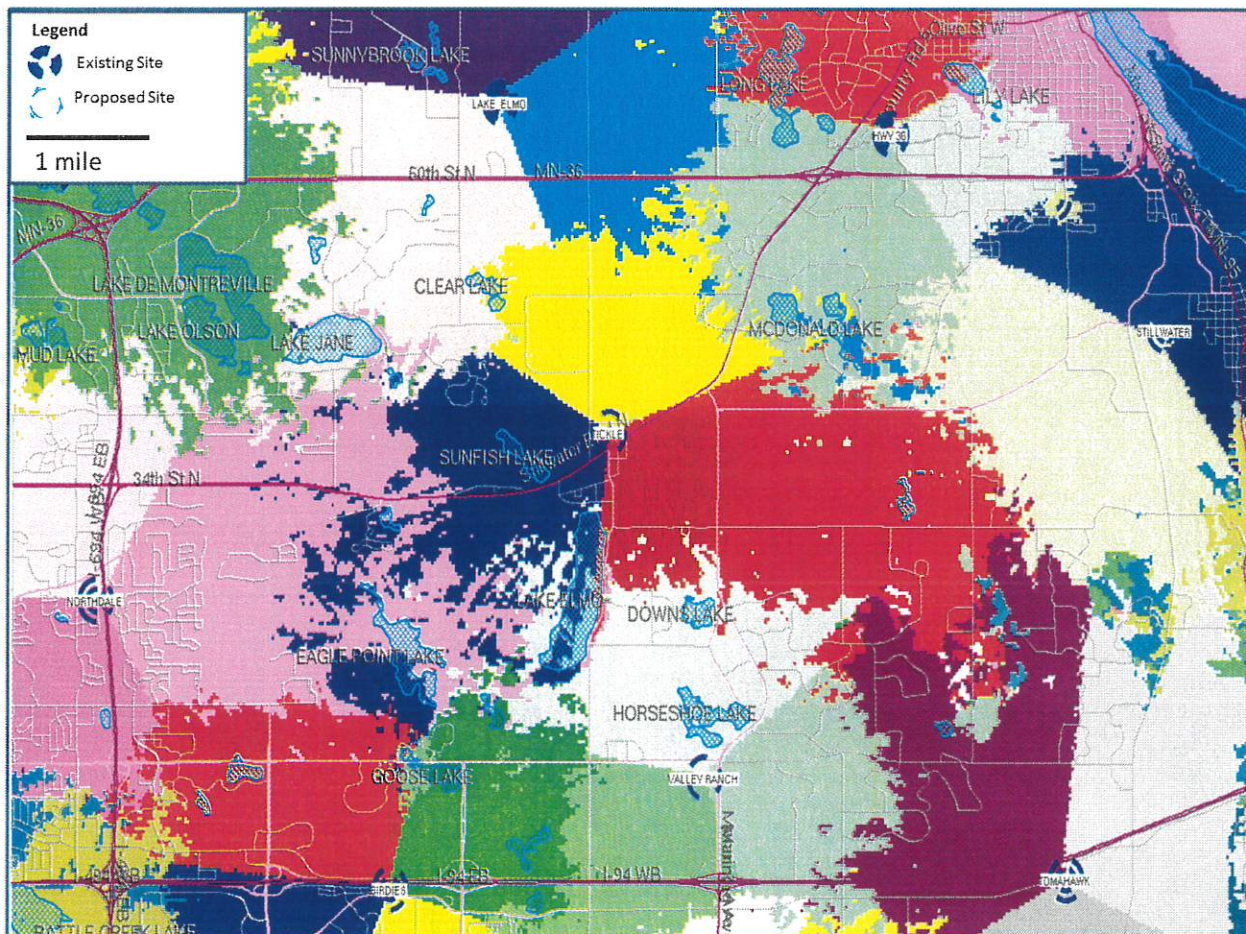


Figure 6: This map shows the existing Best Server coverage plot in the area surrounding the proposed site, including the simulated effect of the proposed site. Each color on the map is associated with a sector of a Verizon Wireless site, representing the serving area of that sector.



Mail Processing Center
Federal Aviation Administration
Southwest Regional Office
Obstruction Evaluation Group
10101 Hillwood Parkway
Fort Worth, TX 76177

Aeronautical Study No.
2018-AGL-6010-OE

Issued Date: 04/18/2018

Network Regulatory
Verizon Wireless (VAW) LLC
5055 North Point Pkwy
NP2NE Network Engineering
Alpharetta, GA 30022

**** DETERMINATION OF NO HAZARD TO AIR NAVIGATION ****

The Federal Aviation Administration has conducted an aeronautical study under the provisions of 49 U.S.C., Section 44718 and if applicable Title 14 of the Code of Federal Regulations, part 77, concerning:

Structure:	Monopole MIN Tickle - B (2446367)
Location:	Lake Elmo, MN
Latitude:	44-59-54.28N NAD 83
Longitude:	92-52-23.47W
Heights:	931 feet site elevation (SE) 134 feet above ground level (AGL) 1065 feet above mean sea level (AMSL)

This aeronautical study revealed that the structure does not exceed obstruction standards and would not be a hazard to air navigation provided the following condition(s), if any, is(are) met:

It is required that FAA Form 7460-2, Notice of Actual Construction or Alteration, be e-filed any time the project is abandoned or:

- ☐ At least 10 days prior to start of construction (7460-2, Part 1)
☒ Within 5 days after the construction reaches its greatest height (7460-2, Part 2)

See attachment for additional condition(s) or information.

To coordinate frequency activation and verify that no interference is caused to FAA facilities, prior to beginning any transmission from the site you must contact Kevin Nagel, Southeast MN SSC Manager, 651-312-8871 .

Based on this evaluation, marking and lighting are not necessary for aviation safety. However, if marking/lighting are accomplished on a voluntary basis, we recommend it be installed in accordance with FAA Advisory circular 70/7460-1 L Change 1.

This determination expires on 10/18/2019 unless:

- (a) the construction is started (not necessarily completed) and FAA Form 7460-2, Notice of Actual Construction or Alteration, is received by this office.
- (b) extended, revised, or terminated by the issuing office.

- (c) the construction is subject to the licensing authority of the Federal Communications Commission (FCC) and an application for a construction permit has been filed, as required by the FCC, within 6 months of the date of this determination. In such case, the determination expires on the date prescribed by the FCC for completion of construction, or the date the FCC denies the application.

NOTE: REQUEST FOR EXTENSION OF THE EFFECTIVE PERIOD OF THIS DETERMINATION MUST BE E-FILED AT LEAST 15 DAYS PRIOR TO THE EXPIRATION DATE. AFTER RE-EVALUATION OF CURRENT OPERATIONS IN THE AREA OF THE STRUCTURE TO DETERMINE THAT NO SIGNIFICANT AERONAUTICAL CHANGES HAVE OCCURRED, YOUR DETERMINATION MAY BE ELIGIBLE FOR ONE EXTENSION OF THE EFFECTIVE PERIOD.

This determination of No Hazard is granted provided the following conditional statement is included in the proponent's construction permit or license to radiate:

Upon receipt of notification from the Federal Communications Commission that harmful interference is being caused by the licensee's (permittee's) transmitter, the licensee (permittee) shall either immediately reduce the power to the point of no interference, cease operation, or take such immediate corrective action as is necessary to eliminate the harmful interference. This condition expires after 1 year of interference-free operation.

This determination is based, in part, on the foregoing description which includes specific coordinates, heights, frequency(ies) and power. Any changes in coordinates, heights, and frequencies or use of greater power, except those frequencies specified in the Colo Void Clause Coalition; Antenna System Co-Location; Voluntary Best Practices, effective 21 Nov 2007, will void this determination. Any future construction or alteration, including increase to heights, power, or the addition of other transmitters, requires separate notice to the FAA. This determination includes all previously filed frequencies and power for this structure.

If construction or alteration is dismantled or destroyed, you must submit notice to the FAA within 5 days after the construction or alteration is dismantled or destroyed.

This determination does include temporary construction equipment such as cranes, derricks, etc., which may be used during actual construction of the structure. However, this equipment shall not exceed the overall heights as indicated above. Equipment which has a height greater than the studied structure requires separate notice to the FAA.

This determination concerns the effect of this structure on the safe and efficient use of navigable airspace by aircraft and does not relieve the sponsor of compliance responsibilities relating to any law, ordinance, or regulation of any Federal, State, or local government body.

A copy of this determination will be forwarded to the Federal Communications Commission (FCC) because the structure is subject to their licensing authority.

This determination cancels and supersedes prior determinations issued for this structure.

If we can be of further assistance, please contact our office at (718) 553-2611, or angelique.eersteling@faa.gov. On any future correspondence concerning this matter, please refer to Aeronautical Study Number 2018-AGL-6010-OE.

Signature Control No: 360999521-362995087

(DNE)

Angelique Eersteling
Technician

Attachment(s)
Additional Information
Frequency Data
Map(s)

cc: FCC

Additional information for ASN 2018-AGL-6010-OE

Upon receipt of notification from the Federal Communications Commission that harmful interference is being caused by the licensee's (permittee's) transmitter, the licensee (permittee) shall either immediately reduce the power to the point of no interference, cease operation or take such immediate corrective action as is necessary to eliminate the harmful interference.

This condition expires after 1 year of interference-free operation. FAA facilities critical to aviation safety are located less than 1 nm from your proposed transmitter site. You may cause harmful interference to these facilities if your equipment meets only minimum FCC standards for spurious emissions. Before you begin any transmission from your facility, contact Southeast MN SSC Manager, 651-312-8871 to arrange procedures to verify that no interference is caused.

FCC requirements in: 47 CFR 73.44 (c) (AM Broadcast) 47 CFR 22.907 (c) (Fixed Cellular) 47 CFR 21.106 (c) (Common Carrier Fixed Microwave) 47 CFR 74.23 (a) Broadcast Auxiliary Transmitters) 47 CFR 94.71 (d) (operational fixed service frequency). Indicate that the licensees may need to employ extra filtering or take other measures if their transmissions disrupt other services. The commission requires its licensees to cooperate fully with other Federal agencies (users in other services) in this case the FAA to eliminate any harmful interference covered by the above requirement.

Frequency Data for ASN 2018-AGL-6010-OE

LOW FREQUENCY	HIGH FREQUENCY	FREQUENCY UNIT	ERP	ERP UNIT
6	7	GHz	55	dBW
6	7	GHz	42	dBW
10	11.7	GHz	55	dBW
10	11.7	GHz	42	dBW
17.7	19.7	GHz	55	dBW
17.7	19.7	GHz	42	dBW
21.2	23.6	GHz	55	dBW
21.2	23.6	GHz	42	dBW
614	698	MHz	1000	W
614	698	MHz	2000	W
698	806	MHz	1000	W
806	901	MHz	500	W
806	824	MHz	500	W
824	849	MHz	500	W
851	866	MHz	500	W
869	894	MHz	500	W
896	901	MHz	500	W
901	902	MHz	7	W
929	932	MHz	3500	W
930	931	MHz	3500	W
931	932	MHz	3500	W
932	932.5	MHz	17	dBW
935	940	MHz	1000	W
940	941	MHz	3500	W
1670	1675	MHz	500	W
1710	1755	MHz	500	W
1850	1910	MHz	1640	W
1850	1990	MHz	1640	W
1930	1990	MHz	1640	W
1990	2025	MHz	500	W
2110	2200	MHz	500	W
2305	2360	MHz	2000	W
2305	2310	MHz	2000	W
2345	2360	MHz	2000	W
2496	2690	MHz	500	W

REFERENCE COPY

This is not an official FCC license. It is a record of public information contained in the FCC's licensing database on the date that this reference copy was generated. In cases where FCC rules require the presentation, posting, or display of an FCC license, this document may not be used in place of an official FCC license.



**Federal Communications Commission
Wireless Telecommunications Bureau**

RADIO STATION AUTHORIZATION

LICENSEE: VERIZON WIRELESS (VAW) LLC

ATTN: REGULATORY
VERIZON WIRELESS (VAW) LLC
5055 NORTH POINT PKWY, NP2NE NETWORK ENGINEERING
ALPHARETTA, GA 30022

Call Sign KNKA219	File Number
Radio Service CL - Cellular	
Market Numer CMA015	Channel Block B
Sub-Market Designator 0	

FCC Registration Number (FRN): 0003800307

Market Name Minneapolis-St. Paul, MN-WI				
Grant Date 08-26-2014	Effective Date 11-04-2016	Expiration Date 10-01-2024	Five Yr Build-Out Date	Print Date

Site Information:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
2	44-43-54.9 N	093-08-08.8 W	292.3	56.7	

Address: 14950 CHIPPENDALE RD.
City: ROSEMOUNT **County:** DAKOTA **State:** MN **Construction Deadline:**

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	69.700	84.200	73.600	67.100	60.500	46.100	52.600	76.700
Transmitting ERP (watts)	209.760	63.350	0.870	0.460	0.580	0.460	27.020	170.500

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	69.700	84.200	73.500	67.100	60.500	46.100	52.700	76.700
Transmitting ERP (watts)	3.020	69.170	234.390	181.940	28.180	0.500	0.500	0.500

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	69.700	84.200	73.600	67.100	60.500	46.100	52.700	76.700
Transmitting ERP (watts)	0.200	0.200	0.200	4.500	49.320	100.690	48.190	2.840

Conditions:

Pursuant to §309(h) of the Communications Act of 1934, as amended, 47 U.S.C. §309(h), this license is subject to the following conditions: This license shall not vest in the licensee any right to operate the station nor any right in the use of the frequencies designated in the license beyond the term thereof nor in any other manner than authorized herein. Neither the license nor the right granted thereunder shall be assigned or otherwise transferred in violation of the Communications Act of 1934, as amended. See 47 U.S.C. § 310(d). This license is subject in terms to the right of use or control conferred by §706 of the Communications Act of 1934, as amended. See 47 U.S.C. §606.

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
4	45-09-37.9 N	093-01-39.8 W	277.1	50.9	1023107

Address: 7050 OTTER LAKE RD

City: Hugo County: ANOKA State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	49.600	38.800	26.200	29.000	41.800	43.800	51.700	50.200
Transmitting ERP (watts)	199.720	72.510	6.920	0.430	0.430	4.170	4.710	169.990

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	49.600	38.800	26.200	29.000	41.800	43.800	51.700	50.200
Transmitting ERP (watts)	7.980	79.840	200.550	159.300	37.340	3.410	0.420	0.540

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	49.600	38.800	26.200	29.000	41.800	43.800	51.700	50.200
Transmitting ERP (watts)	1.240	0.380	1.300	18.370	113.270	192.360	105.710	14.930

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
5	45-11-12.9 N	093-33-00.9 W	293.5	80.2	1023048

Address: SUNSHINE PARK MAIN ST

City: ROGERS County: HENNEPIN State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	93.700	100.000	101.500	86.400	77.500	69.900	80.000	85.000
Transmitting ERP (watts)	226.180	68.300	0.940	0.490	0.620	0.490	29.140	183.840

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	93.700	100.000	101.500	86.400	77.500	69.900	80.000	85.000
Transmitting ERP (watts)	2.910	37.410	43.580	49.440	23.020	0.470	0.470	0.470

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	93.700	100.000	101.500	86.400	77.500	69.900	80.000	85.000
Transmitting ERP (watts)	0.180	0.180	0.180	4.020	44.080	90.000	43.080	2.540

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
6	45-03-10.0 N	093-49-54.0 W	286.5	148.4	1022990

Address: (Delano) COUNTY STATE HWY 14

City: FRANKLIN County: WRIGHT State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	136.200	133.200	129.500	137.100	134.300	129.500	128.400	140.900
Transmitting ERP (watts)	3.960	3.100	0.250	0.250	0.250	1.590	22.440	70.960

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	136.200	133.200	129.500	137.100	134.300	129.500	128.400	140.900
Transmitting ERP (watts)	3.390	3.040	61.870	22.580	1.820	0.290	0.290	0.290

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	136.200	133.200	129.500	137.100	134.300	129.500	128.400	140.900
Transmitting ERP (watts)	0.290	0.290	0.730	12.910	93.540	102.570	18.660	0.690

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
7	45-32-40.8 N	092-58-20.4 W	281.9	149.3	1023116

Address: (North Branch) 0.3 Miles East on CR 30 410th Street

City: North Branch County: CHISAGO State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	146.100	167.400	159.900	155.200	150.200	144.600	136.000	140.800
Transmitting ERP (watts)	138.040	69.180	8.970	0.690	0.280	1.380	16.980	91.200

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	149.900	168.000	160.500	155.800	151.100	145.200	136.600	141.400
Transmitting ERP (watts)	0.160	1.450	19.500	79.430	19.500	1.410	0.180	0.150

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	151.500	172.500	165.000	160.400	155.700	149.800	141.200	146.000
Transmitting ERP (watts)	0.270	0.280	2.510	33.880	138.040	39.880	2.450	0.310

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
8	45-02-10.9 N	092-20-59.7 W	349.9	152.1	1023118

Address: 4.35 MI N

City: BALDWIN County: ST. CROIX State: WI Construction Deadline:

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	159.100	130.400	132.900	119.100	129.900	153.200	164.300	164.900
Transmitting ERP (watts)	0.300	0.330	0.300	0.380	0.300	0.330	0.300	141.250

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	166.600	137.900	140.400	126.600	137.400	160.600	171.800	172.400
Transmitting ERP (watts)	16.220	15.490	15.140	15.140	15.850	15.490	15.850	15.850

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
9	44-37-52.9 N	093-20-42.8 W	335.3	105.8	1022988

Address: VERNON AVENUE

City: LAKEVILLE County: SCOTT State: MN Construction Deadline:

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	99.600	66.100	84.600	65.400	44.900	72.300	90.500	88.000
Transmitting ERP (watts)	32.970	8.480	0.290	0.100	0.100	0.100	3.870	26.800

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	157.500	124.000	142.500	123.400	102.800	130.200	148.400	145.900
Transmitting ERP (watts)	0.150	4.050	14.360	11.150	1.440	0.100	0.100	0.100

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	157.500	124.000	142.500	123.400	102.800	130.200	148.400	145.900
Transmitting ERP (watts)	0.100	0.100	0.100	0.570	7.360	15.390	6.870	0.440

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
10	44-46-40.9 N	093-44-49.9 W	292.6	148.7	1026274

Address: 8810 Highway 212

City: COLOGNE County: CARVER State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	144.200	139.000	175.700	184.900	170.700	145.500	141.400	142.800
Transmitting ERP (watts)	103.970	52.110	6.710	0.520	0.210	1.040	12.790	68.690

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
10	44-46-40.9 N	093-44-49.9 W	292.6	148.7	1026274

Address: 8810 Highway 212

City: COLOGNE County: CARVER State: MN Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	144.200	139.000	175.700	184.900	170.700	145.500	141.400	142.800
Transmitting ERP (watts)	7.590	48.980	85.110	47.860	7.080	0.580	0.170	0.630

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	143.600	138.400	175.100	184.300	170.000	144.900	140.800	142.200
Transmitting ERP (watts)	1.820	0.210	0.550	8.730	57.700	105.000	81.510	22.450

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
11	45-15-49.0 N	093-20-42.0 W	272.8	61.0	1023117

Address: NE OF INT OF ROUND LAKE

City: ANDOVER County: ANOKA State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	56.700	56.600	57.100	59.900	68.500	65.300	64.500	55.700
Transmitting ERP (watts)	90.000	32.680	3.120	0.190	0.190	1.880	20.150	76.600

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	56.700	56.600	57.100	59.900	68.500	65.300	64.500	55.700
Transmitting ERP (watts)	5.440	54.370	136.560	108.480	25.430	2.320	0.290	0.440

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	56.700	56.600	57.100	59.900	68.500	65.300	64.500	55.700
Transmitting ERP (watts)	0.900	0.280	0.950	13.370	82.440	140.000	76.940	10.870

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
12	45-11-47.9 N	093-57-31.9 W	317.0	94.2	1023111

Address: 2.47 MI SE

City: MAPLE LAKE County: WRIGHT State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	100.200	109.000	107.200	118.800	108.400	106.300	89.800	97.400
Transmitting ERP (watts)	26.740	14.030	0.950	0.100	0.100	0.100	1.140	13.400

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
12	45-11-47.9 N	093-57-31.9 W	317.0	94.2	1023111

Address: 2.47 MI SE

City: MAPLE LAKE County: WRIGHT State: MN Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	100.200	109.000	107.200	118.800	108.400	106.300	89.800	97.400
Transmitting ERP (watts)	0.630	14.520	49.210	38.200	5.920	0.100	0.100	0.100

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	100.200	109.000	107.200	118.800	108.400	106.300	89.800	97.400
Transmitting ERP (watts)	0.360	0.360	0.360	10.660	47.870	165.990	134.920	21.880

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
13	45-19-50.9 N	093-00-09.8 W	274.3	60.1	

Address: FALLBROOK ROAD & 265TH STREET

City: WYOMING County: CHISAGO State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.800	63.400	53.200	50.200	56.800	57.900	58.100	58.000
Transmitting ERP (watts)	41.960	159.530	126.720	22.530	2.010	0.360	0.360	3.410

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	55.700	61.300	51.100	48.100	54.700	55.800	55.900	55.800
Transmitting ERP (watts)	0.360	2.870	28.020	131.060	176.800	75.420	8.270	0.630

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.800	63.400	53.200	50.200	56.800	57.900	58.100	57.900
Transmitting ERP (watts)	1.270	0.440	0.440	0.440	0.440	3.350	17.530	22.140

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
16	44-44-33.9 N	092-53-36.7 W	274.9	39.6	

Address: 1800 W 4th Street

City: Hasting County: DAKOTA State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.800	37.700	47.800	44.300	28.400	34.000	26.200	65.300
Transmitting ERP (watts)	80.940	24.440	0.340	0.180	0.220	0.180	10.430	65.790

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
16	44-44-33.9 N	092-53-36.7 W	274.9	39.6	

Address: 1800 W 4th Street

City: Hasting County: DAKOTA State: MN Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	30.800	37.700	47.800	44.300	28.400	34.000	26.200	65.300
Transmitting ERP (watts)	0.650	14.860	50.360	39.090	6.050	0.110	0.110	0.110

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	46.600	53.600	63.600	60.100	44.200	49.900	42.100	81.200
Transmitting ERP (watts)	0.200	0.200	0.200	4.470	49.060	100.160	47.940	2.820

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
18	44-40-43.0 N	093-36-31.0 W	285.0	107.3	1023110

Address: 4255 185th St. West

City: Jordan County: SCOTT State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	115.800	69.000	54.800	57.800	60.100	63.100	85.400	79.300
Transmitting ERP (watts)	44.690	13.500	0.190	0.100	0.120	0.100	5.760	36.320

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	128.600	81.800	67.600	70.600	72.900	75.900	98.400	92.100
Transmitting ERP (watts)	1.130	25.890	87.720	68.090	10.550	0.190	0.190	0.190

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	112.700	66.000	51.800	54.700	57.000	60.000	82.500	76.300
Transmitting ERP (watts)	0.360	0.360	0.360	8.040	88.460	180.000	86.150	5.070

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
20	45-07-23.6 N	092-16-22.5 W	368.5	123.9	1227107

Address: 2618 County Road S

City: Emerald County: ST. CROIX State: WI Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	141.800	125.100	139.600	142.500	116.000	140.500	172.500	156.300
Transmitting ERP (watts)	5.830	6.500	0.780	0.100	0.100	0.220	4.310	6.500

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
20	45-07-23.6 N	092-16-22.5 W	368.5	125.9	1227107

Address: 2618 County Road S

City: Emerald County: ST. CROIX State: WI Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	141.800	125.100	139.600	142.500	116.000	140.500	172.500	156.300
Transmitting ERP (watts)	1.410	12.570	22.690	21.620	7.660	0.500	0.100	0.100

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	141.800	125.100	139.600	142.500	116.000	140.500	172.500	156.300
Transmitting ERP (watts)	0.670	0.200	0.230	5.570	41.080	91.040	57.640	9.780

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
21	45-07-32.0 N	092-35-26.4 W	315.2	60.7	1206290

Address: 1820 110th Street

City: New Richmond County: ST. CROIX State: WI Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	82.300	64.300	65.300	61.900	71.400	94.300	109.100	84.900
Transmitting ERP (watts)	3.010	0.250	0.100	0.100	0.160	1.290	12.270	21.830

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	82.300	64.300	65.300	61.900	71.400	94.300	109.100	84.900
Transmitting ERP (watts)	3.660	24.890	50.000	26.300	3.850	0.200	0.100	0.190

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	82.300	64.300	65.300	61.900	71.400	94.300	109.100	84.900
Transmitting ERP (watts)	0.150	0.150	0.910	10.890	54.340	69.210	23.080	2.430

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
22	45-20-41.7 N	093-14-00.8 W	279.8	60.9	1228419

Address: 20675 NE Highway 65

City: East Bethel County: ANOKA State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	38.400	40.800	45.500	45.400	46.600	48.000	45.700	39.500
Transmitting ERP (watts)	27.860	16.660	2.690	0.110	0.100	0.110	2.560	15.770

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
22	45-20-41.7 N	093-14-00.8 W	279.8	60.9	1228419

Address: 20675 NE Highway 65

City: East Bethel County: ANOKA State: MN Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	38.400	40.800	45.500	45.400	46.600	48.900	45.700	39.500
Transmitting ERP (watts)	0.870	10.330	51.520	65.610	21.880	2.300	0.140	0.140

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	38.400	40.800	45.500	45.400	46.600	48.900	45.700	39.500
Transmitting ERP (watts)	1.030	0.140	0.140	2.020	19.860	64.420	52.970	11.560

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
23	45-03-56.0 N	092-12-13.6 W	379.2	91.1	1226245

Address: 1408 300th St.

City: Glenwood City County: ST. CROIX State: WI Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.800	139.300	153.400	135.000	100.800	89.800	112.600	117.300
Transmitting ERP (watts)	48.980	19.490	2.340	0.200	0.200	0.230	2.000	17.820

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.800	139.300	153.400	135.000	100.800	89.800	112.600	117.300
Transmitting ERP (watts)	0.150	0.420	4.940	37.290	47.390	6.860	0.530	0.150

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	96.800	139.300	153.400	135.000	100.800	89.800	112.600	117.300
Transmitting ERP (watts)	4.480	0.210	0.200	0.990	11.450	62.430	89.730	37.150

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
25	44-34-22.7 N	093-17-37.9 W	344.5	80.7	1203787

Address: 11236 Deuce Rd.

City: Elko County: SCOTT State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	87.200	112.300	100.100	100.100	86.900	68.500	88.000	89.100
Transmitting ERP (watts)	30.270	6.610	0.590	0.100	0.100	0.130	11.350	36.820

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
25	44-34-22.7 N	093-17-37.9 W	344.5	80.7	1203787

Address: 11236 Deuce Rd

City: Elko County: SCOTT State: MN Construction Deadline:

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	87.200	112.300	100.100	100.100	86.900	68.500	88.000	89.100
Transmitting ERP (watts)	5.860	39.820	80.000	42.080	6.150	0.320	0.160	0.310

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	87.200	112.300	100.100	100.100	86.900	68.500	88.000	89.100
Transmitting ERP (watts)	0.100	0.100	0.200	2.920	10.560	12.310	5.750	0.620

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
26	45-39-16.4 N	092-58-44.5 W	285.6	60.4	1226303

Address: 48520 Gallant Avenue

City: Rush County: CHISAGO State: MN Construction Deadline:

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	50.600	73.700	72.100	89.600	59.600	50.000	50.600	52.200
Transmitting ERP (watts)	37.530	14.320	14.490	0.100	0.100	0.540	7.740	31.540

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	50.600	73.700	72.100	89.600	59.600	50.000	50.600	52.200
Transmitting ERP (watts)	1.540	14.890	46.450	37.150	7.850	0.680	0.100	0.100

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	50.600	73.700	72.100	89.600	59.600	50.000	50.600	52.200
Transmitting ERP (watts)	0.210	0.100	0.220	3.850	25.760	49.890	25.530	3.640

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
27	45-15-09.3 N	094-05-35.0 W	322.2	57.9	

Address: (Annandale) 9938 State Hwy 55 NW, P.O. Box 340

City: Annandale County: WRIGHT State: MN Construction Deadline:

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	54.500	50.700	51.700	47.700	45.800	44.700	36.100	39.000
Transmitting ERP (watts)	35.480	1.550	0.350	0.350	0.780	13.800	117.490	158.490

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
27	45-15-09.3 N	094-05-35.0 W	322.2	57.9	

Address: (Annandale) 9938 State Hwy 55 NW, P.O. Box 340

City: Annandale County: WRIGHT State: MN Construction Deadline:

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	54.500	50.700	51.700	47.700	45.800	44.700	36.100	39.000
Transmitting ERP (watts)	42.660	204.170	147.910	18.200	0.600	0.450	0.450	2.570

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	54.500	50.700	51.700	47.700	45.800	44.700	36.100	39.000
Transmitting ERP (watts)	0.450	0.520	6.920	89.130	223.870	89.130	6.920	0.450

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
28	44-34-33.0 N	092-57-30.0 W	320.0	79.2	1244093

Address: 25734 Rochester Road

City: Randolph County: DAKOTA State: MN Construction Deadline: 12-29-2005

Antenna: 4

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	123.000	122.300	108.400	109.700	103.600	118.400	97.100	116.600
Transmitting ERP (watts)	36.480	34.050	4.390	0.320	0.100	0.100	0.440	5.780

Antenna: 5

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	92.500	91.800	78.000	79.200	73.100	88.000	66.600	86.100
Transmitting ERP (watts)	0.100	0.570	1.700	1.380	1.390	1.270	0.270	0.100

Antenna: 6

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	123.000	122.300	108.400	109.700	103.600	118.400	97.100	116.600
Transmitting ERP (watts)	4.390	0.320	0.100	0.100	0.440	5.780	36.480	34.050

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
30	45-00-22.9 N	093-23-57.8 W	282.5	60.5	

Address: 2510 Mendelssohn Avenue North

City: Golden Valley County: HENNEPIN State: MN Construction Deadline:

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	57.100	66.500	59.300	62.900	53.500	38.600	26.800	38.000
Transmitting ERP (watts)	83.770	28.390	2.590	0.180	0.180	1.130	14.230	66.540

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
30	45-00-22.9 N	093-23-57.8 W	282.5	60.5	

Address: 2510 Mendelssohn Avenue North

City: Golden Valley County: HENNEPIN State: MN Construction Deadline:

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	47.600	57.000	49.900	53.400	44.000	29.100	17.400	28.500
Transmitting ERP (watts)	3.120	31.170	51.390	50.030	18.970	1.040	0.260	0.260

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	47.600	57.000	49.900	53.400	44.000	29.100	17.400	28.500
Transmitting ERP (watts)	5.100	5.420	6.300	9.730	13.160	11.920	8.280	5.450

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
31	44-57-40.9 N	093-14-38.8 W	255.1	47.5	

Address: 2112A Minnehaha Avenue South

City: Minneapolis County: HENNEPIN State: MN Construction Deadline:

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	1.800	-8.300	5.700	14.300	28.700	7.900	-2.800	5.900
Transmitting ERP (watts)	77.290	12.540	0.210	0.210	0.210	0.950	27.430	95.090

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	29.500	19.400	33.400	42.000	56.500	35.600	24.900	33.600
Transmitting ERP (watts)	2.440	26.740	64.140	10.890	0.970	0.130	0.130	0.400

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	1.800	-8.300	5.700	14.300	28.700	7.900	-2.800	5.900
Transmitting ERP (watts)	0.210	0.210	1.730	33.740	99.580	68.890	8.090	0.210

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
32	44-53-22.0 N	092-22-22.0 W	367.3	60.0	

Address: 183 Hwy 63

City: Baldwin County: ST. CROIX State: WI Construction Deadline: 06-12-2010

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	79.500	61.700	70.400	64.800	100.500	82.200	105.600	91.900
Transmitting ERP (watts)	51.290	1.830	0.430	0.430	0.540	18.200	154.880	204.170

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
32	44-53-22.0 N	092-22-22.0 W	367.3	60.0	

Address: 183 Hwy 63

City: Baldwin County: ST. CROIX State: WI Construction Deadline: 06-12-2010

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	79.500	61.700	70.400	64.800	100.500	82.200	105.600	91.900
Transmitting ERP (watts)	44.670	199.530	162.180	19.500	0.720	0.430	0.430	2.140

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	79.500	61.700	70.400	64.800	100.500	82.200	105.600	91.900
Transmitting ERP (watts)	0.420	1.480	9.330	4.440	1.660	4.140	8.320	1.490

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
33	45-21-04.9 N	093-54-43.6 W	309.1	57.0	

Address: Barton Ave. & County Rd. 111

City: Silver Creek Townshi County: WRIGHT State: MN Construction Deadline: 06-12-2010

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	66.800	69.800	77.600	72.600	60.000	52.500	59.800	68.000
Transmitting ERP (watts)	97.040	9.060	0.340	0.340	0.340	4.140	65.610	164.790

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	66.800	69.800	77.600	72.600	60.000	52.500	59.800	68.000
Transmitting ERP (watts)	14.030	108.880	164.790	57.140	1.690	0.340	0.340	0.340

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	66.800	69.800	77.600	72.600	60.000	52.500	59.800	68.000
Transmitting ERP (watts)	0.460	0.340	0.910	35.230	146.870	137.070	26.120	0.340

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
34	44-54-08.9 N	092-51-55.6 W	320.3	42.1	

Address: 11380 Lake Rd.

City: Woodbury County: WASHINGTON State: MN Construction Deadline: 06-12-2010

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	64.800	101.600	71.600	73.600	61.300	83.400	73.100	45.000
Transmitting ERP (watts)	85.690	25.880	0.360	0.190	0.240	0.190	11.040	69.650

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
34	44-54-08.9 N	092-51-55.6 W	320.3	42.1	

Address: 11380 Lake Rd.

City: Woodbury County: WASHINGTON State: MN Construction Deadline: 06-12-2010

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	64.800	101.600	71.600	73.600	61.300	83.400	73.100	45.000
Transmitting ERP (watts)	1.140	23.410	63.000	51.800	10.080	0.190	0.190	0.190

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	64.800	101.600	71.600	73.600	61.300	83.400	73.100	45.000
Transmitting ERP (watts)	0.190	0.190	0.190	4.200	46.020	93.950	44.970	2.650

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
36	45-05-03.0 N	094-11-19.4 W	323.4	39.0	

Address: 357 Broadway Avenue North

City: Cokato County: WRIGHT State: MN Construction Deadline: 06-19-2010

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	47.800	50.300	51.100	50.400	39.900	40.100	36.200	46.400
Transmitting ERP (watts)	168.270	260.620	39.450	6.700	1.280	0.600	3.360	18.450

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	47.800	50.300	51.100	50.400	39.900	40.100	36.200	46.400
Transmitting ERP (watts)	3.260	17.910	163.310	252.930	38.280	6.500	1.240	0.580

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	47.800	50.300	51.100	50.400	39.900	40.100	36.200	46.400
Transmitting ERP (watts)	1.870	0.190	0.140	0.480	3.410	13.430	17.100	7.530

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
37	44-48-39.0 N	093-19-35.3 W	253.6	19.8	

Address: (Franco site) 3515 West Old Shakopee Rd

City: Bloomington County: HENNEPIN State: MN Construction Deadline: 02-03-2012

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	6.600	21.200	20.000	-10.000	-9.900	5.900	46.500	-2.300
Transmitting ERP (watts)	161.060	64.120	4.980	0.560	0.560	0.560	4.980	64.120

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
37	44-48-39.0 N	093-19-35.3 W	253.6	19.8	

Address: (Francis site) 3515 West Old Shakopee Rd

City: Bloomington County: HENNEPIN State: MN Construction Deadline: 02-03-2012

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	6.600	21.200	20.000	-10.000	-9.900	5.900	46.500	-2.300
Transmitting ERP (watts)	0.700	12.500	106.410	143.550	32.140	1.400	0.560	0.560

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	6.600	21.200	20.000	-10.000	-9.900	5.900	46.500	-2.300
Transmitting ERP (watts)	0.750	0.560	0.560	3.210	53.330	255.270	184.930	22.750

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
38	45-28-16.1 N	092-58-43.1 W	277.1	102.4	1063919

Address: (South Branch site) 6350 360TH STREET

City: NORTH BRANCH County: CHISAGO State: MN Construction Deadline: 02-03-2012

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	84.100	105.500	82.200	89.000	89.400	84.200	79.800	76.100
Transmitting ERP (watts)	245.820	59.070	5.370	0.600	0.600	1.110	7.760	85.380

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	84.100	105.500	82.200	89.000	89.400	84.200	79.800	76.100
Transmitting ERP (watts)	7.580	65.170	169.420	122.870	24.310	2.090	0.380	0.380

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	84.100	105.500	82.200	89.000	89.400	84.200	79.800	76.100
Transmitting ERP (watts)	0.600	0.600	1.800	19.940	168.070	215.530	28.160	2.200

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
39	45-15-23.4 N	092-51-19.8 W	293.2	60.6	

Address: (Scandia) 12270 Scandia Trail North

City: New Scandia County: WASHINGTON State: MN Construction Deadline: 07-12-2012

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	72.400	70.000	47.800	89.100	59.100	64.700	74.700	75.100
Transmitting ERP (watts)	186.210	38.020	1.320	0.480	0.480	0.560	20.420	144.540

Licensee Name: VERIZON WIRELESS (VAW) LLC

Call Sign: KNKA219

File Number:

Print Date:

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
39	45-15-23.4 N	092-51-19.8 W	293.2	60.6	

Address: (Scandia) 12270 Scandia Trail North

City: New Scandia County: WASHINGTON State: MN Construction Deadline: 07-12-2012

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	72.400	70.000	47.800	89.100	59.100	64.700	74.700	75.100
Transmitting ERP (watts)	2.880	52.480	218.780	162.180	19.050	0.660	0.560	0.560

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	72.400	70.000	47.800	89.100	59.100	64.700	74.700	75.100
Transmitting ERP (watts)	0.560	0.560	0.560	7.940	104.710	239.880	100.000	6.760

Location	Latitude	Longitude	Ground Elevation (meters)	Structure Hgt to Tip (meters)	Antenna Structure Registration No.
40	44-36-02.8 N	093-48-48.1 W	305.3	58.6	

Address: (MNMI_Belle Plaine site) 14500 Blakely trail

City: Belle Plaine County: SCOTT State: MN Construction Deadline: 04-11-2014

Antenna: 1

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	75.000	121.600	64.900	56.400	64.500	86.300	77.800	70.300
Transmitting ERP (watts)	0.620	0.620	0.620	2.310	62.230	242.100	159.960	14.590

Antenna: 2

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	52.200	98.700	42.000	33.500	41.600	63.400	55.000	47.500
Transmitting ERP (watts)	346.740	91.200	3.850	0.810	0.810	0.810	4.030	100.000

Antenna: 3

Maximum Transmitting ERP in Watts: 140.820

Azimuth(from true north)

	0	45	90	135	180	225	270	315
Antenna Height AAT (meters)	52.200	98.700	42.000	33.500	41.600	63.400	55.000	47.500
Transmitting ERP (watts)	0.810	13.960	197.240	291.740	34.280	1.160	0.810	0.810

Control Points:

Control Pt. No. 2

Address: 500 West Dove Road

City: Southlake County: TARRANT State: TX Telephone Number: (800)264-6620

Waivers/Conditions:

License renewal granted on a conditional basis, subject to the outcome of FCC proceeding WT Docket No. 10-112 (see FCC 10-86, paras. 113 and 126).

**CITY OF LAKE ELMO
WASHINGTON COUNTY
STATE OF MINNESOTA**

RESOLUTION 2018-083

*A RESOLUTION APPROVING A CONDITIONAL USE PERMIT FOR A WIRELESS
COMMUNICATIONS FACILITY AT 11351 UPPER 33RD STREET NORTH*

WHEREAS, the City of Lake Elmo is a municipal corporation organized and existing under the laws of the State of Minnesota; and

WHEREAS, Verizon Wireless, 10801 Bush Lake Road, Bloomington MN 55438 (the “Applicant”) has submitted an application to the City of Lake Elmo (the “City”) for a Conditional Use Permit for a wireless communications facility the property located at 11530 Upper 33rd Street North (PID# 13.029.21.31.0018) (the “Property”); and

WHEREAS, the Applicant also submitted an application to the City for variances for nine feet from the maximum height allowed for wireless communications to allow a wireless communications facility 134 feet in height; a variance of 88.5 feet from the minimum setback from the eastern property line to allow a setback of 45.5 feet from the easterly property line; and a variance from the one-year expiration date requirement of the conditional use permit and variance requests; and

WHEREAS, notice has been published, mailed and posted pursuant to the Lake Elmo Zoning Ordinance, Section 154.102; and

WHEREAS, the Lake Elmo Planning Commission held a public hearing on said matter on July 9, 2018; and

WHEREAS, the Lake Elmo Planning Commission has submitted its report and recommendation to the City Council as part of a Staff Memorandum dated July 9, 2018, and

WHEREAS, the City Council considered said matter at its July 17, 2018 meeting; and

NOW, THEREFORE, based on the testimony elicited and information received, the City Council makes the following:

FINDINGS

- 1) That the procedures for obtaining said Conditional Use Permit are found in the Lake Elmo Zoning Ordinance, Section 154.106.
- 2) That all the submission requirements of said Section 154.106 have been met by the Applicant.

- 3) That the proposed Conditional Use Permit includes the following components:
 - a) A Conditional Use Permit for a wireless communications facility for the property located at 11351 Upper 33rd Street North.
- 4) That the Conditional Use Permit for a school district transportation center will be for the Property legally described as follows:

ALL OF THE FOLLOWING DESCRIBED TRACT WHICH LIES SOUTHERLY OF THE SOUTHERLY RIGHT OF WAY OF SAID ST. P. S. & T. F. RY., (NOW OWNED AND OPERATED BY THE UNION PACIFIC RAILROAD): THAT PART OF THE WEST HALF OF SECTION THIRTEEN (13), TOWNSHIP TWENTY-NINE (29) NORTH OF RANGE TWENTY-ONE (21), LYING WITHIN THE FOLLOWING BOUNDARIES, TO-WIT: BEGINNING AT THE QUARTER POST IN THE CENTER OF THE SOUTH LINE OF SAID SECTION; THENCE RUNNING NORTH ALONG THE CENTER LINE OF SAID SECTION TO A POINT IN THE CENTER OF THE SAINT PAUL & STILLWATER ROAD; THENCE SOUTHWESTERLY ALONG THE CENTER OF SAID ROAD TO A POINT FORTY FOUR (44) RODS WEST OF THE EAST LINE OF THE NORTHWEST QUARTER OF SAID SECTION; THENCE SOUTH ON A LINE PARALLEL WITH THE WEST LINE OF SAID SECTION TO A POINT IN THE SOUTH LINE THEREOF FORTY-FOUR (44) RODS WEST OF THE CENTER POST IN SAID LINE; THENCE EAST FORTY-FOUR (44) RODS TO THE PLACE OF BEGINNING, EXCEPTING, HOWEVER, A STRIP OF LAND ONE HUNDRED (100) FEET IN WIDTH, BEING FORTY-FOUR (44) FEET ON THE NORTH SIDE AND FIFTY-SIX (56) FEET ON THE SOUTH SIDE OF CENTERLINE OF ST. P. S. & T. F. RY. TRACK AS CONSTRUCTED OVER AND ACROSS EAST FORTY-FOUR (44) RODS OF WEST ONE-HALF (W1/2), AND ALSO EXCEPTING THEREFROM THE EAST 726 FEET OF THE SOUTH 1800 FEET OF THE SOUTHWEST QUARTER (SW1/4) OF SECTION 13, TOWNSHIP 29 NORTH, RANGE 21 WEST, WASHINGTON COUNTY, MINNESOTA, ACCORDING TO THE UNITED STATES GOVERNMENT SURVEY THEREOF, SUBJECT TO THE RIGHT OF WAY OF MINNESOTA TRUNK HIGHWAY NO. 5 (ALSO KNOWN AS STILLWATER BOULEVARD NORTH), AND IS ALSO SUBJECT TO A 20 FOOT ROAD EASEMENT RECORDED BY DOCUMENT NUMBER 328273 IN THE OFFICE OF THE COUNTY RECORDER, WASHINGTON COUNTY, MINNESOTA, AND IS ALSO SUBJECT TO A NORTHERN STATES POWER EASEMENT RECORDED IN BOOK 136 OF DEEDS, PAGE 297, IN THE OFFICE OF THE COUNTY RECORDER, WASHINGTON COUNTY MINNESOTA SECTION 13 TOWNSHIP 029 RANGE 021

- 5) The proposed use will not be detrimental to or endanger the public health, safety, comfort, convenience or general welfare of the neighborhood or the city. ***The tower has been engineered to withstand high winds and has a fall zone that will not cause it to fall on an adjacent property.***
- 6) The use or development conforms to the City of Lake Elmo Comprehensive Plan. ***The property is guided for and zoned for public facilities, in which wireless communication facilities are an allowed use, and certain wireless communication facilities require a conditional use permit.***
- 7) The use or development is compatible with the existing neighborhood. ***The wireless communication facility will be screened with existing trees.***
- 8) The proposed use meets all specific development standards for such use listed in Article 7 of this Chapter. ***The proposed use meets almost all requirements of the City's Wireless Communications Facilities ordinance except for the required height and setback from property lines, for which the applicant has requested variances.***
- 9) If the proposed use is in a flood plain management or shoreland area, the proposed use meets all the specific standards for such use listed in Chapter 150, §150.250 through 150.257 (Shoreland Regulations) and Chapter 152 (Flood Plain Management). ***The proposed use is not in a flood plain management or shoreland area.***

- 10) The proposed use will be designed, constructed, operated and maintained so as to be compatible in appearance with the existing or intended character of the general vicinity and will not change the essential character of that area. ***The proposed tower will be heavily screened by existing trees and will not change the essential character of the neighborhood.***
- 11) The proposed use will not be hazardous or create a nuisance as defined under this Chapter to existing or future neighboring uses. ***The proposed use will be setback further from the property line than the fall zone and so will not be hazardous. It will be well screened and fenced so as to not create a nuisance, and climbing will be discouraged.***
- 12) The proposed use will be served adequately by essential public facilities and services, including streets, police and fire protection, drainage structures, refuse disposal, water and sewer systems and schools or will be served adequately by such facilities and services provided by the persons or agencies responsible for the establishment of the proposed use. ***The proposed use has adequate access, and the Fire Department has reviewed the application and does not see an issue, as access can be achieved if need be through the fence.***
- 13) The proposed use will not create excessive additional requirements at public cost for public facilities and services and will not be detrimental to the economic welfare of the community. ***The City will enter in to a lease agreement for which it will receive a negotiated amount.***
- 14) The proposed use will not involve uses, activities, processes, materials, equipment and conditions of operation that will be detrimental to any persons, property or the general welfare because of excessive production of traffic, noise, smoke, fumes, glare or odors. ***The proposed use will not create excessive production of traffic, noise, smoke, fumes, glare or odors.***
- 15) Vehicular approaches to the property, where present, will not create traffic congestion or interfere with traffic on surrounding public thoroughfares. ***There is an existing access road that will be utilized until such time the cul-de-sac providing connection from Easton Village is constructed.***
- 16) The proposed use will not result in the destruction, loss or damage of a natural or scenic feature of major importance. ***The proposed use will not result in in any destruction, loss or damage or a natural or scenic feature of major importance.***

NOW, THEREFORE, BE IT FURTHER RESOLVED, that the Lake Elmo City Council hereby approves the request by Verizon for a Conditional Use Permit for a wireless communications facility with the following conditions of approval:

- 1) The applicant shall enter into a wireless communications tower agreement that addresses all items listed in Section 150.121 of the Lake Elmo City Code addressing wireless communications facilities with the City prior to the issuance of a building permit for the proposed facility.
- 2) The applicant must submit proof of liability and worker's compensation insurance.
- 3) Monopole shall be constructed of, or treated with, corrosive resistant material.

- 4) An agreement providing for co-location and 6-month removal of unused and/or obsolete towers shall be attached and become part of the permit.
- 5) The addition of antennas and associated equipment of an additional provider to an existing permitted tower shall be considered co-location and shall require a zoning permit and site plan approval. An amendment to a conditional use permit shall typically not be required.
- 6) All towers shall be reasonably protected against unauthorized climbing. The area around the base of the tower and guy wire anchors shall be enclosed by a fence with a minimum height of 6 feet with a locked gate.
- 7) All obsolete or unused towers and accompanying facilities shall be removed within 6 months of the cessation of operations at the site unless a time extension is approved by the City. After the facilities are removed, the site shall be restored to its original or an improved state which includes removal of all concrete to 6 feet below normal grade and surrounding area returned to normal grading. Electronic equipment shall not be removed in advance of removal of obsolete or unused towers. To ensure compliance, the applicant must submit a performance bond or letter of credit in an amount sufficient to cover all removal costs as determined by the city prior to the issuance of a building permit for the facility. Failure to remove the structure shall be cause for the city to remove the tower and associated equipment and assess the cost against the required bonding or letter of credit instrument.
- 8) The city shall conduct a final inspection of the site to ensure that all requirements of the City Code and all conditions of approval attached as part of the wireless communications permit are met prior to the start of operation of the facility.
- 9) For installations of a facility in an area that could potentially be accessed by the public (including rooftop installations or other locations that would be considered public versus occupational) a radio frequency hazard analysis and a yearly report must be submitted before December 31 of each year showing the results of on-site measurements at the site. A registered professional engineer hired by the provider must sign these measurements and report. At a minimum, the report must document any changes to the site over the course of the previous year.
- 10) All lighting associated with the facility shall comply with the City's lighting ordinance. The wireless communications tower shall not be illuminated by artificial means, as it is not required by the Federal Aviation Administration.
- 11) The area around the base of the tower and guy wire anchors shall be enclosed by a fence with a minimum height of six feet with a locked gate.
- 12) Building permits shall be applied for and issued before any construction is started.
- 13) The applicant shall be compliant with all other minimum conditions outlined in Section 150.123 of the Lake Elmo City Code addressing wireless communications facilities.
- 14) The applicant shall enter in to a lease agreement approved by Council for both this site and the water tower site at the corner of Ideal Avenue North and 34th Street North.

- 15) The applicant shall design the accessory equipment building to accommodate any additional equipment that may be needed by additional carriers on the tower.

Passed and duly adopted this 17th day of July 2018 by the City Council of the City of Lake Elmo, Minnesota.

Mike Pearson, Mayor

ATTEST:

Julie Johnson, City Clerk

**CITY OF LAKE ELMO
WASHINGTON COUNTY
STATE OF MINNESOTA**

RESOLUTION 2018-084

***A RESOLUTION APPROVING VARIANCES FROM THE REQUIRED HEIGHT AND
SETBACK FOR A WIRELESS COMMUNICATIONS FACILITY FOR THE PROPERTY
LOCATED AT 11351 UPPER 33RD STREET NORTH AND FROM THE EXPIRATION DATE
REQUIREMENTS FOR THE CONDITIONAL USE PERMIT AND VARIANCE***

WHEREAS, the City of Lake Elmo is a municipal corporation organized and existing under the laws of the State of Minnesota; and

WHEREAS, Verizon Wireless, 10801 Bush Lake Road, Bloomington MN 55438 (“Applicant”), has submitted an application to the City of Lake Elmo (the “City”) for a variance to allow construction of a wireless communications facility that does not meet the required maximum height and minimum setback standards required for wireless communications facilities as well as a variance from the one year expiration requirement for a conditional use permit and variance.

WHEREAS, notice has been published, mailed and posted pursuant to the Lake Elmo Zoning Ordinance, Section 154.109; and

WHEREAS, the Lake Elmo Planning Commission held a public hearing on said matter on July 9, 2018; and

WHEREAS, the Lake Elmo Planning Commission has submitted its report and recommendation to the City Council as part of a Staff Memorandum dated July 9, 2018; and

WHEREAS, the City Council considered said matter at its July 17, 2018 meeting.

NOW, THEREFORE, based on the testimony elicited and information received, the City Council makes the following:

FINDINGS

- 1) That the procedures for obtaining said Variance are found in the Lake Elmo Zoning Ordinance, Section 154.109.
- 2) That all the submission requirements of said Section 154.109 have been met by the Applicant.
- 3) That the proposed variance includes the following components:

- a) A 9-foot variance from the maximum height requirement for wireless communication facilities, which require that the maximum height of wireless communications facilities within the PF – Public and Quasi-Public Open Space districts is 125 feet, to allow a 125-foot wireless communications facility with a 9-foot lightning rod.
 - b) An 88.5-foot variance from the minimum setback requirement for wireless communications facility, which requires that wireless communications facilities be setback a distance from the property line equal to the height of the tower, to allow a 45.5-foot setback for a wireless communications tower from the easterly property line.
 - c) Variances from the requirements that a variance shall expire if work does not commence within twelve months of the date of granting such variance and that a conditional use permit is void if substantial construction has not taken place within twelve months of the date on which the conditional use permit was granted.
- 4) That the Variance will be located on property legally described as follows:

ALL OF THE FOLLOWING DESCRIBED TRACT WHICH LIES SOUTHERLY OF THE SOUTHERLY RIGHT OF WAY OF SAID ST. P. S. & T. F. RY., (NOW OWNED AND OPERATED BY THE UNION PACIFIC RAILROAD): THAT PART OF THE WEST HALF OF SECTION THIRTEEN (13), TOWNSHIP TWENTY-NINE (29) NORTH OF RANGE TWENTY-ONE (21), LYING WITHIN THE FOLLOWING BOUNDARIES, TO-WIT: BEGINNING AT THE QUARTER POST IN THE CENTER OF THE SOUTH LINE OF SAID SECTION; THENCE RUNNING NORTH ALONG THE CENTER LINE OF SAID SECTION TO A POINT IN THE CENTER OF THE SAINT PAUL & STILLWATER ROAD; THENCE SOUTHWESTERLY ALONG THE CENTER OF SAID ROAD TO A POINT FORTY FOUR (44) RODS WEST OF THE EAST LINE OF THE NORTHWEST QUARTER OF SAID SECTION; THENCE SOUTH ON A LINE PARALLEL WITH THE WEST LINE OF SAID SECTION TO A POINT IN THE SOUTH LINE THEREOF FORTY-FOUR (44) RODS WEST OF THE CENTER POST IN SAID LINE; THENCE EAST FORTY-FOUR (44) RODS TO THE PLACE OF BEGINNING, EXCEPTING, HOWEVER, A STRIP OF LAND ONE HUNDRED (100) FEET IN WIDTH, BEING FORTY-FOUR (44) FEET ON THE NORTH SIDE AND FIFTY-SIX (56) FEET ON THE SOUTH SIDE OF CENTERLINE OF ST. P. S. & T. F. RY. TRACK AS CONSTRUCTED OVER AND ACROSS EAST FORTY-FOUR (44) RODS OF WEST ONE-HALF (W1/2), AND ALSO EXCEPTING THEREFROM THE EAST 726 FEET OF THE SOUTH 1800 FEET OF THE SOUTHWEST QUARTER (SW1/4) OF SECTION 13, TOWNSHIP 29 NORTH, RANGE 21 WEST, WASHINGTON COUNTY, MINNESOTA, ACCORDING TO THE UNITED STATES GOVERNMENT SURVEY THEREOF, SUBJECT TO THE RIGHT OF WAY OF MINNESOTA TRUNK HIGHWAY NO. 5 (ALSO KNOWN AS STILLWATER BOULEVARD NORTH), AND IS ALSO SUBJECT TO A 20 FOOT ROAD EASEMENT RECORDED BY DOCUMENT NUMBER 328273 IN THE OFFICE OF THE COUNTY RECORDER, WASHINGTON COUNTY, MINNESOTA, AND IS ALSO SUBJECT TO A NORTHERN STATES POWER EASEMENT RECORDED IN BOOK 136 OF DEEDS, PAGE 297, IN THE OFFICE OF THE COUNTY RECORDER, WASHINGTON COUNTY MINNESOTA SECTION 13 TOWNSHIP 029 RANGE 021

- 5) That strict enforcement of the requirements from which the variance was requested would cause practical difficulties, and that the property owner proposes to use the property in a reasonable manner, as a majority of the site is used by the City for stormwater ponding and is heavily wooded, and so this is the only site on the parcel that would be suitable to construct the monopole. The applicant has reviewed a number of alternatives to the site and found this to be the most suitable. Lowering the tower height to accommodate the lightning pole and

still be at the required height would decrease the tower's effectiveness. Further, the applicant has explained that the process of procuring contractors, ordering parts, and short construction seasons would result in the commencement of construction within one year of granting the variance to be very difficult.

- 6) That the plight of the landowner is due to circumstances unique to the property not created by the landowner, as the parcel is unique in that most of it is being used for stormwater ponding for the downtown area. The property became a stormwater pond prior to it being considered a location for a monopole. Lowering the height of the tower would decrease its effectiveness, and the lightning rod is needed for safety reasons.
- 7) That the proposed variance will not alter the essential character of the locality in which the property in question is located, as the monopole will be well screened from the public right-of-way and adjacent properties. The additional height of the lightning rod will not be visible against the sky.
- 8) That the proposed variance will not impair an adequate supply of light and air to properties adjacent to the property in question or substantially increase the congestion of the public streets or substantially diminish or impair property values within the neighborhood, as the proposed monopole will have no effect the supply of air and light, increase congestion or impair property values within the neighborhood. A majority of the base of the tower will be screened in a heavily wooded area, and the applicant has shown that the fall zone is shorter than the requested reduced setback.

CONCLUSIONS AND DECISION

Based on the foregoing, the Applicant's application for a Variance is granted.

Passed and duly adopted this 17th day of July 2018 by the City Council of the City of Lake Elmo, Minnesota.

Mike Pearson, Mayor

ATTEST:

Julie Johnson, City Clerk