

# **Telecommunications Site Options Analysis Report**

## ***Gardner Street Water Tower Technical Review***

City of Wayzata, Minnesota

SEH No. WAYZA 121956

December 5, 2012



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## Executive Summary

This report provides a technical review of the current Gardner Street Water Tower telecommunications site and creates alternative telecommunication site development options within the city to accommodate current and future telecommunication carrier tenants. The technical review process included documenting current tenant systems at the Gardner Street Water Tower site, tabulation of available city properties, and site visits to the top 14 properties most viable for development as alternate telecommunication sites. To aid in development of viable alternate site options, a common set of basic site requirements and telecommunication system design assumptions was created. The site requirements are listed in Section 4 of this report and are applied to the evaluation of the three most viable alternate site options, also presented in Section 4.

In addition to the creation and analysis of site development options, this report also presents comment or analysis on other telecommunication issues such as:

- **Telecommunications Ordinance:** Section 5 – The primary principles and requirements of a local telecommunications ordinance are to serve a public purpose, be consistent with state and federal laws, use clear and precise language, and to be reasonable in nature. Section 5 presents comment and input on the current Draft Wayzata Telecommunications Ordinance document.
- **Site Safety Standards and Best Practices:** Section 6 - There are many site safety standards to consider when evaluating existing telecommunication sites or planning for the development of new sites. This section highlights issues associated with protecting adjacent properties and casual non-professional citizens that may be in the general proximity of a telecommunications site.
- **Lease Conversion Option Evaluation:** Section 7 - The City of Wayzata received a proposal from Unison Site Management that offered a cell site lease conversion program offer for the Gardner Street Water Tower site. This section provides a financial analysis and documents pros and cons of the lease purchase option.

The primary findings of this report include:

- The analysis identified the 550 Broadway Avenue site, currently used by the city as snow storage and construction staging, as the city owned property that is most viable for the development of an alternate telecommunications site to replace the current Gardner Street Water Tank site.
- A new telecommunication site development budgetary cost is in the range of \$ 295,000 to \$ 310,000 for the City. Current tenants would also incur costs of as much as \$150,000 or more, per tenant, if they choose to relocate to the new tower location.
- The current draft telecommunications ordinance document contains the essential content needed for a robust telecommunications ordinance. Some modification may be needed to broaden the scope to include non-commercial applications, and the draft should be refined and some terms reorganized to make the ordinance more clear and concise.
- The Unison lease purchase offer should not be accepted in its current form. If the City chooses to pursue a lease purchase arrangement, SEH would recommend an open public solicitation or reverse bid process to assure the best terms and financial results for the City.

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# Telecommunications Site Options Analysis Report

## Gardner Street Water Tower Technical Review

Prepared for City of Wayzata

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### 1.0 Introduction

The purpose of this telecommunications site options analysis is to conduct a technical review of the current Gardner Street Water Tower telecommunications site and to create alternative telecommunication site options within the city to accommodate current and future telecommunication carrier tenants. The analysis will create and analyze different site alternatives. In particular the City seeks to review the existing tenant equipment and systems, explore various city owned parcels, and document site location and relocation alternatives. The analysis includes detailed radio coverage propagation studies of the current water tower site and several alternate sites.

In addition to the alternative site analysis the report will also:

- Review and comment on the current draft Wayzata Telecommunication Ordinance.
- Estimate the cost to develop an alternate telecommunications site, and to decommission and clean up the current Gardner Street Water Tower site.
- Document safety standards and recommended best practices related to telecommunication sites.
- And, comment on the pros and cons of a lease conversion of the current tenant leases, versus the current city managed telecommunication site business practices.

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## 2.0 Project Approach

SEH met with City Staff to review current status and operation of the Gardner Street Water Tower telecommunications site. Documentation on the current transmission equipment, FCC licenses, antenna systems and compound shelter footprint was collected. In addition to review of existing archived lease and tenant system documentation, an information survey was created and distributed to each tenant to allow them the opportunity to advise us on their high priority system requirements related to a potential relocation or alternate site development effort. Telecommunication site technical and physical requirements were created to guide the selection of alternate site options.

The City tabulated a listing of all available city owned properties. This list was used as a base line for review and evaluation of potential relocation or site development options. There were 37 properties identified as city owned that were included in the initial site list. SEH met with city staff and conducted site visits to 14 of the most promising site locations.

In addition to field site reviews, the technical viability of site options was determined by comparison of existing system performance and coverage potential, compared to the estimated system performance and coverage predictions for several proposed alternate sites. Site physical size, ground elevation, proximity to utilities, and zoning considerations were also evaluated in the determination of site viability.

Sites that were considered viable based on the field site visit and established technical and physical requirements were then evaluated to determine predicted coverage performance. An engineering radio coverage propagation study was done to compare and contrast the select alternative telecommunication sites. This coverage prediction information was used to guide the alternate site tower height and location determination. The tower height requirements and site development considerations were used to develop budgetary price estimates for construction of a new telecommunications site.

SEH professional experience was used, and additional industry research was conducted, to document and recommend telecommunication site development best practices. A financial analysis was done on the Unison lease purchase proposal, and a pros and cons comparison was used to evaluate the potential of selling the current leases at the Gardner Street water tower site.

A review of the telecommunication site alternatives, estimated relocation and development costs, ordinance review, best practices recommendations, and lease purchase analysis was done with city staff to help vet and finalize the content of this report.

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### 3.0 Summary of Existing Gardner Street Telecom Tenant Systems and Equipment.

As demand for wireless technology has increased over time, cellular communication companies have responded by expanding their existing networks and building new capacity which also means increasing the number of transmitter locations. As a general rule regarding transmitter coverage, the higher the placement of an antenna above ground level the greater the coverage area. To minimize cumulative visual impacts of new cellular towers, many communities and local governments encourage use of existing structures and co-location whenever feasible and aesthetically desirable. Water storage towers make excellent antenna support structures and are frequently used for this purpose as is the case with the City of Wayzata.

The city's main water tower is a six legged bowl design structure located at 403 Gardner Street East. The location has a ground elevation of 996' above mean sea level (AMSL) and is one of the highest points of land in the city of Wayzata. The water tower has an overall height of 142' 9" above ground level (AGL). The tower makes a good location for cellular carriers to co-locate as the elevation provides them with good radio propagation without having to build their own radio towers. The City of Wayzata Water Tower currently hosts five cellular carriers that include AT&T, Nextel, Sprint, T-Mobile and Verizon. The systems and antenna equipment deployed at the Gardner Street site are summarized by carrier as follows:

- **AT&T**

AT&T occupies the highest point on the water tower and consists of a total of 6 panel antennas (see Figure 1). Four of the panel antennas occupy the highest points on the water tower. They are each mounted at the top of individual steel lattice tower sections that are secured to the side of the tower bowl spaced 90 degrees apart. These sections provide an overall antenna height of 149' 6" AGL. Two additional panel antennas are mounted on the railing of the cat walk that surrounds the lower portion of the water tower bowl and have an overall height of 117' AGL. The AT&T equipment shelter occupies a ground space footprint of 12' x 24', and is located in the fenced 60' x 48' telecom compound area (see Figure 4).

AT&T's current upgrade plans include the relocation of the 4 antennas on the individual lattice towers to a new 20' diameter railing to be installed on the top of the water tower bowl. The individual towers will be removed providing a more traditional look to the water tower.

- **Nextel**

Nextel has three 10' Omni-directional antennas mounted on the southeast facing water tower leg at a height of 95' AGL (see Figure 1). Nextel has equipment located in the city storage building located adjacent to the tennis court area (see Figure 4). On December 15, 2004, Sprint and Nextel announced they would merge to form Sprint/Nextel Corporation.

Sprint/Nextel has advised the city of plans to decommission the Nextel systems at this site in 2013.

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- **Sprint**

Sprint has 6 panel antennas bundled in 3 sectors of 2 antenna per sector, spaced 2' apart. The three sectors are mounted on the railing of the cat walk that surrounds the lower portion of the water tower bowl, spaced 120 degrees apart. The antennas have an overall height of 114' AGL (see Figure 1). Sprint has an outdoor equipment platform that occupies a ground space footprint of 20' x 15', and is located in the fenced 60'x48' telecom compound area (see Figure 4).

Sprint has proposed future plans to remove the existing antennas and replace each sector with a single antenna and remote radio unit (RRU).

- **T-Mobile**

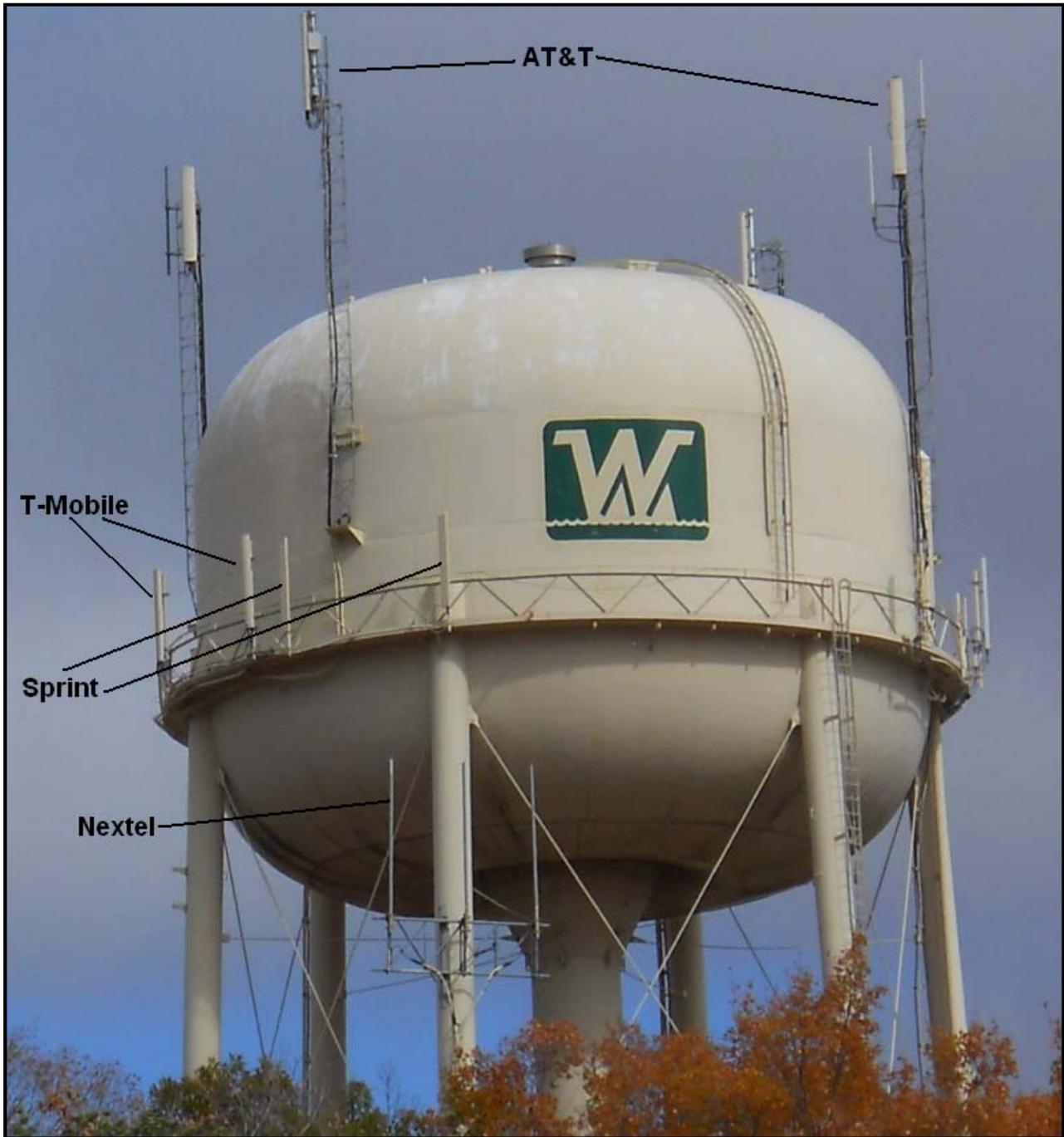
T-Mobile has 6 panel antennas bundled in 3 sectors of 2 antennas per sector. The three sectors are mounted on the railing of the cat walk that surrounds the lower portion of the water tower bowl, spaced 120 degrees apart. The antennas have an overall height of 116' AGL (see Figure 1). The T-Mobile equipment shelter occupies a ground space footprint of 9' 6" x 16' 4", and is located in the fenced 60'x48' telecom compound area (see Figure 4).

T-Mobile has proposed future plans to remove the existing antennas and replace them with new Andrew TMBXX-6517 antennas and mount 2 RRUs (Remote Radio Units) per sector near the antennas.

- **Verizon**

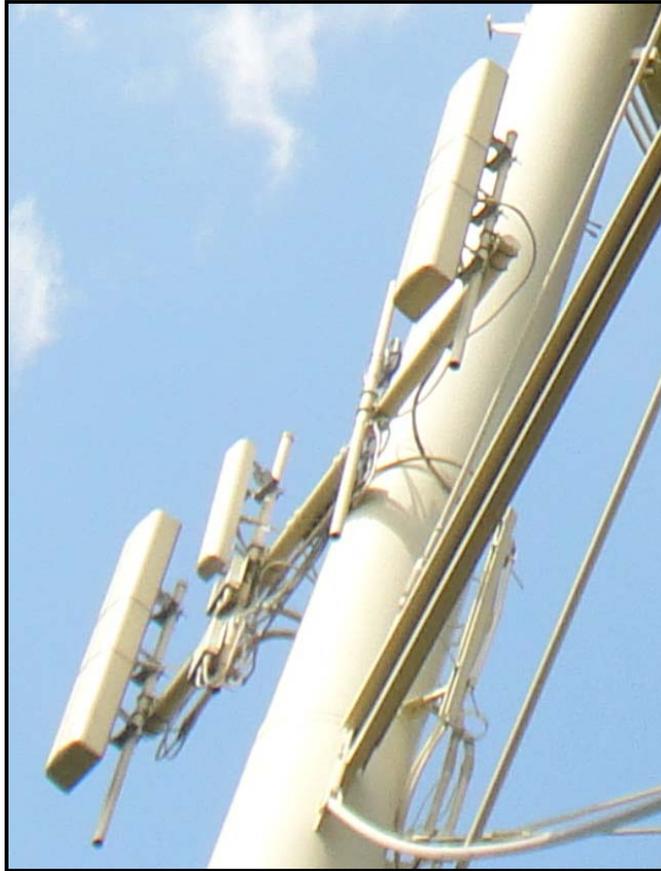
Verizon has 9 panel antennas bundled in 3 sectors of 3 antennas per sector. Two of the sectors are mounted on a horizontal support beam below the water tower bowl at a height of 70' AGL (see Figure 2). The third sector is mounted to the south west water tower leg at a height of 79' AGL (see Figure 3). The Verizon equipment shelter occupies a ground space footprint of 12' x 18', and is located in the fenced 60'x48' telecom compound area (see Figure 4).

Figure 1 – Wayzata Water Tower (South Face)



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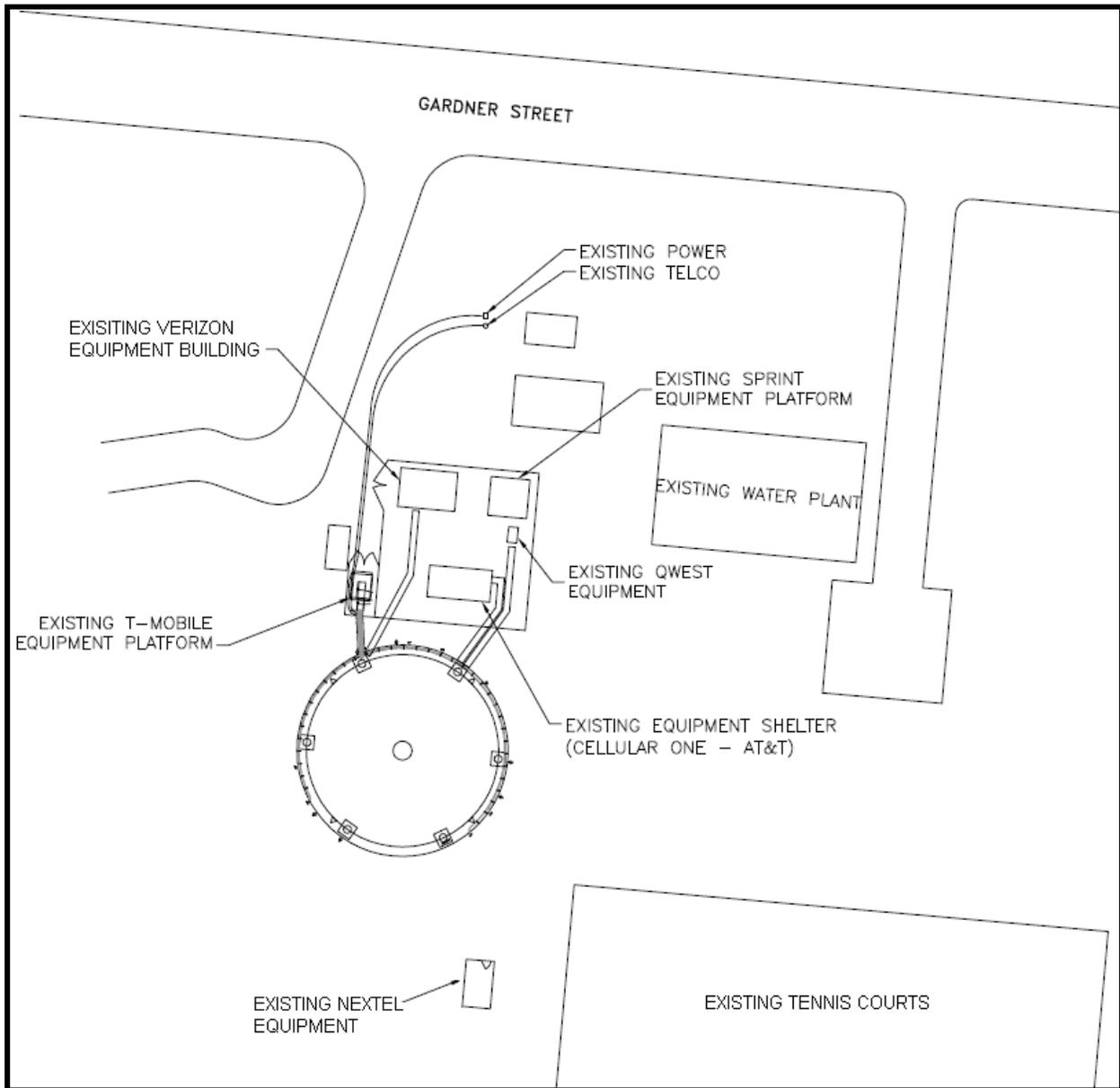
**Figure 2 – Verizon Antenna on Wayzata Water Tower**



**Figure 3 – Verizon Antenna on Wayzata Water Tower**



Figure 4 – Cellular Equipment Compound Diagram



**Figure 5 – Existing Tower Tenant Equipment Layout Diagram**

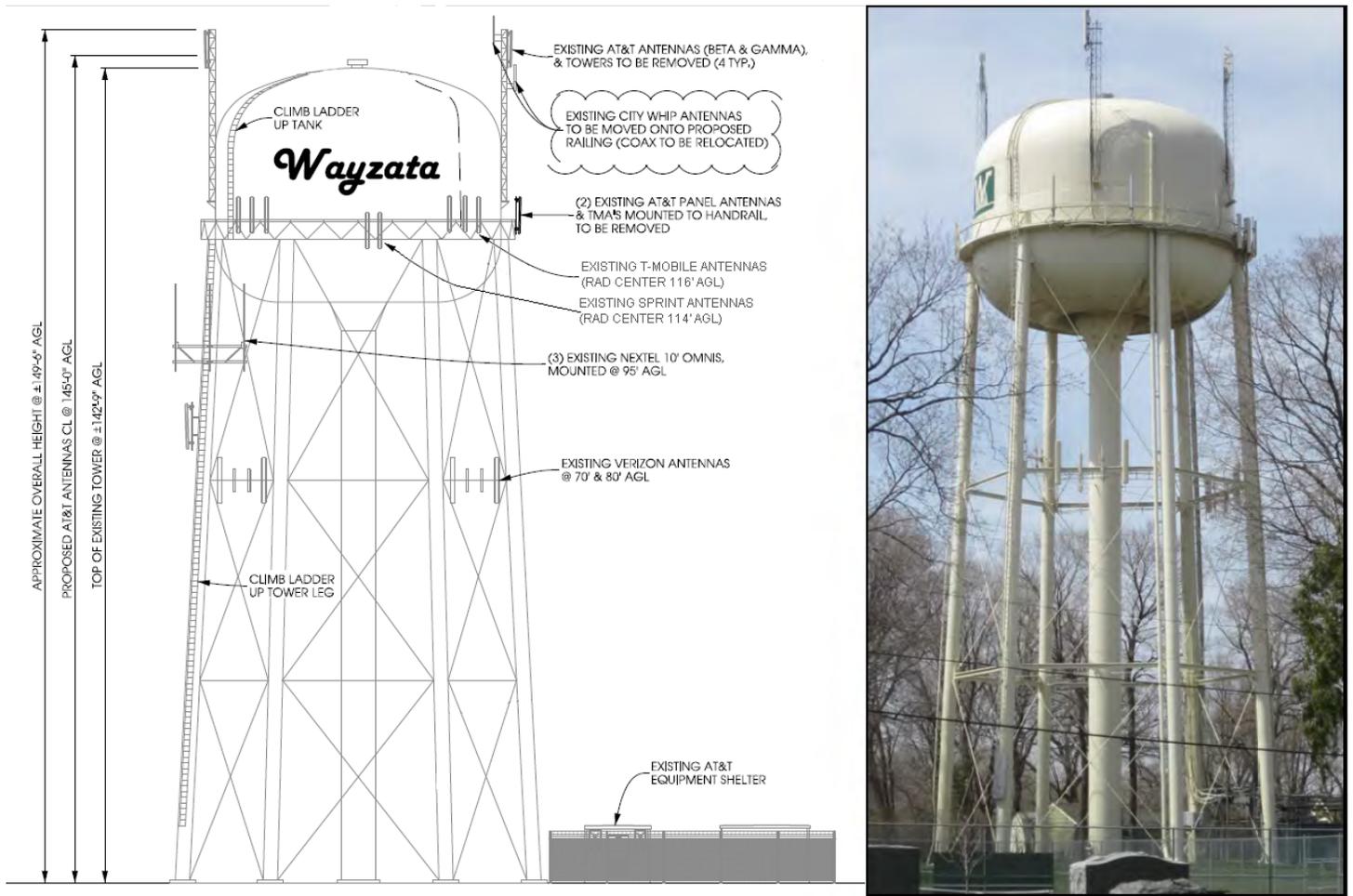


Figure 5 represents a typical site elevation diagram that is included in the site plans provided by carriers as part of the site application and lease process, or during site improvements or replacements. This diagram is from a recent AT&T plan set.

A tabulated list of tenant existing and proposed antenna equipment is included in Appendix A.

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## 4.0 Site Requirements and Viable Alternate Site Options

To aid in development of viable alternate site options, a common set of basic site requirements and telecommunication system design assumptions was created. The purpose of the site requirements and design assumptions is to use these factors when considering each potential site to determine if it is a suitable candidate for possible development. Some of the requirements are specific to the site, such as ground elevation or available square footage of the site available for development. Some of the factors are used in modeling the radio system performance and creation of coverage area predictions that allow for a side by side comparison of potential sites with the current Gardner Street Site. The requirements and design considerations will also influence site development decisions such as how much property would need to be cleared and developed and what height a support tower structure may need to be. The following subsections outline the basic site requirements and design assumptions, and then apply them to the evaluation of three selected viable alternate site options.

### 4.1 Basic Site Requirements and Design Assumptions

The development of alternate viable telecommunication sites is dependent on a number of technical and operational considerations. In order to allow existing tenants to have input into the process of establishing site alternatives, a Telecom Site Options Survey document was created and sent to each existing tenant that occupies the Gardner Street Tower site (see Appendix A). We did not receive responses to the survey request, so we have created minimum technical requirements to address each of the survey parameters. This information is used to inform the site selection and coverage prediction modeling effort that follows in this section of the report.

Requirements and base line assumptions include:

**Service Area** - The cellular carrier service area is likely to be the primary consideration for site selection and is of primary importance to current and future tenants. The Service Area provided from the Gardner Street Tower site will be different for each tenant. The geographic service area coverage can be influenced by a number of site and equipment characteristics including:

- the number of antenna, their type and location;
- the location and proximity of adjacent sites
- the technology and frequency band of the transmit and receive equipment
- the transmit power and receiver sensitivity of base equipment
- the height of the antennas on the tower, and the relative height of the site compared to the surrounding terrain (height above average terrain – HAAT)
- the obstructions near and around the site such as trees or buildings the “Quality of Service” requirements of the provider

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**Structure Height and Load Capacity** – A support structure will be required that is adequate in both overall height and load carrying capacity to accommodate the antenna system of each of the current telecommunication carrier tenants. In addition, it is prudent to plan for some level of excess capacity on the new structure for additional future tenants or some unanticipated city need. There are a variety of tower design options available.

Telecommunication towers are generally categorized into three major types; guyed tower, self supporting tower, and monopole. The heights of the towers typically vary between 100 and 250 feet or more. Factors that affect the type of tower erected include topography, soil conditions, land use and availability, tower height requirements, required wind loading (maximum forces that may be applied to a structural element by wind), ice loading (maximum forces that may be applied to a structural element by ice), and zoning.

- **Guyed Towers:** For tower heights above 150 feet, guyed towers generally are the least costly, however they require the greatest amount of land to erect due to the area needed for the cable guy wire turnbuckles. As a result, guyed towers are most often seen in rural or suburban settings where land is not at a premium. Guyed towers may be constructed with either 3 legs (triangular) or 4 legs. Two variables that affect the amount of land needed for a guyed tower are the tower height and the separation needed distance between the tower and the guy anchors. The distance between the tower base and guy anchors will increase as the height of the tower and overall tower load increases.
- **Self Supporting Tower:** Self supporting towers are free standing with a lattice frame design and can be constructed with either three or four legs. They are generally the strongest and can support the largest wind and ice loads of the three tower types but tend to be the most expensive to erect. The main variable for the amount of land needed when considering a self supporting tower is the tower height.



*Typical Guyed Tower*



*Typical Self Supporting Tower*

- **Monopole:** A monopole is free standing tower constructed of slip jointed all welded tubes of different diameter steel sections either cylindrical or multi sided in shape. They are commonly used in applications below 150 feet. The individual sections are bolted or welded together with the largest diameter sections at the base and each successive section being smaller in diameter. The main variable for the amount of land needed when considering a monopole tower is the tower height.



*Typical Monopole Tower*

**Other Site Development Requirements -** Beyond the type or style of tower structure, a number of other site development issues will also need to be considered. Some of the primary site development concerns include site access during construction, site security, utility connections, and physical space needed for equipment shelters and potential future growth. Some key development considerations include:

- **Equipment Shelters:** Equipment shelters are usually located near the base of communication tower and are primarily prefabricated structures made of steel, fiberglass, or concrete aggregate wall material. They can also be built on site from wood frame or concrete block construction and are finished to meet the particular function they are serving. They can be installed on steel I-beams, concrete piers or concrete pad. The prefabricated structures are delivered to the site by truck and installed with a boom truck or crane and generally have factory installed wiring, HVAC, humidity control, and an exterior generator plug. Size or squared footage is dependent on the amount of radio equipment needed to be housed in the shelter. Equipment shelters can also be built with a separate room for an emergency generator which will increase the overall size of the shelter.
- **Compound Fencing:** The most common type of fencing used to protect tower site compounds is chain link fence. The fencing is generally six feet high with three strands of barbed wire above the top rail and equipped with a locked gate. Guyed towers should also have a fenced perimeter area of 4' by 30' around the turnbuckles. The radio towers should be equipped with anti-climb devices.
- **Perimeter Clearing and Landscaping:** A driveway from a public access point to the tower site must be cleared in order to provide access and an area to erect the tower and place the various site improvements necessary to operate the communication network. An area between one and three acres is typically cleared depending on the type of tower erected. The driveway and the cleared and fenced in area at most tower sites are graded down 4 inches, landscape fabric applied then covered with crushed stone. The landscape fabric and crushed stone makes access easier and keeps the vegetation from growing at the site.
- **Utility Requirements:** Most carriers will require utilities installed at the site. Typical utilities consist of electrical power, basic telephone service and high capacity service such as T-1 lines. On some cell sites, each carrier will use up to 10 T-1 lines. Depending

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on the carrier and availability from the local phone company, fiber optic lines may also be run to the site.

- **Electrical Power Requirements:** Typically each cellular carrier will require 120 to 240 volt (50 to 200 amps) power supply with a rectifier system that converts the AC power to DC power needed by the system's electronic circuits. Other typical power needs are HVAC system (including redundant units), room lights, possible outdoor security lighting and UPS system. The Federal Communications Commission (FCC) requires that a UPS system be available to provide at least a 12-hour backup for the cellular site. The power utility company usually provides the service to the meter in underground installations and to the weather head in overhead installations. All wiring after the meter typically is the responsibility of the customer. Primary metering (high voltage) may be an exception.
- **Emergency Generators:** Emergency or backup generators are used to ensure an uninterruptible power supply for the communications equipment. Most are equipped to run on liquid propane and require a separate fuel tank mounted on a concrete pad. The generator size or rated output is dependent on the total power consumption requirements for all loads that will need to remain operational during a power outage. In the wake of Hurricane Sandy in 2012, the Federal Communications Commission is considering making emergency generators mandatory for all cellular sites.

In addition to the site requirements listed above, there are requirements related to the telecommunication system design and performance that play a major role in the operation and performance of the telecommunication site. In order to make an equivalent site comparison, some basic design considerations and assumptions were developed to be used as inputs into a radio coverage prediction software tool. This tool then provided radio signal coverage propagation predictions that were used to compare alternate sites with the base line coverage predicted from the Gardner Street Tower site. Some of the base line design assumptions used to evaluate the various site alternatives included:

- **Signal Strength Requirement** – The strength of the propagated signal and the ultimate level of signal available to the receiver is a primary consideration in effective cellular system coverage performance and are influenced by many factors including: terrain, obstructions such as buildings and foliage, weather, and receiver sensitivity. SEH has selected a Longley Rice RF propagation model using a 95% time, and 95% area reliability standard to predict signal coverage from the current Gardner Tower Site and the alternate options sites. Receive signal levels from 70 dBu to 120 dBu will be compared to evaluate the sites for expected signal strength and expected coverage performance.
- **Minimum AMSL/HAAT requirement** – The overall height of the antenna systems relative to the ground elevation of the site and the surrounding terrain is an important factor in radio system coverage. The Height Above Average Terrain (HAAT) is a comparative measure that takes into account the structure height and the surrounding terrain characteristics. SEH is using both HAAT and Ground Elevation Above Mean Sea Level G-AMSL to compare alternate telecom site options. Supporting tower structures are being proposed to provide an equivalent overall height for antenna systems to be comparable to the current Gardner Street Tower Site.
- **Antenna / Feed line Requirements** – The particular antenna make and model, type of feed line, and other appurtenances such as Remote Radio Units (RRU), or Tower Top Amplifiers (TTA) are important elements of the communication system design. However, SEH has used effective radiated power (ERP) as the primary tool for modeling

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site coverage performance and is using an omni-directional coverage pattern to model and compare sites. It is understood that each carrier may employ site specific antenna equipment and different systems per sector to provide the best performance for any given site. For uniform comparison purposes a single propagation profile is used at all sites to provide for an equal comparison of alternate site predicted performance.

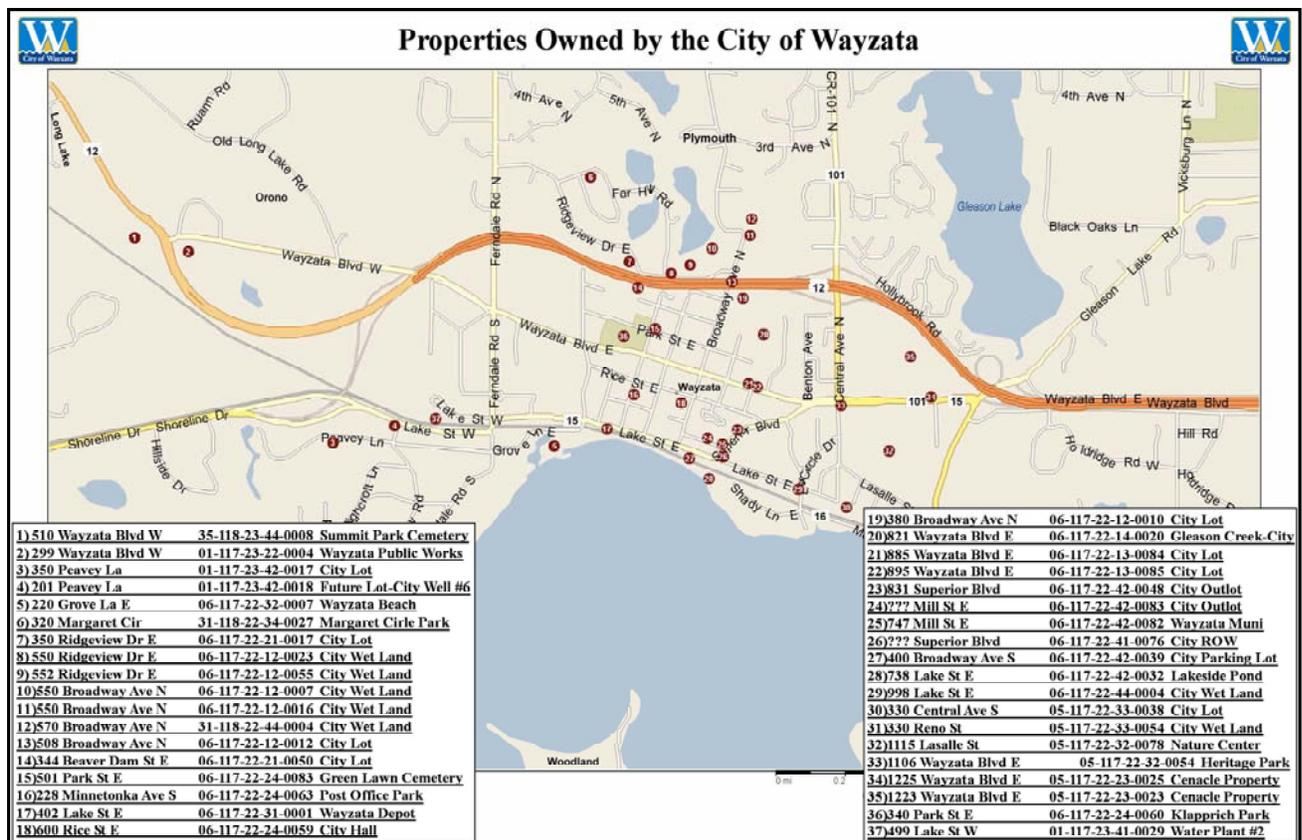
- **Transmit / Receive Equipment and Power Output** – SEH reviewed the FCC license database records for the current tenants to determine the typical and maximum ERP emanating from the existing systems. The power output differs based on carrier and antenna sector but the majority are within the range of 110 Watts to 225 watts, with most below the 200 Watt threshold. As a basic design parameter SEH will use 200 Watts ERP for the comparison design model.
- **Frequency band(s)** – Each carrier is licensed for a particular block, or multiple blocks, of radio frequency spectrum to operate their system. The blocks range from the 700MHz band up to and through the 2500 MHz band. Operating frequency will have an impact on the site coverage, signal propagation, and signal penetration characteristics of each carrier's system. SEH has selected 1700 MHz as a typical representative frequency to run the radio propagation model studies. Again, for uniform comparison purposes a single frequency parameter is used at all sites to provide for an equal comparison of alternate site predicted performance coverage

Other Specific Site Requirements or design assumptions: There may be other important technical or operational site considerations that are not included in this report. The site analysis comparisons below are based on the requirements defined here and do not take into account possible unique site evaluation considerations that each individual tenant may have. This document is intended to develop site alternatives and a comparison of those alternatives. A detailed design effort will be needed to assure that any selected site can meet specific requirements for a new telecommunications site and should address in specific terms the tower, shelter, security, utility and other design requirements outlined above.

## 4.2 Site Selection – Available Properties Evaluated

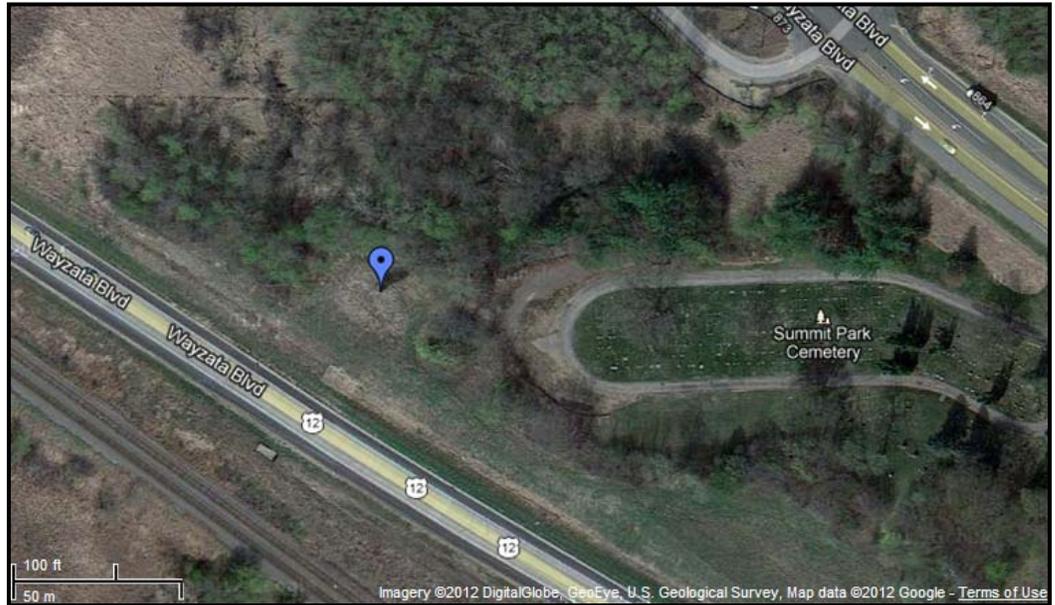
Wayzata city staff provided SEH with a comprehensive listing of properties owned by the city. There were 37 initial properties identified as potential opportunities for consideration. An initial review of properties was done to eliminate properties that were clearly not suited for development based on factors such as limited size of the property, restrictive terrain and soil conditions; proximity to business, residential, or lake properties. This initial vetting reduced the viable site alternative list to 14 properties that were further investigated with on-site visits. SEH and city staff toured each of 14 identified sites and evaluated the development potential. The site visits allowed for a review of site characteristics such as; property boundaries, terrain, current uses, proximity to utilizes, and general site constructability. Preliminary pros and cons of using the site as a telecommunications site were also discussed. Figure 6 identifies the full listing of sites considered.

**Figure 6 – Properties Owned by the City of Wayzata**



### 4.3 Alternate Site #1 – Summit Park Cemetery Site

Site Location: Address: 510 Wayzata Blvd West, Wayzata, MN 55391  
 Coordinates: 44-58-43.1688 N, 093-32-45.5922 W  
 Ground Elevation (AMSL): 292 Meters, 957 Feet  
 Parcel Area: 6.71 Acres, 292,452 sq.ft.



Pros	Cons
Relatively secluded	Far west end of the City
Low traffic	No utilities on site (Potentially available adjacent in Orono)
No residential	Adjacent to Woodhill Country Club and Wayzata County Club
Good proximity to Hwy 12 Bypass	
Nice clear development site for tower & shelter compound	

Proposed Development: The site is suited to accommodate a self supporting or guyed lattice radio tower and associated equipment compound. To determine the desired future tower height requirement we have compared the G-AMSL elevation and the HAAT figures from the Gardner Towers Site and the Summit Park site. To provide for antenna HAAT comparable to the Gardner Street Tower site, the new structure height would need to be 180 ft. An access driveway could be extended from the current cemetery loop road to provide convenient site access. The tower and equipment shelter compound should be fully fenced to provide for site security. Power would need to be located and brought into the site.

Service Area Comparison: Figure 7 reflects the predicted radio system coverage from the existing Gardner Street Towers site, with antennas at the top height of 150 feet to tip. Figure 8 reflects the predicted radio system coverage from the proposed new Summit Park site with an antenna height of 190 feet to tip.

**Figure 7 – Gardner Street Tower – 150’ Coverage Prediction**

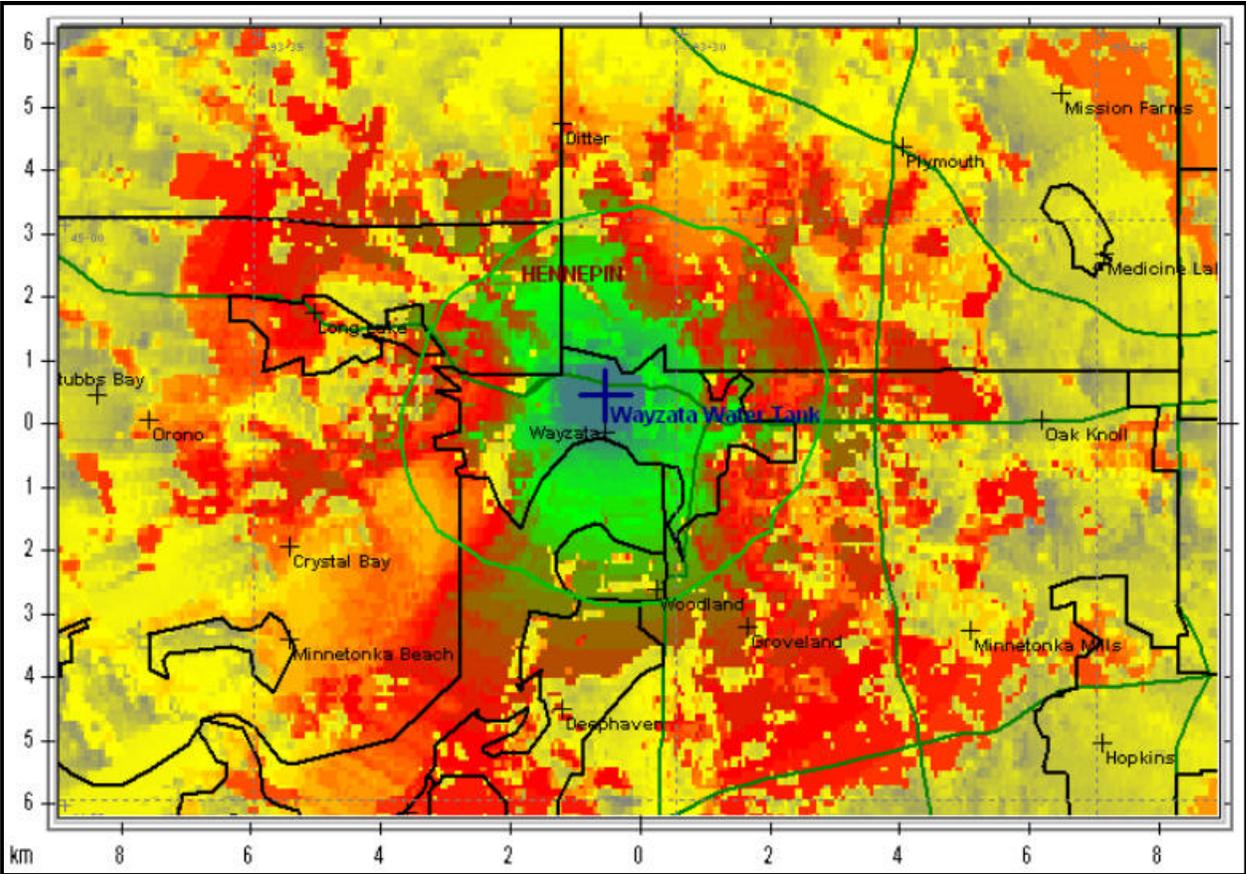
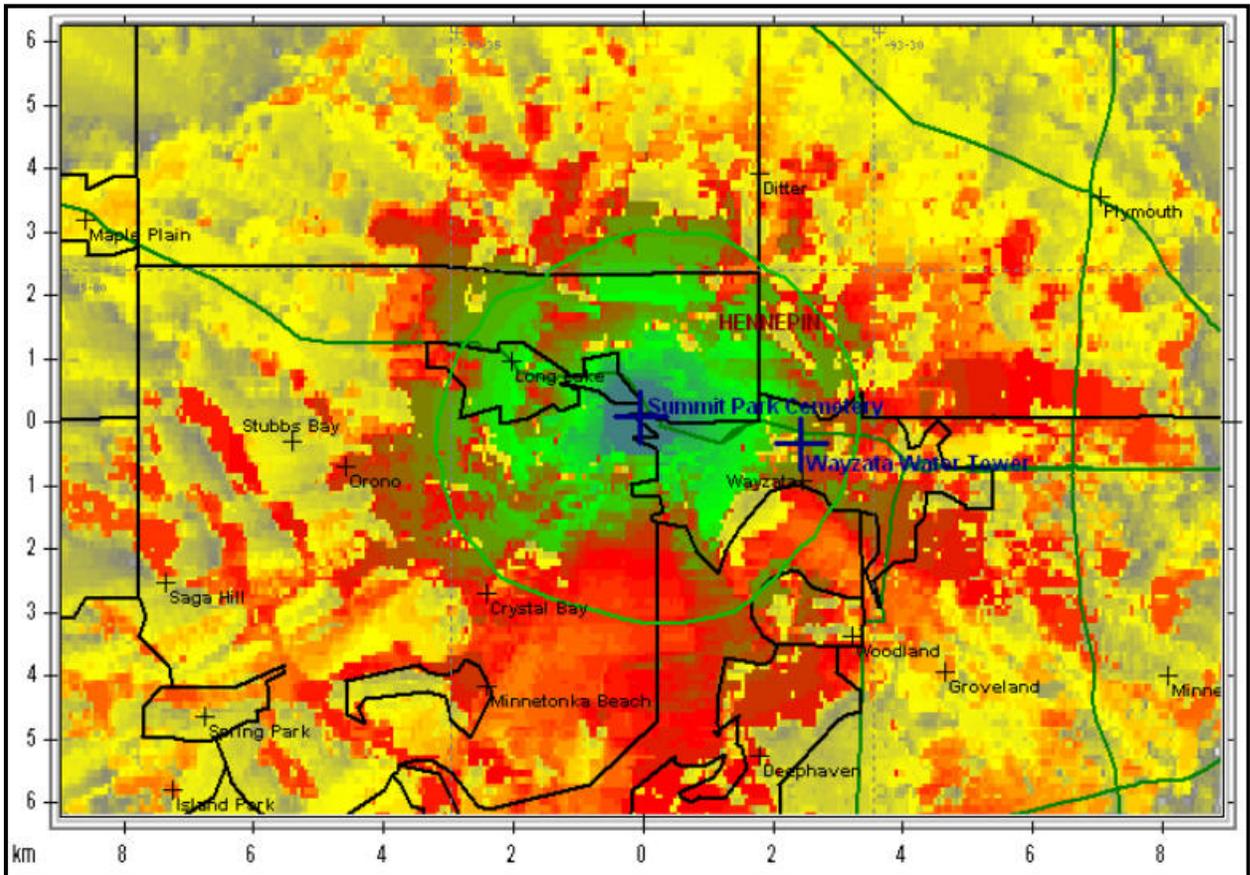


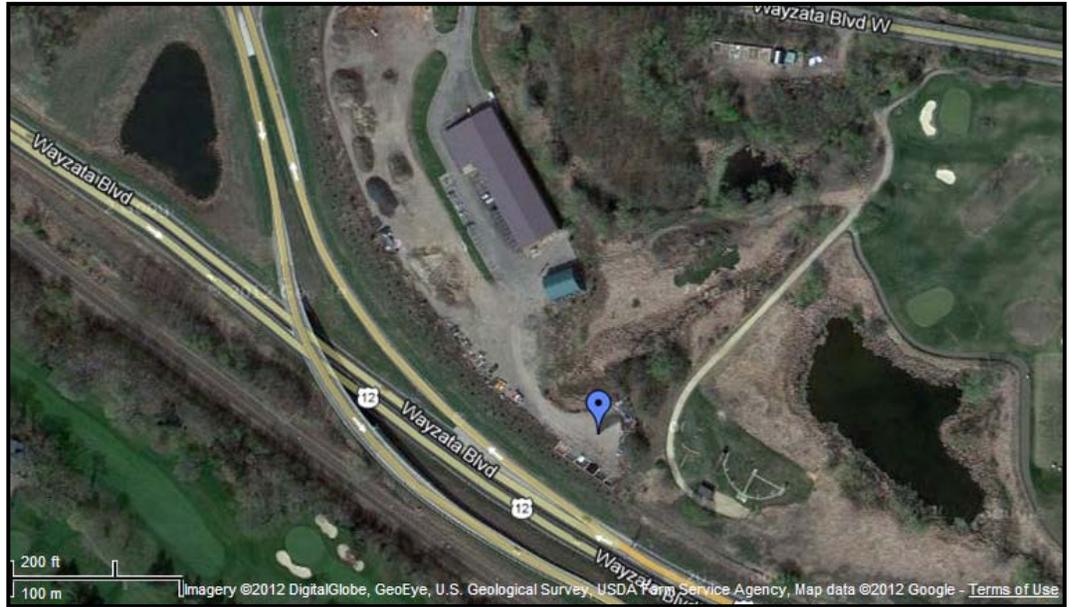
Figure 8 – Summit Park Cemetery Tower – 190' Coverage Prediction



Comments: Due to the proximity of this site on the west end of the city, there is a high likelihood that the coverage area served by this site would not be equivalent to the current Gardner Street site, even if the tower height is such that a comparable HAAT is achieved. This is demonstrated by the coverage prediction map comparison.

#### 4.4 Alternate Site #2 –Wayzata Public Works Site

Site Location: Address: 299 Wayzata Blvd West, Wayzata, MN 55391  
 Coordinates: 44-58-31.926 N, 093-32-21.7242 W  
 Ground Elevation (AMSL): 289 Meters, 949 Feet  
 Parcel Area: 7.58 Acres, 330,346 sq.ft.



Pros	Cons
Secure area	Located on the west end of the City
No residential	Lowest ground elevation of alternate site options
Possible separate access	Adjacent to Wayzata Country Club and Woodhill County Club
Good proximity to Hwy 12 Bypass	
Good access to power & utilities	
Low traffic	

Proposed Development: The site is suited to accommodate a self supporting lattice radio tower and associated equipment compound. To determine the desired future tower height requirement we have compared the G-AMSL elevation and the HAAT figures from the Gardner Towers Site and the Summit Park site. To provide for antenna HAAT comparable to the Gardner Street Tower site, the new structure height would need to be 180 ft. An addition of a gate on the southeast end of the public works yard would help limit access to the telecommunications site and would differentiate the compound from other public works activities. The current material storage bunkers and associated excess stored construction materials and equipment would need to be removed and relocated. Power would need to be extended to feed the new compound area.

Service Area Comparison: Figure 9 reflects the predicted radio system coverage from the existing Gardner Street Towers site, with antennas at the top height of 150 feet to tip. Figure 10 reflects the predicted radio system coverage from the proposed new Public Works site with an antenna height of 190 feet to tip.

**Figure 9 – Gardner Street Tower – 150' Coverage Prediction**

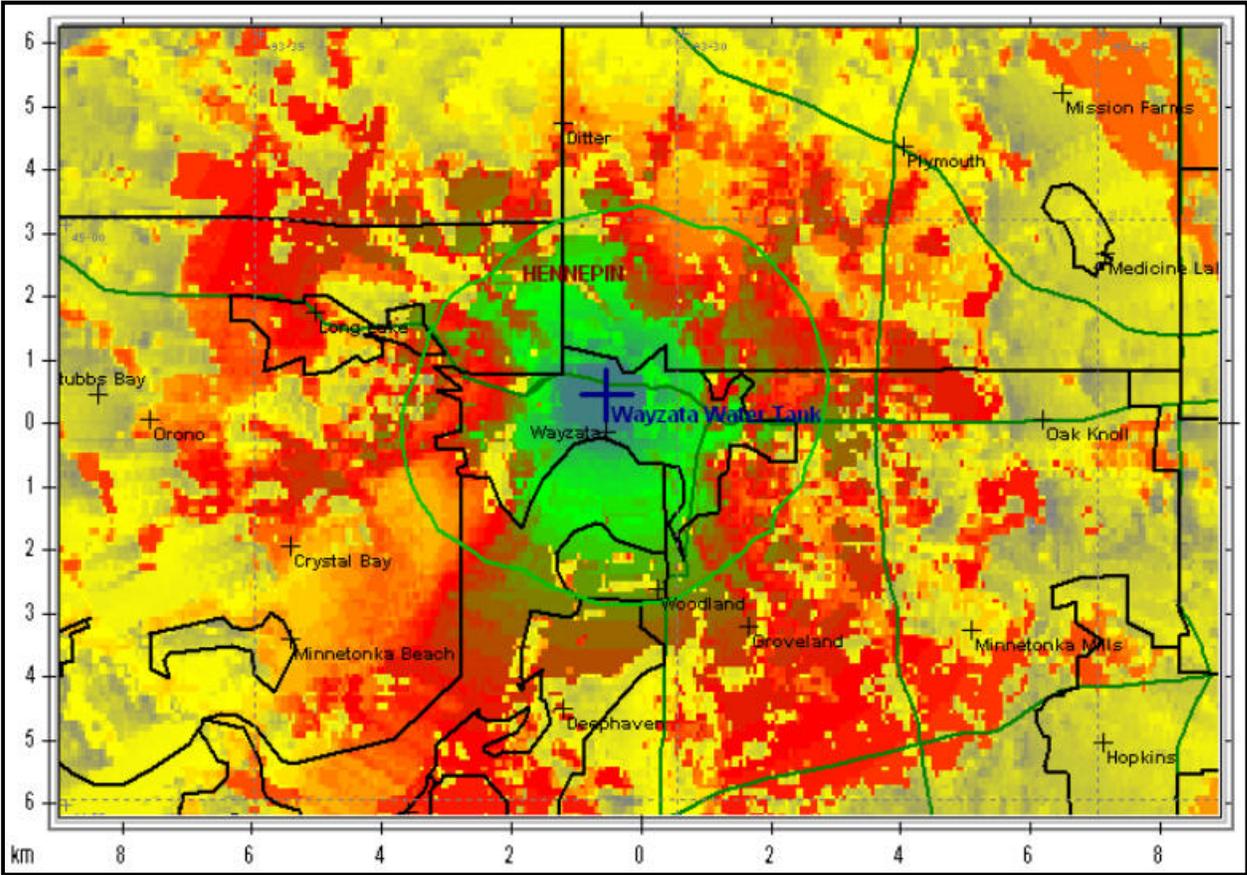
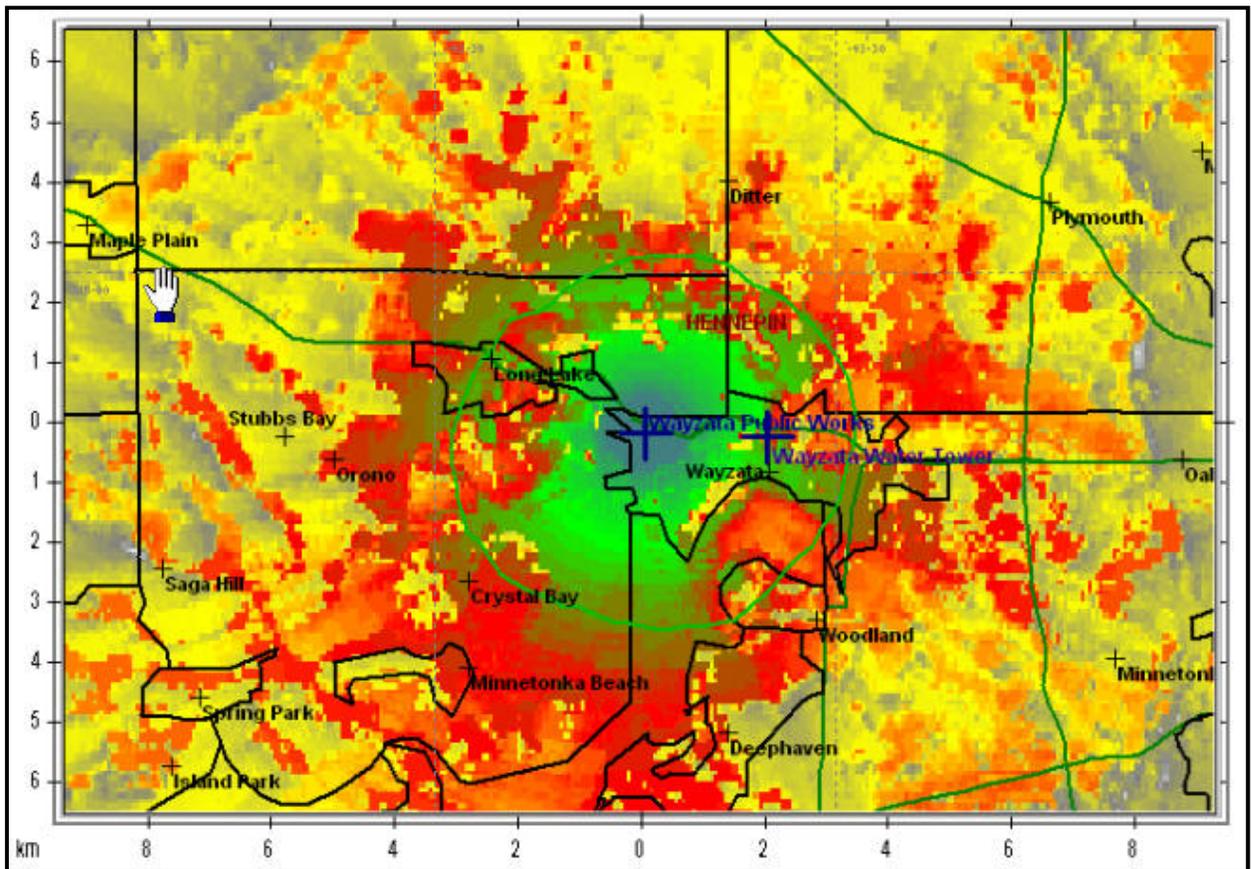


Figure 10 – Public Works Tower – 190' Coverage Prediction



Comments: Of the alternate sites considered, the public works site has the lowest ground elevation and therefore is least able to provide comparable height to the Gardner Street Tower site. The site, like the Summit Park Cemetery site, is on the west end of the city and this shift in coverage is difficult to make up by adding height to the structure. It is likely that coverage on the east end of Wayzata would suffer without the addition of another site to the east or significant increase in tower height at the sight such that its development would become unfeasible. Of the alternate sites considered, this site is most suitable for development from a constructability and occupancy perspective because the site is already used for municipal purposes, and because the city occupies the site as a public works facility.

#### 4.5 Alternate Site # 3 – Broadway Ave Snow Storage Site

Site Location: Address: 550 Broadway Avenue North, Wayzata, MN 55391  
 Coordinates: 44-58-41.3148 N, 093-30-26.229 W  
 Ground Elevation (AMSL): 296 Meters, 969 Feet  
 Parcel Area: 0.76 Acres, 33,011 sq.ft.



Pros	Cons
Highest ground elevation of alternate site options	Adjacent to residential properties
Level site	Marginal space, .76 Acre
Site is already cleared	Telecom site would displace current snow storage area & construction staging uses
Good access to power & utilities	
Good proximity to Hwy 12 Bypass	

Proposed Development: The site is suited to accommodate a self supporting lattice radio tower and associated equipment compound. To determine the desired future tower height requirement we have compared the G-AMSL elevation and the HAAT figures from the Gardner Towers Site and 550 Broadway Avenue site. To provide for antenna HAAT comparable to the Gardner Street Tower site, the new structure height would need to be 180 ft. The tower and equipment shelter compound should be fully fenced to provide for site security. The current use of the site for snow storage or construction materials staging would need to be discontinued or substantially reduced. Power appears to be available in close proximity to the site but would need to be extended to feed the new compound area.

Service Area Comparison: Figure 11 reflects the predicted radio system coverage from the existing Gardner Street Towers site, with antennas at the top height of 150 feet to tip. Figure 12 reflects the predicted radio system coverage from the proposed new Public Works site with an antenna height of 190 feet to tip.

**Figure 11 – Gardner Street Tower – 150’ Coverage Prediction**

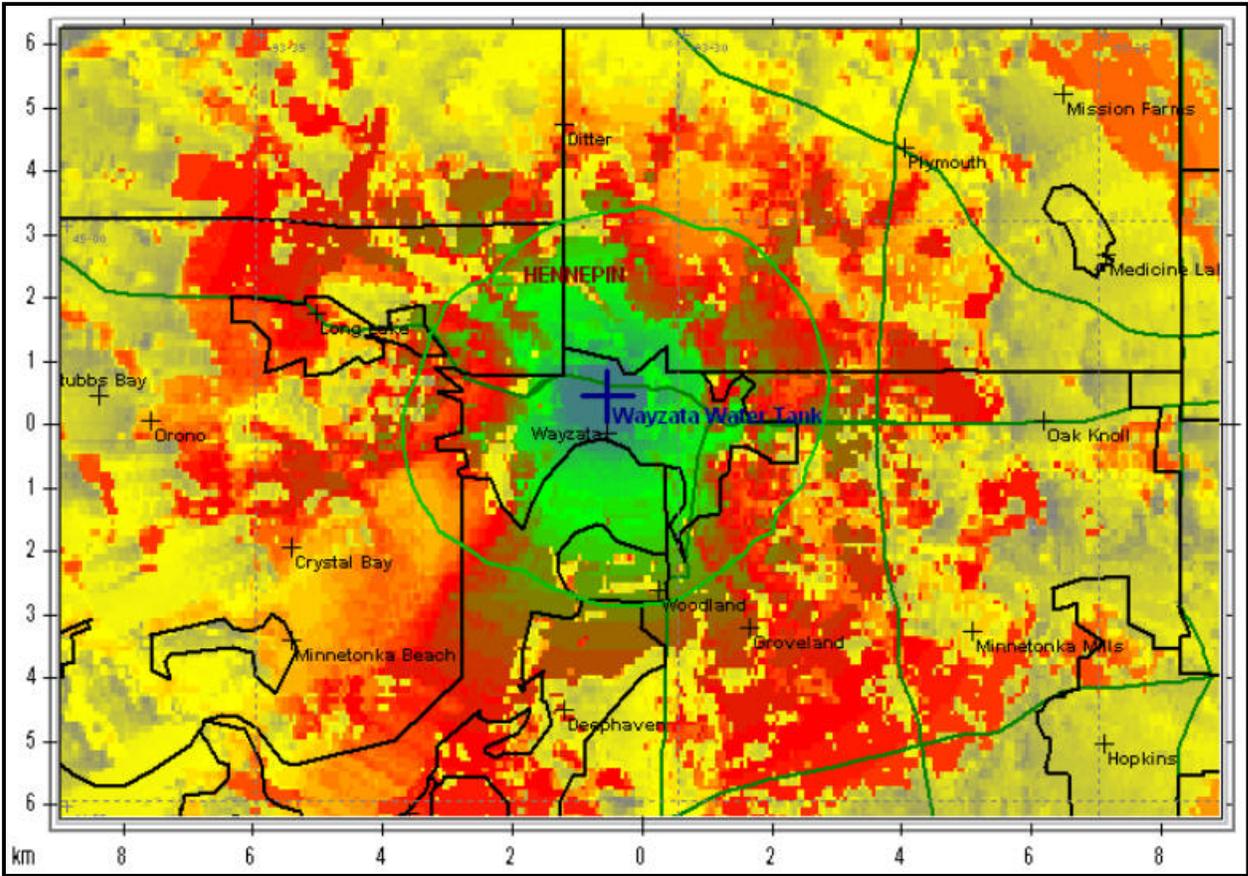
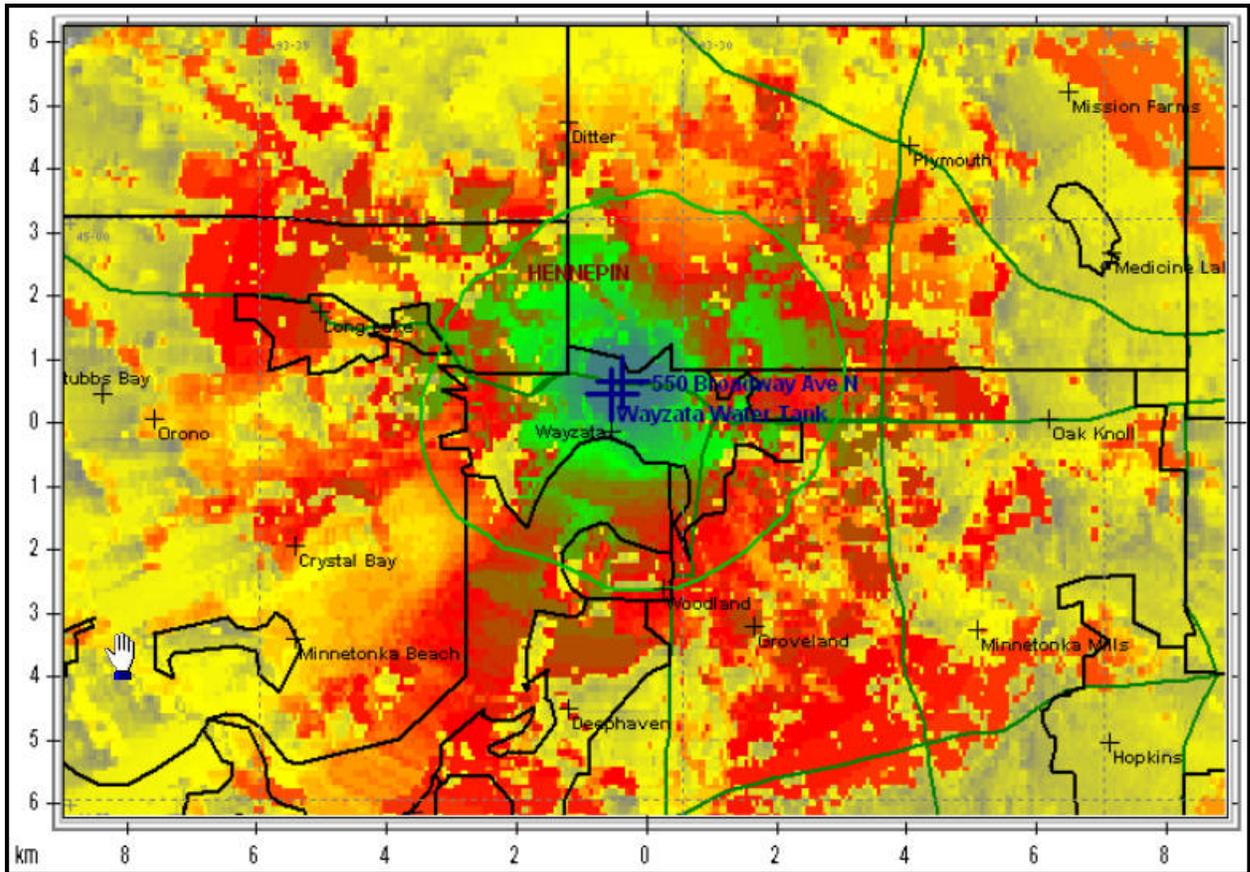


Figure 12 – 550 Broadway Ave. Tower – 180' Coverage Prediction



Comments: Of the alternate sites considered, 550 Broadway Avenue offers the highest ground elevation. Because the difference in ground elevations between the Gardener Street Site and the Broadway Avenue site is within 25 feet, it is possible to provide comparable coverage from this alternate location. The site, like the current Gardner Street Tower site, is centrally located within the city and the shift in coverage pattern is therefore minimal. Of the alternate sites considered, this site most closely matches the current coverage propagation characteristics of the current site. As far as suitability for development, the site footprint is smaller than desired to accommodate a robust telecommunications site and compound, so careful planning is needed during the detailed design phase of site development at this location. This site may be limited in terms of future growth or expansion opportunities relative to the other sites evaluated.

#### 4.6 Potential for a Two Site Alternative

Upon analysis and review of the site options presented above it becomes clear that although it is possible to compensate for reduced ground elevation, by erecting towers that are taller than the current Gardner Street Water Tower; it is difficult to replicate the current coverage footprint of the site when an alternate site is located to the far west end of the city. As with many real estate considerations the mantra of “location – location – location” also applies to the desirability of telecommunication sites.

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One option that may compensate for the shift in location of alternate sites from the current site is the development of two telecommunication sites within the city to replicate, or even enhance, the coverage footprint and service levels provided from the current site. Two new sites, one to the west and one to the east, would likely compensate for the shift in coverage shown in the coverage prediction maps above. However, because the city owned property options did not provide for a suitable location on the east side of Wayzata this option is not explored in depth in this report. Other draw backs to this option include the duplicate expense to the city to develop two sites rather than one. Although the height of the towers needed in a two site option would likely be lower than a one site option, the cost and added expense of two sites would still be nearly double that of a one site option. In addition, this would require tenants to deploy and operate two sites rather than one to service the same customers.

#### **4.7 New Telecommunication Site - Typical Site Development Costs**

Each of the alternate possible telecommunications sites has its own unique site development design considerations. However, of the purposes of this alternate site development evaluation, we are able to compare these various factors, and find that many of the costs are common regardless of the site selected. This cost estimate table is based on past projects and estimates of typical industry materials and construction costs. This estimate should be considered preliminary, and for comparison purposes only. For future procurement, construction or site development purposes; a more robust investigation of a selected site will be needed and a detailed design of the tower and compound should occur. Table 1 gives comparative cost figures for the three sites identified earlier in this section.

**Table 1 – Site Development Cost Comparison**

<b>Item #</b>	<b>Description</b>	<b>Summit Park 180' Guyed</b>	<b>Public Works 180' Self Support</b>	<b>550 Broadway 180' Self Support</b>
<b>1.0</b>	<b>PREPARE NEW SITE</b>			
1.1	Detailed design, bid specs, and construction docs.	\$ 25,000	\$ 25,000	\$ 25,000
1.2	Clear and grade compound and tower locations	\$ 10,000	\$ 2,000	\$ 0
1.3	Access drive	\$ 6,000	\$ 0	\$ 0
1.4	Soils / Geotechnical	\$ 5,000	\$ 5,000	\$ 5,000
1.5	Tower structure w foundation (installed)	\$ 125,000	\$ 145,000	\$ 145,000
1.6	Ice Bridge to Compound w Spurs to Tenants	\$ 10,000	\$ 10,000	\$ 10,000
1.7	Equipment Shelter Compound: aggregate, gate, fence.	\$ 30,000	\$ 20,000	\$ 20,000
1.8	Site grounding system	\$ 8,000	\$ 6,000	\$ 6,000
1.9	New Electrical Service	\$ 10,000	\$ 6,000	\$ 8,000
1.10	Project PM and Construction Admin.	\$ 35,000	\$ 33,000	\$ 33,000
1.11	Subtotal	\$ 264,000	\$ 252,000	\$ 252,000
1.12	Contingency	\$ 13,000	\$ 13,000	\$ 13,000
<b>1.13</b>	<b>New Site - Estimated Project Cost:</b>	<b>\$ 277,000</b>	<b>\$ 265,000</b>	<b>\$ 265,000</b>
<b>2.0 **</b>	<b>RELOCATE / ADD TENANTS (@ Tenant Expense)</b>	<b>* See Note</b>	<b>* See Note</b>	<b>* See Note</b>
<b>2.1</b>	<b>City related PM / Coordination / Legal</b>	<b>\$ 15,00</b>	<b>\$ 15,000</b>	<b>\$ 15,000</b>
<b>3.0</b>	<b>DECOMMISSION AND CLEAN UP @ GARDNER</b>			
3.1	Remove Chain Link Fence	\$ 2,000	\$ 2,000	\$ 2,000
3.2	Remove Cables and Ice Bridges	\$ 3,000	\$ 3,000	\$ 3,000
3.3	Remove all Brush and Aggregate	\$ 3,000	\$ 3,000	\$ 3,000
3.4	Grade and Sod site	\$ 5,000	\$ 5,000	\$ 5,000
3.5	Project PM and Construction Admin.	\$ 2,000	\$ 2,000	\$ 2,000
3.6	Subtotal	\$ 15,000	\$ 15,000	\$ 15,000
3.7	Contingency	\$ 1000	\$ 1000	\$ 1000
<b>3.8</b>	<b>Gardner Site Clean Up - Estimated Project Cost:</b>	<b>\$ 16,000</b>	<b>\$ 16,000</b>	<b>\$ 16,000</b>
<b>4.0</b>	<b>Total Estimated Project Cost: (w/o Tenant Costs)</b>	<b>\$ 308,000</b>	<b>\$ 296,000</b>	<b>\$ 296,000</b>

**\*\* NOTE:** Tenant Relocation Cost – This cost comparison table reflects projected city costs associated with development of a new Telecommunications Site. The comparison does not include the potentially substantial costs incurred by tenants of the site that may be requested by the city to relocate to an alternate location. The tenant relocation costs would vary based on the size, type, quantity and age of equipment in place. These costs could easily be in the range of \$75,000 to \$150,000, or more, per tenant. Some tenants may choose to upgrade or replace equipment at the time of a relocation which could also potentially increase their costs. Other tenants may feel the requirement to relocate is not operationally or financially acceptable and may choose to discontinue their lease arrangement with the City. Each tenant will need to evaluate the new site viability, the relocation costs, and other factors associated with their adjacent network and service areas to determine the total impact and cost for their operations.

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## 5.0 Wayzata Telecommunications Ordinance

The purpose of a city ordinance is to promote and protect public peace, health, safety and welfare, and to guide growth and development in keeping with the City Charter. The ordinance should give clear and understandable direction and guidance to residents and businesses as to the allowable and accepted approaches and methods to develop and provide for telecommunication facilities and their operations within the city. It should provide a basis for local government decision making and inform citizens, developers, and decision-makers of the ground rules that guide development within the city.

The primary principles and requirements of a local Telecommunications ordinance are:

- **Serve a public purpose:** An ordinance must advance a public purpose, not the interests of a private person or party.
- **Consistency with state and federal laws and local charters:** The provisions of an ordinance must be consistent with state law; the ordinance may not conflict with or be preempted by a state law. The same holds true for federal law.
- **Clear and precise language:** If an ordinance is vague, ambiguous or indefinite so that it is impossible to determine what the ordinance requires or to determine the legislative intent, the courts will hold the ordinance void.
- **Reasonable in nature:** An ordinance must be reasonable both at first sight and as applied to a particular situation or it will be held invalid.

The main elements of a robust city ordinance include:

- Ordinance number
- Caption or “title”
- Preamble, or “whereas” causes
- Ordination clause
- Controlling provisions
- Severability clause
- Date of effect
- Number of readings
- Amendments between readings
- Signatures

In addition to the establishment of telecommunication ordinances, the city uses the Building Inspections Office to provide prompt response to public needs, questions and concerns regarding health and safety, and to effectively respond to violations and obtain property owners' compliance in correcting these violations.

To aid in the establishment of a proper and robust telecommunication ordinance for the City, SEH reviewed the content of the annotated draft Ordinance Section 31: Commercial Telecommunications Facilities and Residential Accessory Communications Device Uses ordinance dated last revised on 7/10/21012. The review included a comparison of terms and content with that of other local city ordinances such as the City of Minnetonka MN., the City Golden Valley MN., and the City of Hutchinson MN. In addition SEH staff evaluated the ordinance in relation to the principles and requirements of local ordinances as outlines above.

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The general findings of this review are that:

- The current draft contains many of the needed elements for a telecommunications ordinance, but appears to be specifically written to address commercial facilities. It may be beneficial to broaden the scope of the ordinance to cover conditions of residential use such as amateur radio towers, roof top satellite antenna, or other special telecommunication applications and appurtenances.
- The layout and flow of the draft ordinance, and many of the terms and requirements seem to reflect the legal terms associated with telecommunications tenant lease document rather than a governing ordinance. There are terms and references such as lessee, liability insurance, lease agreement, performance bond, and others that are more appropriate for a legal agreement that are not typical ordinance references.
- There are references to items that may be considered objective or difficult to demonstrate or justify that can cause difficulty for enforcement of the ordinance. Examples include section 5. ii) “have no adverse impact”; and section C. i. J) “significant negative visual or property value impact”. If possible these references should be clarified or quantified with specific limitations or values.
- Section 1, Purpose and Intent, the statement identifies a reference to “establish transitional processes of relocation of facilities from the City’s water tower...”. This would be a one time and temporary process and may be more appropriate in a section other than the Purpose and Intent which should establish more long term, permanent and high level goals for the city related to Telecommunications Facilities.
- Section 4, Permitting, typically includes references fees required for applications, permits, and administrative processing. Other application specific requirements are also typically presented at the beginning of the ordinance. It may be beneficial to relocate Section 8 or to merge its content with Section 4.
- Section 5, Minimum Requirement for Commercial Telecommunications Facilities, appears to assume or require that all applications are for city owned properties only. Terms in this section may need to be made more general to apply to all telecommunication facilities within the city, whether on city property or private property.
- Sections 5, 6 and 7 have similar design and requirement themes and may be more clear and effective if combined or merged. For example the collocation design requirement does not initially come across as a firm requirement as it is listed as a sub bullet under Co-location Opportunity, rather than in the section for Minimum Requirements, or Design Standards.
- Throughout the draft ordinance document there is a need to review and edit the numbering and lettering bullet and sub-bullet references to assure accuracy, consistency and uniformity of the referencing scheme of the document.

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## **6.0 Telecommunication Site Safety Standards and Best Practices**

There are many site safety standards to consider when evaluating existing telecommunication sites or planning for the development of new sites. This section is intended to highlight issues associated with protecting adjacent properties and casual non-professional citizens that may be in the general proximity of a telecommunications site. For more detailed references to information on this topic specific to employees or contract professionals that may operate or work at the site or on the tower; one of the most comprehensive and pertinent resources for Telecom site safety standards is the US Department of Labor – Occupational Health and Safety Administration (OSHA) Subpart R – Special Industries, Standard Number 1910.268 Telecommunications. This section sets forth safety and health standards that apply to the work conditions, practices, means, methods, operations, installations and processes performed at telecommunications centers and at telecommunications field installations, which are located outdoors or in building spaces used for such field installations.

For general site safety there are some best practices recommendations to consider in particular related to design and layout of the site, and related to marking and warning signage of the site. In addition to OSHA prescribed safety requirements, there are various generally accepted industry guidelines or best practices that regularly appear in the industry research. Telecommunication site safety and best practices areas of interest include the following:

### **6.1 Site Selection**

The ideal site for a cellular tower would be flat with level ground, good soil compaction qualities and a low water table. Areas to avoid include flood plains, wetlands, wildlife habitats and any areas with known soil problems. For a guyed tower, the site should also be of sufficient size to accommodate a guy radius, from the tower base to the outer anchor heads, of 70-80 percent of the overall tower height, plus 15-20 feet to accommodate the foundations. Generally, guyed towers are less expensive above 100 feet however if the desired location is in a metropolitan area where land is very expensive, it may make economical sense to consider a self-supporting tower. The site area must also be large enough to accommodate the required compound for the carrier equipment shelter(s).

In many cases, the tower site selection will require approval from a zoning board, planning commission, and will have to meet state government other agency rules and regulations along with FCC and FAA rules, regulations and approvals.

### **6.2 Tower Setbacks**

Tower setbacks are governed by local, state, and municipal rules. Generally, guyed towers should be setback at a distance equal to 200% from any offsite residential structure, adjoining parcels, rights of way and roads and streets. Monopole towers may have a 20% reduction in the required setbacks. The minimum lot area should be about 1.5 times the fall zone. The lot area should also not encompass any public road or railroad right of ways.

### **6.3 Fall Zone**

The fall zone is the area on the ground within which there is a potential hazard from falling debris or the collapsing of the tower. The fall zone distance is generally from the base of the tower to the property should generally not be less than 1.5 times the height of the tower and be contained within the property lines.

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## 6.4 Environmental Factors

Environmental factors such as wind, ice loading conditions, and the structure of the soil on which the tower stands need to be taken into consideration. Accepted codes such as EIA/TIA for the tower industry need to be followed. Other codes include Uniform Building Code, the Standard Building Code, and the National Building Code, or the wind load requirements as defined by ANSI (American National Standards Institute).

For ice loading consideration, the EIA/TIA-222-G Code appendix should be referred to. This code requires ice load consideration but does not stipulate ice load amounts or wind velocity. It is important to include ice in the tower analysis and this should be discussed with the tower vendor at the time of quoting to get a better definition of the effects on the particular tower requirements. For Soil type and structure of the subsoil it is essential to have a geological analysis (soil report) done on for the site and to provide this to the tower manufacturer prior to tower design. For guyed towers, a boring should be taken at each guy anchor location as well as at the base of the tower. A minimum of one boring should be done however if a large disparity in the soil conditions is encountered from one boring to another or if there is a large elevation difference from one position to the next, additional borings should be taken at all anchor locations.

## 6.5 Lighting and Painting

Required lighting and painting of a radio tower is determined by the FAA on a site-by-site basis. The FCC always requires an FAA determination that an antenna tower will not pose an aviation hazard before it will grant permission to build that antenna tower and a specific FAA permit is required for each site and will stipulate the markings required. Tower lighting and painting requirements are based upon the advisory recommendations of the FAA, which are set forth in two FAA Advisory Circulars. 47 CFR §§ 17.21-17.58. If tower lighting is required, the tower owner may be requested to install a lighting controller with remote sensing alarms which can be incorporated with the site alarm system to indicate various modes of lighting failure

## 6.6 Security

The tower and equipment shelter(s) should be protected from unauthorized access by appropriate security measures. An enclosed fence not less than six (6) feet in height should surround the perimeter as well as no climb security measures provided on the tower or support structure. For a guyed tower, it is advisable to also provide security fencing around each of the guy anchors.

**Safety Signs:** The American National Standards Institute (ANSI) has a standard for hazard communication via signs. This provides a structured approach to signing a facility that is uniform across industries and hazards. There are different classifications of hazards and warning signs that may include: Notice, Caution, Warning, and Danger. When you see an ANSI-compliant Danger sign, it should mean the same thing whether the hazard is RF, electrical, chemical, mechanical, or whatever.

Some of the most common signs used at telecommunication sites include:

**Tower Registration Sign** - Designed to help tower owners comply with FCC rules on tower registration that became effective in 1996.



**RF Field Level Signs** - RF field level signs come with three different action words at the top of the sign: NOTICE, CAUTION, or WARNING. The signs related to RF fields are based on the Maximum Permissible Exposure (MPE) limits established by the Federal Communications Commission (FCC). The FCC has two tiers of MPE limits for RF field levels. The more restrictive limits are for General Population/Uncontrolled exposure. The NOTICE sign refers to fields that may exceed this level. The CAUTION and WARNING signs refer to fields that may exceed human limits—the FCC MPE limits for Occupational/Controlled exposure. The Tower CAUTION and Water Tank CAUTION signs refer to RF field levels on the tower or water tank. The three basic signs refer to field levels “beyond this point.”



## 7.0 Lease Conversion Option Evaluation

On May 8, 2012 the City of Wayzata received a proposal from Unison Site Management that offered a cell site lease conversion program offer for the Gardner Street Water Tower site. The offer would provide for a lump sum payment in exchange for a purchase of a defined easement for the cell site. The offer anticipated that Unison would manage the site and receive revenue from the current site tenants including: AT&T, Verizon Wireless, Sprint PCS, T-Mobile, and Nextel Communications. The Unison financial offer proposed a one-time initial payment to the City of Wayzata of \$ 2.75 million. The offer does not stipulate the time commitment of their offer (ie; 10 years, 25 years, in perpetuity, etc.). The cumulative projected revenue stream for the site, inclusive of the 5 current tenants, is \$21,502.585 per month, with a 5.0% annual escalation. The 2012 total annual revenue generated by the Gardner Street Water Tower Site is estimated at \$258,055.

The current lease revenue from the site is shown in the table below.

**Table 2 – Gardner Street Tower – Annual Telecom Revenue**

CURRENT ANNUAL REVENUE FROM TELECOMMUNICATION TENNANTS					
Vendor	Lease Started	Auto Lease Renewal Ends	2011	2012	2012
AT&T	4/2/1985	4/1/2021	\$54,021	**727.21 per Ant. + 363.64 gmd. Lease	\$56,722
Nextel	12/8/1997	1/1/2018	\$29,502	727.21 per Ant. + 399.81 gmd. Lease	\$30,977
Qwest (Terminated '06)	4/1/1999	1/1/2020		Terminated Lease	
Sprint	4/1/1997	1/1/2018	\$54,021	727.21 per Ant. + 363.64 gmd Lease	\$56,722
T-Mobile	3/20/1997	1/1/2018	\$54,176	727.21 per Ant. + 363.64 gmd Lease	\$56,885
Verizon	12/20/2001	1/1/2007 + 15 years If not contested	\$54,047	727.21 per Ant. + 365.89 gmd Lease	\$56,749
<b>*Total 2012 Lease Revenue:</b>					<b>\$258,055</b>

There are a number of items to consider when evaluating the merit of the Unison proposal. Both financial and operational considerations should be explored, as well as the near term and long term implications of the decision. Below is a brief review of the pros and cons of this offer followed by a financial analysis of the proposal. Both these elements, the pros and cons and the financial considerations, will help to determine the viability or desirability of the Unison proposal.

**Table 3 – Lease Purchase Pros and Cons**

<b>Pros</b>	<b>Cons</b>
Secures current value of asset, protects against future wireless market uncertainty and risks such as consolidation or mergers of carriers, or technology changes that may diminish the need for high site wireless communications	Could introduce the potential of loss of control over site aesthetics, future site uses, and other site management concerns.
For financially distressed municipalities the sale of leases provides lump sum cash relief to assist with meeting near term budget gaps.	Reduces the flexibility of the City to take action for future moves, changes, or additions to the site.... You are committed far into the future.
Unison site management may relieve the City from administrative and clerical tasks associated with managing the carriers on the site.	The city may forgo future potential revenue opportunities. Society is more and more dependent on wireless communications and there is continued growth in demand for mobile video, mobile entertainment, wireless smart machine technology in the home, and increased telematics and transportation industry wireless communications. These industry factors all indicate that a desirable wireless communications site is a reliable revenue source into the future.

The financial analysis showing the Net Present Worth (using general net present value discounted rate of return calculations) of the Unison Offer is included in the table below. The assumptions include an 8% discount rate for future year revenue projections to accommodate a typical expected investment return. An additional calculation is shown with the current Federal Reserve Discount Rate of 1.25% as a comparison. The table includes two series of revenue projections with the first including all 5 current tenants, the second omits the Nextel revenue from all future year revenue calculations. The table shows a projected 8% profit margin for Unison and a complete payback period for of approximately 14 years. All revenue beyond the 14th year would be Unison profit. These calculations do not account for site management operating costs that may be incurred by Unison.

**Table 4 – Unison Proposal Discounted Revenue Table**

Number of Years	Annual Projected Revenue	Estimated Expected Rate of Return (@ 8%)	Revenue discounted at Fed Rate of 1.25%	Annual Projected Revenue (less Nextel)	Estimated Expected Rate of Return (@ 8%)
1	\$258,055	\$238,940	\$254,869	\$227,078	\$210,257
2	\$270,958	\$232,303	\$264,309	\$238,432	\$204,417
3	\$284,506	\$225,850	\$274,098	\$250,353	\$198,739
4	\$298,731	\$219,576	\$284,250	\$262,871	\$193,218
5	\$313,667	\$213,477	\$294,777	\$276,015	\$187,851
6	\$329,351	\$207,547	\$305,695	\$289,815	\$182,633
7	\$345,818	\$201,782	\$317,017	\$304,306	\$177,560
8	\$363,109	\$196,177	\$328,759	\$319,522	\$172,628
9	\$381,265	\$190,727	\$340,935	\$335,498	\$167,832
10	\$400,328	\$185,429	\$353,562	\$352,273	\$163,170
	<b>\$3,245,788</b>	<b>\$2,111,807</b>	<b>\$3,018,271</b>	<b>\$2,856,163</b>	<b>\$1,858,305</b>
11	\$420,344	\$180,279	\$366,657	\$369,886	\$158,638
12	\$441,362	\$175,271	\$380,237	\$388,380	\$154,231
13	\$463,430	\$170,402	\$394,320	\$407,799	\$149,947
14	\$486,601	\$165,669	\$408,924	\$428,189	\$145,782
15	\$510,931	\$161,067	\$424,069	\$449,599	\$141,732
	<b>\$5,568,456</b>	<b>\$2,964,494</b>	<b>\$4,992,478</b>	<b>\$4,900,017</b>	<b>\$2,608,635</b>
16	\$536,478	\$156,593	\$439,776	\$472,079	\$137,795
17	\$563,302	\$152,243	\$456,064	\$495,683	\$133,968
18	\$591,467	\$148,014	\$472,955	\$520,467	\$130,246
19	\$621,040	\$143,902	\$490,472	\$546,490	\$126,628
20	\$652,092	\$139,905	\$508,637	\$573,815	\$123,111
	<b>\$8,532,835</b>	<b>\$3,705,151</b>	<b>\$7,360,382</b>	<b>\$7,508,551</b>	<b>\$3,260,384</b>
21	\$684,697	\$136,019	\$527,476	\$602,506	\$119,691
22	\$718,932	\$132,241	\$547,012	\$632,631	\$116,366
23	\$754,878	\$128,567	\$567,272	\$664,262	\$113,134
24	\$792,622	\$124,996	\$588,282	\$697,475	\$109,991
25	\$832,253	\$121,524	\$610,070	\$732,349	\$106,936
	<b>\$12,316,216</b>	<b>\$4,348,498</b>	<b>\$10,200,493</b>	<b>\$10,837,774</b>	<b>\$3,826,503</b>

SEH RECOMMENDATION – Unison Proposal: SEH does not find the current Unison proposal to include sufficient detail, or provide a significant enough financial advantage over the current revenue stream. Therefore SEH recommends that the city not accept the current Unison offer. If the City is considering the potential for a one time conversion of future revenue in exchange for a single lump sum present day payment, it is recommended that the site be advertised for the lease sale and a reverse auction style bid process be undertaken to

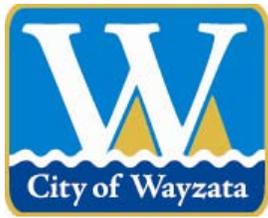
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assure that multiple real-estate investment and site management firms have an opportunity to evaluate the site and its revenue potential. This form of competitive approach is most likely to give the City a robust financial offering. This approach will also allow the city to set specific operations requirements, protect the water tower asset and the site for its intended municipal water uses, and assure all terms and conditions of a lease purchase can be clearly established and set by the city.

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## **Appendix A**

Tenant Survey



**City of Wayzata Public Works**  
299 Wayzata Blvd. West  
Wayzata, MN 55391

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**Director of Public Service**

David Dudinsky  
**Superintendent**  
Jim Eibensteiner  
**Secretary**  
Rebecca Jones

**TO:** Tenant; City of Wayzata Gardener Tank

**FROM:** Dave Dudinsky, Director of Public Service  
City of Wayzata

Andrew Terry, PE  
SEH Inc.

**DATE:** September 13, 2012

**RE:** Wayzata – Gardner Street Water Tank  
Alternative Telecom Site Options Analysis Survey  
SEH No. WAYZA 121596

On August 09, 2012 the Wayzata City Council authorized the Director of Public Service to proceed with development and technical review of alternative telecommunication site options within the city to accommodate current and future telecommunication carrier tenants. The options assessment and site evaluation study is intended to determine the feasibility of relocating the current telecommunication carriers from the existing Gardner Street Water Tank to some alternate location or proposed new structure. All current telecommunication carriers that hold leases to the site are being surveyed to determine their minimum site design requirements and to document comments and concerns regarding the potential for an alternate site development and relocation project.

The purpose of this memo is to request your time for the completion of the attached brief information survey and to request your participation in a follow up telephone conference with the City and its engineering consultant, SEH Inc. The telephone discussion is to further discuss the site relocation options evaluation process, to review site design considerations, and to document your concerns as the city explores its options related to a possible future site development and relocation project. Each tenant will be asked to participate in an independent conference call, and all data collected will be tabulated in generic formats with anonymous references to tenants to provide as much confidentiality as is possible.

**We request your response to the attached survey document no later than September 26<sup>th</sup> 2012.** We propose to conduct the follow up conference call discussions the week of October 1<sup>st</sup>, 2012.

Please return completed surveys to Andy Terry, [aterry@sehinc.com](mailto:aterry@sehinc.com); or via fax at 651.490.2150. Also please provide a preferred conference call recommendation for the week of October 1<sup>st</sup>.

Questions regarding this Options Assessment Project or the Information Collection Survey can be directed to Andy Terry at 651.490.2147 or Dave Dudinsky at 952.404.5361.

# City of Wayzata – Gardner Street Water Tank Telecommunication Site Options – Data Collection Survey

## Cellular Site, Carrier Requirements

### Tenant Information

1. Names, addresses and telephone numbers of the Cellular Provider:
  - a. Tenant Name: \_\_\_\_\_
  - b. Address: \_\_\_\_\_
  - c. Primary Contact Name: \_\_\_\_\_
  - d. Phone No.: \_\_\_\_\_
  - e. Fax No.: \_\_\_\_\_
  - f. E-mail address: \_\_\_\_\_

### Service Area

1. Define the service area requirements for this site (Geographic Coverage/ Square Miles)?  
\_\_\_\_\_  
\_\_\_\_\_
2. Signal Strength/Coverage Requirements? \_\_\_\_\_
3. Data Usage Capacity/Throughput: \_\_\_\_\_
4. Call Clarity & Network Speed: \_\_\_\_\_

### Coverage Considerations

1. Minimum AMSL/HAAT requirement? \_\_\_\_\_
2. Maximum site-spacing/search eye radius between sites. \_\_\_\_\_

### Antenna/Feed line Requirements

1. Number of antennas and type (Identify model number). Or provide the type of antenna and its effective projected area [EPA]? \_\_\_\_\_
2. Antenna Heights / Locations: (Provide RAD center heights and azimuths) \_\_\_\_\_
3. Feed line requirements (Detail the size of the transmission line or the manufacturer's part number) \_\_\_\_\_
4. Feed Line Attachment: (Provide details on the distribution of the antenna lines and the type of mounting hardware that will be used such as clusters or blocks).  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# City of Wayzata – Gardner Street Water Tank Telecommunication Site Options – Data Collection Survey

## Transmitter Equipment

1. Provide a list of the frequency band(s) and frequencies that you operate on?

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2. Transmitter output power or antenna amplifier specification:

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## Equipment Shelter Space Requirements

1. What space requirements, rack requirements?

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2. How many racks do you require? \_\_\_\_\_

3. If providing your own shelter, please specify the foot print space required. \_\_\_\_\_

## Utility Requirements

1. Electrical Power Requirements \_\_\_\_\_

2. Backup Generator? \_\_\_\_\_

3. HVAC Requirements? \_\_\_\_\_

## Transport Carrier Requirements

1. What type of Telecommunication Transport is required (i.e. T1 Leased Line, Fiber Optic, Microwave, DSL, Fiber, Cable?) \_\_\_\_\_

2. What are the bandwidth requirements? \_\_\_\_\_

## Site Access and Security Requirements

1. What are your security requirements? \_\_\_\_\_

2. What are your access requirements? \_\_\_\_\_

## Other Specific Site Requirements

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