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Lake Elmo, MN 55042

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NOTICE OF MEETING

The City of Lake Elmo
Planning Commission will conduct a meeting on

Wednesday, May 30, 2018
at 7:00 p.m.

AGENDA

1. Pledge of Allegiance
2. Approve Agenda
3. Approve Minutes
    a. May 7, 2018
4. Public Hearings
    a. FINAL PLAT AND PLANNED UNIT DEVELOPMENT (PUD) PLANS. A request by OP4 Boulder Ponds, LLC c/o The Excelsior Group, LLC, 1660 Highway 100 South, Ste 400, St. Louis Park, MN 55416, for Final Plat and Final PUD Plans, consisting of 33 single family detached residential units and 1 outlot. PID #04.029.21.32.0038.
    b. COMPREHENSIVE PLAN 2040 UPDATE. The City of Lake Elmo is proposing approval of the DRAFT 2040 Comprehensive Plan.
5. Business Items
    a. Self-service storage facility discussion
6. Communications
    a. City Council Updates – 5/15/18 Meeting
        a. 2040 Comprehensive Plan Extension Request
        b. Golf Cart Ordinance - passed
        c. Accessory Structure update – passed
        d. Variances 9369 Jane Road – passed
        e. Easton Village 4th Final Plat & Developer agreement - passed
    b. Staff Updates
        a. Upcoming Meetings:
            - June 4, 2018
            - June 18, 2018
7. Adjourn

***Note: Every effort will be made to accommodate person or persons that need special considerations to attend this meeting due to a health condition or disability. Please contact the Lake Elmo City Clerk if you are in need of special accommodations.

City of Lake Elmo
Planning Commission Meeting
Minutes of May 7, 2018

Chairman Dodson called to order the meeting of the Lake Elmo Planning Commission at 7:00 p.m.

COMMISSIONERS PRESENT: Emerson, Johnson, Kreimer, Dodson, Lundquist, Dorschner, Weeks, & Hartley

COMMISSIONERS ABSENT: Pearce

STAFF PRESENT: Planning Director Becker, City Planner Prchal and City Administrator Handt

Approve Agenda:

The agenda was accepted as presented.

Approve Minutes: April 23, 2018

M/S/P: Hartley/Lundquist, move to approve the April 23, 2018 minutes as amended, ***Vote: 7-0, motion carried unanimously.***

Public Hearing – Variance Request 9369 Jane Road

Prchal started his presentation regarding the shoreland variance request at 9369 Jane Road. This request is for a variance of a non-conforming structure that does not meet the minimum structure setbacks from the Ordinary high Water Level, required sideyard and front yard setbacks and maximum impervious standards.

This variance is for a deck as well as an expansion of a garage off the front of the home. There was a variance approved in 2001 to build the home. Some of the key points with that variance was that the house footprint could not be greater than 1350 square feet, which was the size of the original home. A 30 foot setback from Jane Road needed to be maintained which added a 6 foot increase on the setback from the OHW of Lake Jane and must be setback 44.2-52.7 feet from the OHWL.

There are four variance criteria that need to be met. Staff feels that the first one, practical difficulties is met. Because of the size of the lot, the rear and front setbacks would be difficult to be met. The selected locations seem to be the best for the deck and garage. Staff feels that the second criteria of unique circumstances is met. This property was platted before the OHWL was created, making it difficult to improve the property without approval. Staff feels the third criteria, character of locality is met as this variance will not change the character of the locality. Staff feels the last criteria is met. The side loaded garage will actually make it safer for the homeowner to pull out onto Jane Road.

Dodson asked where the septic is. Prchal stated it is a 201 system which is an offsite system owned by the city. Dodson asked if it has been discussed with the applicant about removing the turnaround stub as a way to reduce the impervious. Prchal stated that he did not discuss that with applicant. That was put in as a turnaround so that they can leave the driveway nose first vs. backing out onto the road.

Heidi Offord, 9369 Jane Road, stated that the driveway is steep going to garage, which makes it difficult to back down the driveway. This is especially true in the winter and there is a surprising amount of traffic on the road. The request for the deck gives them a way to get to the back yard without having to go through the whole house to get to the walk out. Both requests are safety driven.

Public Hearing opened at 7:24 pm

No one spoke and there were no written comments.

Public Hearing closed at 7:24 pm

M/S/P: Lundquist/Johnson, move to recommend approval for the request for shoreland variances from the minimum structure setback from the Ordinary High Water Level, front and side yard setbacks, and maximum impervious surface standards, subject to conditions of approval as recommended by staff , ***Vote: 7-0, motion carried unanimously.***

Dodson is concerned about the impervious surface, but does understand the need for the stub turnaround on the driveway. Emerson stated that with this process they will actually end up with less impervious because they are removing some pavers. This is condition number 6.

Public Hearing – Comprehensive Plan 2040 Update

Jennifer Haskamp, Swanson Haskamp Consulting, has been working with the City for just over a year with the update of the Comprehensive Plan. Haskamp went through what the process has been with the update. The Metropolitan Council has governance over this process through the system statement which states that the City has to comply with four regional systems and are required to plan consistently with them. The four systems include transit and transportation, sewer, airports and parks.

Community designations identify which areas are planned for urban services and which areas are planned to stay the same over this planning period. The I94 and Village Area are designated as emerging suburban designation and they are supposed to plan for 3-5 units per acre. The rest of the area is guided for rural development and is encouraged to be 1 unit per 10 acres. These areas are on individual septic or community septic.

Haskamp stated that the City Council requested that they simplify the plan and take out some of the unnecessary items and put them into the system plan, which is the appropriate location. Hopefully this will cut down on the number of Comprehensive Plan requests.

Over the course of the last year, the advisory panel met 11 times to discuss the 2040 Comprehensive Plan. There were a number of public events, such as farmers market. There were a series of stakeholder meetings and 2 open houses.

The things that have changed, are the Urban Reserve, Mixed-Use and Housing. People have asked most about the Urban Reserve. The Urban Reserve, which has been ran past Met Council but not officially approved, would essentially designate areas within the Metropolitan Urban Service Area (MUSA) that are projected to be developed post 2040. These areas would not count towards density calculations for areas in the MUSA. The reason for the proposal was that in the 2030 plan, we were being asked to plan for 25% more housing units. We can reduce that number by 25% per the 2015 system statement, but cannot reduce the MUSA and must hit 3 units per acre. Netting out land within the Urban Reserve allows us to achieve the density of three units per acre while still sticking close to the 25% decrease in population. The areas that within the Urban Reserve Land Use Category were selected on a best guess of where infrastructure will go in. This in essence becomes a staging plan of where the pipe will be next.

Dodson is wondering why we would care about the projections if the density in the MUSA is set. Haskamp stated that a lot of the feedback is that people want to stay as close to the projections as possible. Haskamp stated that it is good to promote continuous growth so that the City is not putting in pipe in advance of needing it.

Haskamp stated that they might have come up with a solution for the Urban Reserve to develop in this planning period if the pipe is available without necessitating a Comprehensive Plan Amendment.

Jay Dema, has been working with Swanson Haskamp Consulting on some of the market research for the Plan. He looked at the market research for the mixed use designation along the I94 corridor. In the 2030 plan, a lot of the land along the I94 corridor is designated as commercial or retail. Retail is going through a lot of changes now with all of the on-line shopping. The office side of things are changing with the digital age, and the amount of space is not required. They felt that adding the mixed use category gave property owners more flexibility for what they can do.

Another question they heard is why plan for different housing types. With an aging population, people are looking for a different, maintenance free type of housing. Also first time home buyers are looking for something a little more affordable. There is also a shift with the uncertainty of the stability of being a homeowner.

Haskamp stated that the new plan integrates the high density land use designation throughout the whole MUSA area vs leaving it mostly on Manning Ave. The goal is to try to reduce the number of Comprehensive Plan Amendments by giving a more diverse land use plan.

Haskamp stated that the advisory panel recommended that 2 additional properties be taken out of Urban Reserve and be guided as high density. This would make it easier for the 5th Street connection to be made. This added approximately 100 additional housing units. The advisory panel also asked that the parks and trails plan be simplified and the new draft attempts to do that.

Haskamp discussed with the Met Council if the land in Urban Reserve can develop prior to 2040 if the utilities are available. If criteria is established so there is no leap frog development and if the land meets all of a set of criteria that is developed through an ordinance process, then it would be permitted to develop at 3-5 units per acre.

Kreimer asked about the urban reserve and is confused why we would not just include those areas and reduce some of the higher densities. Using urban reserve would seem to guarantee that our population will be way higher than everyone thought. Haskamp stated that the fact that the MUSA required 3-5 units per acre makes it difficult. Currently, the city is only at 2.2 units per acre with approved preliminary and final plats, so it will be difficult to get to the 3 units.

Dodson asked about development in the Urban Reserve areas that might make sense to develop with another property across the street. Haskamp stated that those properties would need to develop at the 3-5 units per acre and a zoning ordinance would need to be written very precisely to allow that to happen. There could be circumstances written into the ordinance that might trigger development such as a roadway or street lights.

Haskamp stated that urban reserve properties would only be able to develop at the 3-5 dwelling units without a comprehensive plan amendment. For instance if a property in urban reserve wanted to develop as commercial, that would be a comprehensive plan amendment. Haskamp stated that without urban reserve, everything would need to be at 3-5 units per acre or the numbers don't work. Urban low density and village low density is at 2.5-5, so that doesn't work. Haskamp stated that the good thing about Urban Reserve is that it allows additional time to understand the market for the next planning period.

Dorschner asked if the numbers would change if in the next planning period the market goes south. Haskamp stated that the 3 units comes from what the Met Council considers an efficiency number for the sewer pipe, so she doesn't believe it will ever go lower. Dorschner feels that in the future, things might change for instance with OP developments that need to connect to sewer, that there might be room for some changes or options. Hartley stated that adding the OP developments would actually hurt our numbers.
Dorschner is curious about the downtown and why some sort of a mixed use wasn't used. Haskamp stated that a mixed use would guarantee more commercial that they just don't feel there is a market for. The other piece is that there is a district concept. There would be a village district where more of the commercial is and then the supporting district where the housing will be. It comes down to having households to support the commercial.

Dodson is wondering about the private conservation areas in chapter 6, parks and trails. He is thinking they are typically part of an open space development. Who will be responsible for managing those areas? Haskamp stated that any 84C can manage them and it might be helpful to identify others for the future. Sometimes watershed districts are interested if there is an important water body.

Public Hearing opened at 8:31 pm

Todd Williams, 3025 Lake Elmo Ave, has carefully reviewed the comprehensive plan draft and has 3 ½ typed pages of comments and changes. These comments were included in the packet. Williams will limit his comments to the housing chapter, comments about affordability and the parks chapter. Williams is urging the Planning Commission to include much more about affordable housing in the housing chapter. There is no discussion of how to implement affordable housing. There seems to be a tutorial about affordable housing which is not necessary. Williams would encourage the Planning Commission to reject the housing chapter until concrete goals and plans are included regarding affordable housing. Regarding the parks chapter, Williams recently found out that the City Council approved a very intrusive mountain bike trail system in Reid Park. The mountain bike trails will drastically change this quiet park, but there is no mention of this in the comprehensive plan. This change was buried in the CIP and there was no public hearing regarding this. Williams would urge the Planning Commission to reject the parks chapter until the change to Reid Park is vetted, with consideration for alternate sites.

Tom Wolter, Easton Village developer, feels that the urban reserve category is inappropriate for a portion of his property. They are working with Washington County regarding the realignment of Manning Ave. The Northern property that they own that is designated Urban Reserve has the trunk sewer line installed and water available. They were assessed for it and have been planning for it. Haskamp stated that this property was chosen because they looked at properties from a contiguous growth perspective.

They focused on the Village and moved out. Wolter stated that builders would like to see a greater variety of houses and housing types.

Richard & Jackie McNamara, 10321 10th Street N, feels that their investment and future has been changed by having their property put in urban reserve. In 2008 they had plans to develop their property as commercial. Having the property zoned as urban reserve would definitely decrease the value of it.
Bob Durow, 10363 Manning Ave, has questions about what type of flexibility mixed use brings to a property. The last comprehensive plan did not differentiate, but this comprehensive plan designates his property as mixed use Business Park. His concern is that this will take away some of the flexibility that they had in the past. He would like to see the property be just mixed use so that the market can dictate the use.

Becker went through what can go into a mixed use business park. This was selected because 50 percent needs to be housing and it provides a better transition from commercial to residential. Haskamp further expanded that in the business park mixed use, the property boundaries are not looked at, but the area as a whole is planned to be developed with 50 percent of housing units. The City will need to figure out how to implement that plan and how to monitor it. The other piece is that there is not zoning for the Mixed Use Commercial and Mixed Use Business Park areas. The City has not developed what the allowed, conditional and interim uses are yet. These will be critical to develop so that people know what they can do with their land.

Susan Dunn, 11018 Upper 33rd St N, has concern with development that has occurred in the past number of years. Dunn has concern with the surface water. Dunn is concerned that with the rate of growth, important things will get missed. Dunn is also concerned about the pollution issue. Dunn feels that health, safety and welfare of the residents should be of utmost importance. Sustainability is important and she would hope that with the well closure it is important to think about how to provide water to residents. The land use designations are extremely important, thinking about a cemetery in a RR district. It is important to make sure that uses are compatible with surrounding uses and that the City is thinking about current residents and what they want next to them.

Sarah Lee & David Screaton, 711 Manning, they do not feel that Village Urban Reserve is a fair zoning category for their property. They were told that they would be part of a Village category.

Becker stated that there were a number of written comments that were also covered via verbal testimony with the exception of the property owner at 3343 Langly Court. This property owner is guided to be zoned RS and owns a four plex and would like to be reguided to VMX so that the use can be expanded. The use is currently non-conforming.

There was also a developer that previously asked for a comprehensive plan amendment for the OP development density to be calculated at gross acreage vs. net acreage.

M/S/P: Dorschner/Johnson, move to recess the public hearing regarding the Comprehensive Plan, ***Vote: 7-0, motion carried unanimously.***

Johnson appreciates the approach of the Urban Reserve, but he is reluctant to go along with it. Johnson thought that since the city services are available for the Easton Village parcel, the exemption would apply. Haskamp stated that it depends what the ordinance requires for the exemption. Kreimer asked what happens if the Met Council doesn't accept the Urban Reserve. Haskamp stated that there will be a draft plan that will go to the Met Council for preliminary review. If the Met Council says that anything in the Urban Reserve needs a Comprehensive Plan Amendment, there is time to modify and there will be another public hearing before the plan is approved. Haskamp stated that the concept of Urban Reserve is not a problem for the Met Council, it is just whether they will require Comprehensive plan amendments to develop in those areas.

Dorschner is cautious of putting restrictions on peoples land for 20 years. In some cases they have planned to develop it. This may work, but the city will need to be diligent when the zoning piece is done.

Hartley stated that a lot of the things that are in this plan derive directly from meeting the Met Council requirements. The Urban Reserve is a reasonable solution to the problem of 3-5 units per acre.

Lundquist is wondering if there could be an incentive for people to put their property into Urban Reserve and to look for volunteers to do so. Dodson thinks that sounds problematic. Haskamp stated that would be starting this process all over again. The City needs to be thoughtful on land use patterns based on market and infrastructure data.

Hartley stated that the Met Council wants the development to be contiguous and they don't want development to leap frog. That leads to planning for where sewer lines will go. It is about the economics of the sewer lines.

Johnson would be in favor of the Urban Reserve if there is a mechanism to develop those properties without the Comprehensive Plan Amendments.

Dodson asked if there was more work that the Met Council would have to do adding pipes. Handt stated that she does not believe there is any more work for the Met Council to do as there are the two interceptors. It would be the developers putting in the infrastructure to get to the interceptors. Emerson does not agree with the Urban Reserve because he does not think it is fair to the property owner not to let them develop at the market rate. Kreimer thinks that all the Urban Reserve does is to say that we are not planning for 24,000 people in this planning period. Dorschner feels that people are not in favor of the fast growth and this is a way to slow it down. He will be in favor if the zoning can give an exemption.

Emerson feels that there was a lot of money set aside to develop the additional phases of Easton Village and that property should not go into Urban Reserve.

Dodson asked for a straw poll of who is in favor of Urban Reserve. No one is in favor with a number in against. Lundquist abstained because she feels that some land should be put in reserve and maybe the City needs to think outside the box. Handt asked if Urban Reserve isn't essentially phase 4. There already are 3 phases of development with the current Comprehensive Plan. There are currently properties that are not allowed to develop because the infrastructure isn't there and they would have to get the infrastructure there. Haskamp stated that it essentially is a stage 4, but by calling it a reserve category, you are essentially taking it out of the counts for this planning period.

Hartley stated that regardless of what you call it, the pipe isn't there yet and depends in large part on orderly development. The Urban Reserve category is used because it is believed that the pipe is not going to get there in this planning period.

Weeks does not feel that it is fair to put property owners into Urban Reserve and have to go through other hurdles to develop their property with a Comprehensive Plan Amendment. Hartley stated that the without the Urban Reserve, the target population for this planning period will be 25,000 instead of 20,000.

Emerson stated that this will all be market driven. In 5 years, the population could come in way less than what we plan for.

Kriemer wants to add to chapter 2 on page 12, goal #2 to protect existing neighborhoods, "utilize graduated densities, screening and/or open space to separate new sewered areas from existing neighborhoods".

Hartley stated that he is a little concerned about the wording of separating sewered areas from non-sewered areas. Weeks thinks that the way goal #2 is worded already covers it.

Johnson wanted to comment on Reid Park. Handt stated that work on that has already begun. Becker stated that it is a little specific for a Comprehensive Plan. Johnson stated that affordable housing is important. Inclusionary zoning is important, but being less specific has advantages because it allows greater flexibility.

Dodson asked about the housing chapter and how the types of housing is controlled. Density and the implementation strategies can help with that. There can be a market component and developers might have a product preference.

Weeks stated that it is hard to mandate affordable housing as it is sometimes just as expensive as any other type of housing. Weeks stated that many times affordable housing is naturally occurring as homes age. Emerson asked if there is ever an affordable housing component with market rate multi-unit developments. Dema stated that he has seen this happen in other communities.

City Council Updates – May 1, 2018 Meeting

a. None

Staff Updates

1. Upcoming Meetings
    b. May 30, 2018 (note change in meeting date)
    c. June 4, 2018

Meeting adjourned at 10:25 pm

Respectfully submitted,

Joan Ziertman
Planning Program Assistant

THE CITY OF LAKE ELMO

STAFF REPORT

DATE: MAY 30, 2018
AGENDA ITEM:
PUBLIC HEARING

TO:	Planning Commission
FROM:	Emily Becker, Planning Director
ITEM:	Boulder Ponds 3rd Addition – Final Plat, Final PUD Plan
REVIEWED BY:	Jack Griffin, City Engineer

BACKGROUND:

The Planning Commission is being asked to consider an application for a Final Plat and Final Planned Unit Development (PUD) Plan submitted by OP4 Boulder Ponds, LLC c/o The Excelsior Group, LLC. The Final Plat application represents the third phase of the Boulder Ponds residential development and includes 33 single family residential lots and one outlot. The proposed project is located north of Hudson Blvd. N., east of the Eagle Point Business Park and south of the Stonegate subdivision. Staff is recommending approval of the of the Boulder Ponds 3rd Addition Final Plat and Final PUD Plan subject to compliance with conditions as noted in this report.

GENERAL INFORMATION

Applicant:	OP4 Boulder Ponds, LLC c/o The Excelsior Group, LLC, 1660 Highway 100 South, Ste 400, St. Louis Park, MN 55416
Property Owners:	OP4 Boulder Ponds, LLC11455 Viking Drive, Suite 350, Eden Prairie, MN 55344
Location:	Outlot K, Boulder Ponds, PID # 34.029.21.32.0038
Request:	Application for Final Plat and Final Planned Unit Development (PUD) Plan for the 3rd phase of the Boulder Ponds planned development which includes 33 single family lots.
Existing Land Use/Zoning:	LDR (PUD) - Urban Low Density Residential Planned Unit Development.
Surrounding Land Use:	North –Stonegate Residential Estates (RE) subdivision; west – Eagle Point Business Park (Bremer Bank, Eagle Point Town Office Condos, High Pointe Medical Campus, vacant land) (BP); east – Lennar Savona Urban Low Density Residential (LDR) subdivision; south – vacant land guided for Commercial and Interstate Highway 94.

Comprehensive Plan:	Urban Medium Density Residential (4.5-7.0 units per acre) and Urban Low Density Residential (2.5-4 units per acre)
History:	Boulder Ponds General Concept Plan approved by the City on 12/17/13 (Resolution #2013-109). Boulder Ponds Preliminary Plat and Preliminary PUD Plan approved by the City on 9/16/14 (Resolution #2014-73). The first phase Boulder Ponds Final Plat and Final PUD was approved on April 21, 2015, and the second phase was approved on May 17, 2016.
Deadline for Action:	Application Complete – 4/27/2018 60 Day Deadline –6/29/2018 Extension Letter Mailed – N/A
Applicable Regulations:	Chapter 153 – Subdivision Regulations Article 10 – Urban Residential Districts (LDR) Article 16 – Planned Unit Development Regulations §150.270 Storm Water, Erosion, and Sediment

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REVIEW AND ANALYSIS:

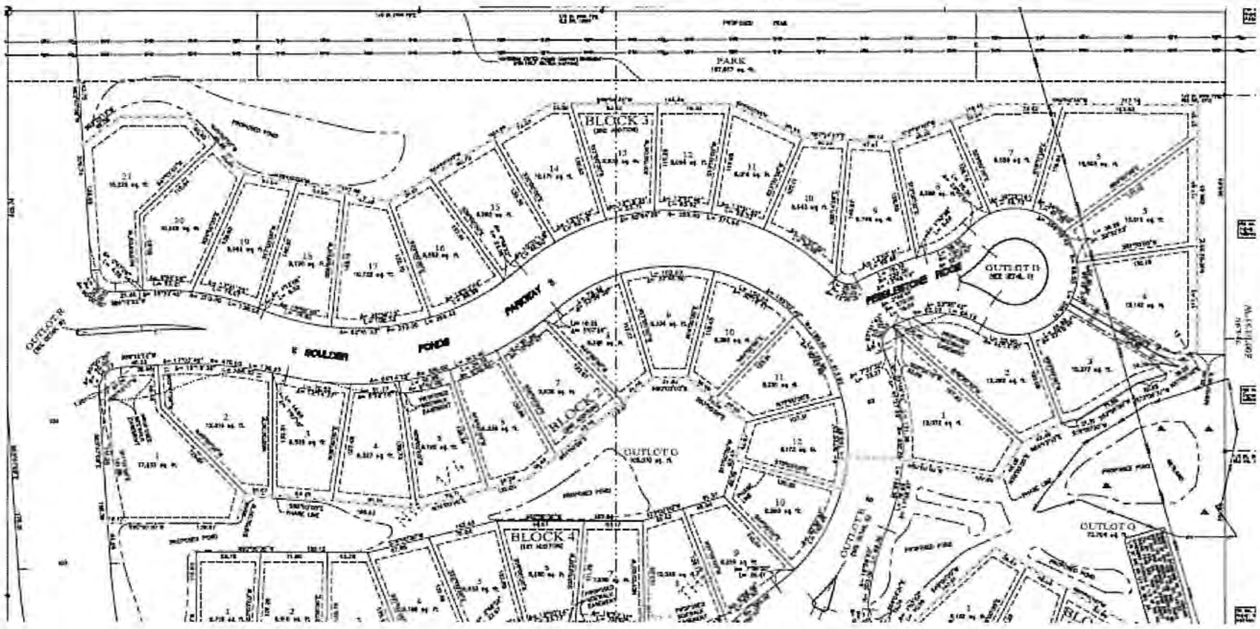
The City of Lake Elmo has received a request from OP4 Boulder Ponds, LLC for a Final Plat and Final PUD Plan to subdivide Oulot K, Boulder Ponds, 13.580 acres, into 33 single family (detached Villa) lots on a cul-de-sac as guided by the approved Preliminary PUD Plan. The preliminary plat approved 98 single family lots. 1st Addition approved 47 single family lots, and the 2nd Addition approved 18 single family lots, and the 3rd Addition will be the final phase of the single family lots of the preliminary plat.

The applicant has submitted detailed construction plans related to sanitary sewer, water main, storm sewer, grading, drainage, landscaping, and other details that have been reviewed by the City Engineer, Fire Chief and Landscape Consultant.

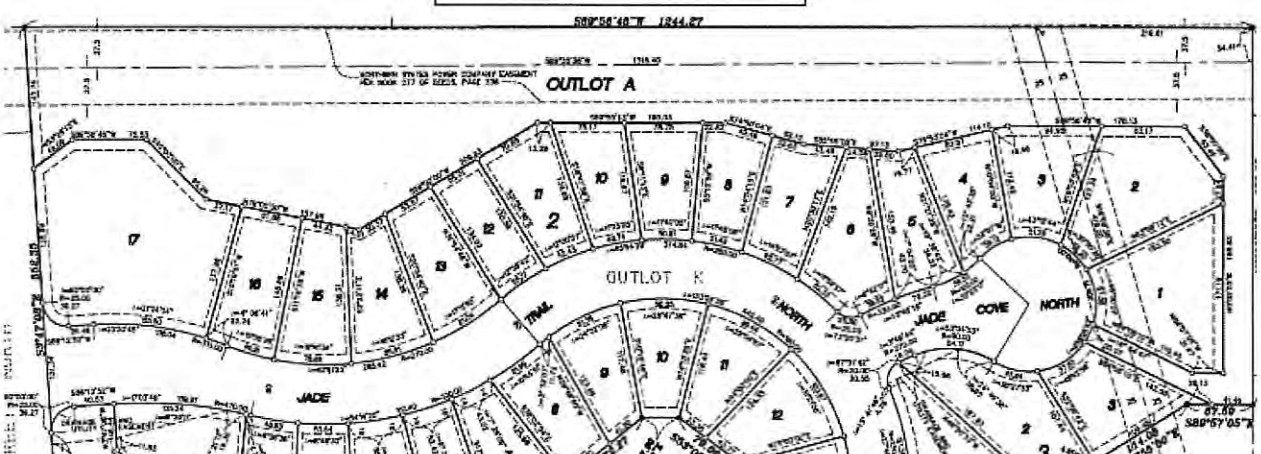
Final Plat Approval Process. The City's subdivision ordinance establishes the procedure for obtaining final subdivision approval, in which case a final plat may only be reviewed after the City takes action on a preliminary plat. As long as the final plat is consistent with the preliminary approval, it must be approved by the City. Please note that the City's approval of the Boulder Ponds Preliminary Plat included 13 conditions that must be met by the applicant, which are addressed in the "Review and Analysis" section below. Staff has reviewed the final plat and found that it is consistent with the preliminary plat that was approved by the City on September 16, 2014.

Changes to Final Plat from Preliminary Plat. Lot 17, Block 2 is much larger than originally approved with Preliminary Plat, and most of the remaining lots are smaller, as shown below. The applicant has indicated that future plans would be to submit for a PUD amendment in the future to increase the number of lots within the development by three or four. An analysis regarding these changes has been provided below.

Preliminary Plat



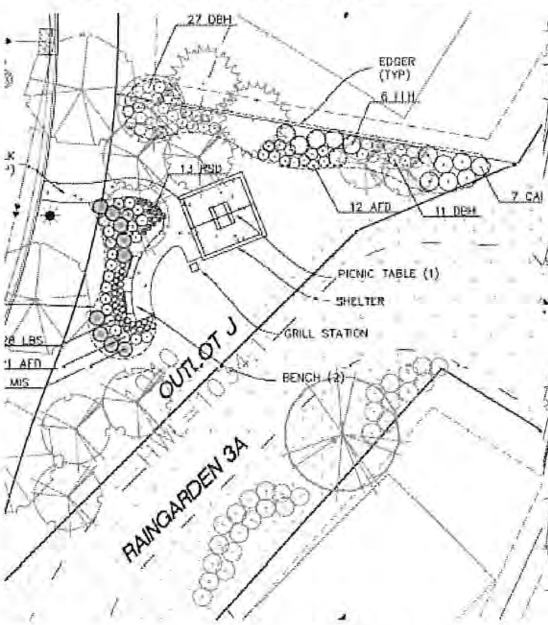
3rd Addition Final Plat



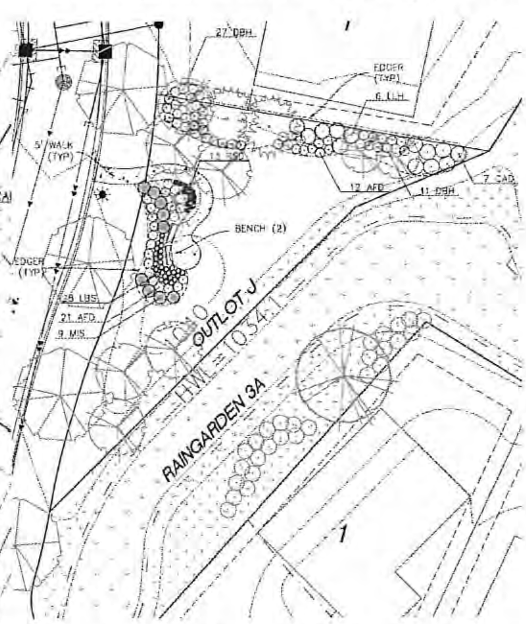
- *Density.* The density of the single family lot area within the preliminary plat was approved as approximately 2.5 (total site area of 58.3 acres – 19.08 (4.29, 1.39, and 1.54 acre commercial outlots + 4.29 and 2.24 acre multifamily outlots + 1.46 acres of wetlands + 3.87 acres of park) = 39.22, and 98/39.22=2.5. With the PUD amendment, the addition of three to four more lots would increase the density within the 3rd Addition to 2.57 to 2.6, which is allowed within Urban Low Density Residential Land Use category (designated as 2.5-4 units per acre).

- *Decreased Lot Widths.* The minimum lot width of the Low Density Residential (LDR) zoning district is 60 feet. There are fifteen lots within the 3rd Addition that do not meet this minimum lot width. There was no indication of flexibility on lot widths within the Resolution that approved Preliminary Plat, however, many of the lots outside of the 3rd Addition did not meet the minimum 60-foot requirement (although all lots within the 3rd Addition did meet this requirement). Additionally, there are two lots (Lots 5 and 6, Block 2) that do not meet the minimum rear yard lot widths as required by the City's Subdivision Regulations of 30 feet. Staff does not see an issue with this, provided the required setbacks are met.
- *Lot Sizes.* The average lot size of the approved preliminary plat was 9,882 square feet, and the smallest lot size was 7,206 square feet. The smallest lot size within the 3rd Addition is 7,224 square feet and the average lot size is 9,782 square feet. As a recommended condition of approval, the lot books show the required setbacks.
- *Landscape Plan.* The applicant has removed the picnic table, shelter, and grill station that was within Outlot J of the 1st Addition. It was not a condition of final plat approval of that addition that these amenities be installed, nor is it a requirement that these items be provided, and so Staff does not see issue with these being removed.

Preliminary Landscape Plans

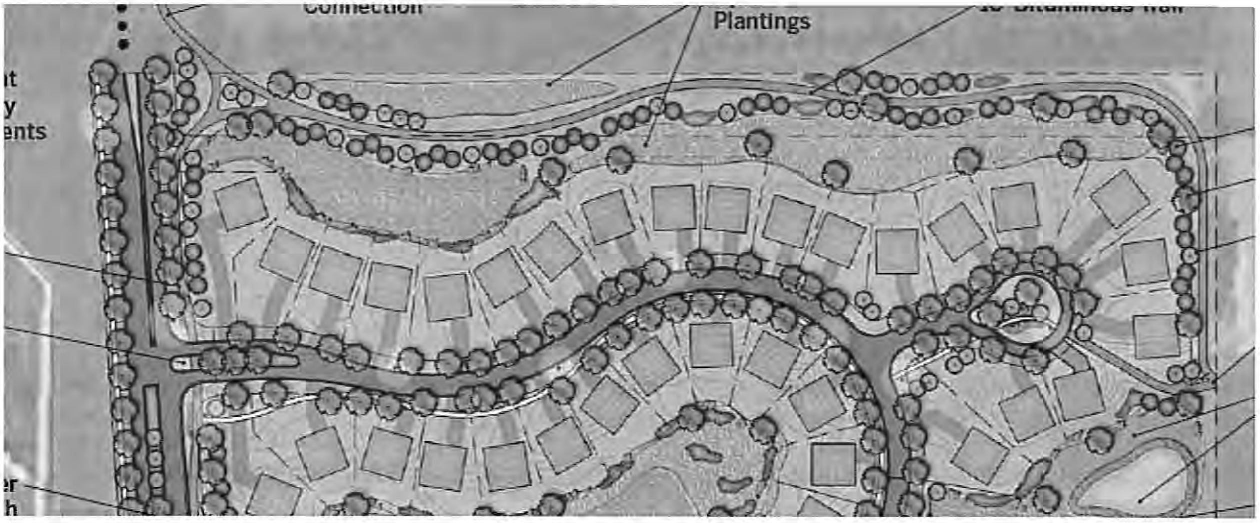


3rd Addition Final Landscape Plans

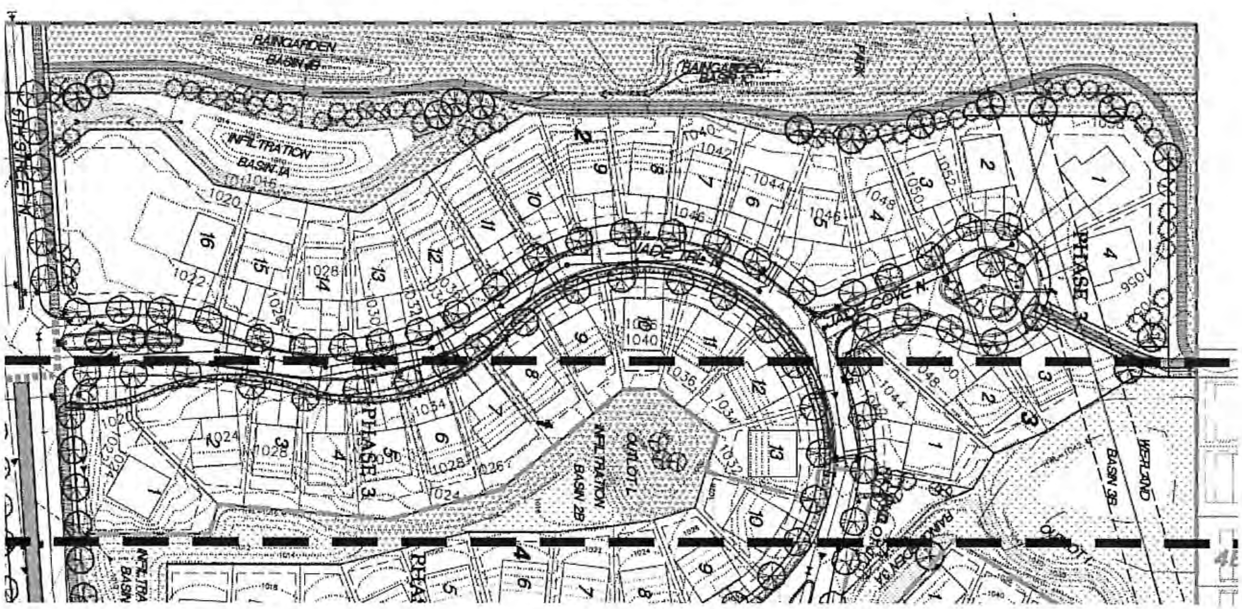


- *Trails.* The northern trail has changed very slightly since preliminary plat as outlined below.

bufPreliminary Plat



Final Plat



City Engineer Review. The City Engineer has reviewed the final plat, and his comments are attached to this report. Although there are some additional revisions and additions necessary for the Final Plat and final construction plans that need to be addressed by the applicant, the revisions can be made before the City releases the final plat for recording. Staff is recommending that all revisions and modifications noted within the City Engineer's review memorandum date May 25, 2018 be completed prior to the release of Final Plat for recording as a condition of approval. Some issues that Staff would like to highlight from this report are as follows:

- The approved Preliminary Plat and Plans showed the construction of a Hudson Boulevard eastbound left turn lane and westbound right turn lane on to Jade Trail North (see Engineer Review Memo Dated 7/24/14). These turn lanes must be constructed with Boulder Ponds 3rd Addition Final Plat, as they were not required with the 1st or 2nd Addition, at the request of the developer. Because the developer has already sold the Commercial outlots, and in order to complete improvements for the single family residential development portion of this PUD, it is a recommended condition of approval that these turn lanes be constructed prior to release of building permits for the 3rd Addition.

- The driveway for Lot 6, Block 2 must access Jade Trail North and not Jade Cove North, as frontage along Jade Cove North is not adequate for a driveway.
- The meandering sidewalks (particularly along Lots 1, 2, 4-7, Block 3) do not meet the City standard boulevard layout. Therefore, an alternate boulevard layout must detail the proposed changes for City review, and easements must be amended as necessary. Further, in order to avoid issue with cars blocking sidewalks, it is a recommended condition of approval that garages be set back at least 25 feet and that homes be setback the required 20 feet from sidewalks that are not within the right-of-way.

Fire Chief and Building Official Review. The Fire Chief and Building Official have review the Final Plat and have worked with engineering on providing comments.

Outlots. It is a recommended condition of approval that Outlot A be dedicated to the City for parkland and infiltration purposes.

Landscape Plans. The final landscape plans were reviewed by the City's Landscape Architect, and the landscape plans do not meet the required number of trees, as ornamental trees are being counted towards the required number of trees within the development. Additionally, it was a condition of preliminary plat approval that additional buffering and screening be provided north of the trail. It is a recommended condition of approval that the landscape plans be amended to provide this additional screening and meet the required number of trees within the development.

PUD Flexibility. Boulder Ponds was provided PUD flexibility for the following with approval of the Preliminary Plat and PUD. The 3rd Addition Final Plat and PUD adheres to this PUD flexibility:

Proposed Lot Dimensional Standards through Planned Unit Development Process:

- Lot Area: 9,882 sq. ft. average (7,206 sq. ft. min.)
- Front Yard Setback: 20 ft. (25 feet for garage)
- Side Yard Setback: 5 ft.
- Rear Yard Setback: 25 ft.
- Additionally, the Staff report from the preliminary plat indicated that the allowed front yard setback for the development was 20 feet and 25 feet for garage (25 feet allowed per the LDR zoning district), and the allowed side yard setback was 5 feet (10 feet for principal building and 5 feet for accessory structure allowed per the LDR zoning district). It is a recommended condition of approval that the applicant provide a lot book which demonstrates that the allowed setbacks are able to be met with the reconfigured lots and decreased lot widths.

Density. The total area of 3rd Addition is 13.58 acres, with 0 square feet of wetlands and wetland buffers and 1.77 acres of parkland. The total final density of 3rd Addition is 2.79 units per acre.

Parkland Dedication. The parkland dedication required for the entire preliminary plat was 4.34 acres (10% of 43.48 acres of residential area). The applicant will be dedicating Outlot A, consisting of 3.865 acres, for trail purposes with the 3rd Addition Final Plat. Per the preliminary plat, 1.77 of these acres will count towards park dedication credit. The developer has already paid the remaining 2.57 acres worth of land towards park dedication fees with the 1st Addition.

Preliminary Plat Conditions. The preliminary plat for Boulder Ponds was approved with several conditions, which are indicated below along with Staff's comments on the status of each. Staff is recommending approval of the final plat, but with additional conditions intended to address the outstanding issues that will require additional review and/or documentation.

Please also note that the applicant has also provided a response to the preliminary plat conditions as part of the project narrative.

1) The applicant must enter into a separate grading agreement with the City prior to the commencement of any grading activity in advance of final plat and plan approval. The City Engineer shall review any grading plan that is submitted in advance of a final plat, and said plan shall document extent of any proposed grading on the site. ***Comments: The site was mass graded in phase 1.***

2) The developer shall be required to submit an updated parkland dedication calculation in advance of Final Plat. Upon submission of the calculation, the applicant must work with the City to achieve the required parkland dedication amount per the City's Subdivision Ordinance. The developer shall be required to pay a fee in lieu of land dedication equivalent to the fair market value for the amount of land that is required to be dedicated for such purposes in the City's Subdivision Ordinance less the amount of land that is accepted for park purposes by the City. Any cash in lieu of land dedication shall be paid by the applicant prior to the release of the Final Plat for recording. ***Comments: The park land dedication of 1.77 acres is comprised of the portion of the northern greenbelt park not within the Xcel Energy easement that is to be used for park purposes. As per the preliminary plat and PUD plans, this area was to be used to integrate trails and other facilities into Stonegate Park. The remaining park dedication equivalent to the fair market value of 2.57 acres of land was paid with the first phase of the development.***

3) The developer shall follow all the rules and regulations of the Wetland Conservation Act and adhere to the conditions of approval for the South Washington Watershed District Permit. ***Comments: The permit was received with the first phase of the development.***

4) The applicant will work with the Planning Staff to name all streets in the subdivision in a manner acceptable to the City prior to the submission of Final Plat. ***Comments: Jade Trail North is a continuation of the existing Jade Trail North. There is already a Jade Court North within the development, and so the applicant has proposed Jade Cove North for the cul-de-sac within the development.***

5) The applicant will work with staff to address the comments in the City Engineer's review memo dated 7/24/14 to the satisfaction of the City Engineer as part of the Final Plat and Final PUD Plan. ***Comments: These were completed for the 1st phase. It is a recommended condition of approval that the Applicant address comments as outlined in the City Engineer's review memo dated May 25, 2018.***

6) In addition to standard easements required by the Subdivision Ordinance, additional drainage and utility easements must be provided extending 10 feet from meandering sidewalks, as well as all of the portion of private lots between meandering sidewalks and the public right-of-way. ***Comments: This was complied with in the first and second phase and will be again in the third phase. It is a recommended condition of approval that the***

7) The landscape plan shall be updated to locate all boulevard trees in between the public street and sidewalk to not interfere with private utilities. ***It is a recommended condition of approval that the final landscape and irrigation plans be approved prior to release of building permits.***

8) All islands and medians internal to the Boulder Ponds development shall be platted as part of the right-of-way and shall be maintained by the Home Owners Association. The applicant shall enter into a maintenance agreement with the City that clarifies the individuals or entities responsible for any landscaping installed in areas outside of land dedicated as public park and open space on the Final Plat. ***Comments: The islands and median except those in 5th Street are the responsibility of the HOA into perpetuity. The developer has an approved management plan, but has not entered into a landscape license agreement. A landscape license agreement will be entered in to, which will address this.***

9) The design of the northern buffer trail shall be modified to a width of 8 feet as opposed to the regional trail standard of 10 feet. ***Comments: This requirement has been met.***

10) The eastern segment of the northern buffer trail shall be moved to the south to the greatest extent possible with plantings to screen the trail on the north side. ***Comments: It appears that the trail has been moved to the south to the greatest extent possible. However, no screening has been provided on the north side. It has been added as a condition of approval.***

11) Prior to recording the Final Plat for any portion of the area shown in the Preliminary Plat, the Developer shall enter into a Developers Agreement acceptable to the City Attorney that delineates who is responsible for the design, construction, and payment of public improvements. ***Comments: This will be done concurrently or after approval of the final plat by Council and prior to recording of the final plat.***

12) The Final PUD Plan will include a development lot book to clarify proper building placement for use in granting building permits for the development. ***Comments: This has been added as a recommended condition of approval.***

Staff is recommending that the conditions noted above that pertain to the 3rd Addition Final Plat that have not yet been addressed by the applicant should be again conditioned with this approval. The City Engineer's review letter identifies a number of issues that need to be addressed by the developer in order for the City to approve the final plans. However, the majority of these concerns are related to the construction plans and should have little bearing on the final plat. The City Landscape Architect has reviewed and approved the Landscape Plans, but no irrigation plans have been received, and are about half way complete. Additionally, screening should be required north of the trail as per the condition of preliminary plat. The Fire Chief has reviewed the Final Plat and has identified no issues.

Staff is recommending that City Officials not sign the final plat mylars until the City's construction plan review is finalized and all necessary easements are documented on the Final Plat.

Draft Findings. Staff is recommending that the Planning Commission consider the following findings with regards to the proposed Boulder Ponds 3rd Addition Final Plat and Final PUD Plan:

1) That the Boulder Ponds 3rd Addition Final Plat and Final PUD Plan is generally consistent with the Preliminary Plat and Plans as approved by the City of Lake Elmo on September 16, 2014.

2) That the Boulder Ponds 3rd Addition Final Plat and Final PUD Plan is consistent with the Lake Elmo Comprehensive Plan and the Future Land Use Map for this area.

3) That the Boulder Ponds 3rd Addition Final Plat generally complies with the City's Urban Low Density Residential zoning district, with the exceptions as noted in the approved Preliminary PUD Plans and decreased front and rear yard lot widths that are less than the minimum lot widths required by the City's Urban Low Density Residential zoning district and Subdivision Regulations.

4) That the Boulder Ponds 3rd Addition Final Plat complies with all other applicable zoning requirements, including the City's landscaping, storm water, sediment and erosion control and other ordinances, except as noted in this report or attachment thereof.

5) That the Boulder Ponds 3rd Addition Final Plat complies with the City's subdivision ordinance.

6) That the Boulder Ponds 3rd Addition Final Plat and Final PUD Plan complies with the City's Planned Unit Development Ordinance.

7) That the Boulder Ponds 3rd Addition Final Plat is consistent with the City's engineering standards with the exceptions noted by the City Engineer in his review comments to the City dated May 25, 2018.

Recommended Conditions of Approval. The recommended conditions are as follows:

1) Final grading, drainage, and erosion control plans, utility plans, sanitary and storm water management plans, and street and utility construction plans shall be reviewed and approved by the City Engineer prior to the recording of the Final Plat. All changes and modifications to the plat and plans requested by the City Engineer in memos dated May 25, 2018 shall be incorporated into these documents before prior to signing the Plat for recording.

2) Outlot A shall be dedicated to the City.

3) Garages shall be setback at least 25 feet and homes shall be setback at least 20 feet from sidewalks that are not within the public right-of-way.

4) Prior to the release of the Final Plat for recording, the Developer shall enter into a Developer's Agreement acceptable to the City Attorney and approved by the City Council that delineates who is responsible for the design, construction, and payment of the required improvements with financial guarantees therefore.

5) All easements as requested by the City Engineer and Public Works Department shall be documented on the Final Plat prior to recording. Easements may need to be revised pending review by the City of a detailed right-of-way boulevard plan and updated grading plans showing the storm water high water levels.

6) The Final Landscape and Irrigation Plans shall be submitted for review and approval by the City Landscape Architect Consultant prior to the release of building permits.

7) Plantings to sufficiently screen the northern portion of the northern buffer trail shall be provided on the Final Landscape Plan to be approved by the City's Landscape Architect.

8) The applicant shall provide evidence that all conditions attached to the South Washington Watershed District permit for the Final Plat and associated grading work have been met prior to the release of the Final Plat for recording.

9) Final Plat shall be contingent upon receipt and City Attorney review of any agreements between the Developer and the BP Pipeline easement area and the Xcel Energy Transmission Easement area, demonstrating that said agreements in no way unacceptably encumbers the City.

10) The applicant shall provide a complete development lot book for all lots in Phase 3 of the Boulder Ponds development clarifying proper building placement for use in granting building permits prior to the release of Final Plat for recording.

11) That a License and Maintenance Agreement for Landscaping Improvements be executed for the maintenance of commonly held Common Interest Community (CIC) and City outlots and rights-of-ways prior to release of the final plat for recording. The agreement shall state that the Jade Cove North center island shall be maintained by the Homeowners' Association.

12) The eastbound left turn lane and westbound right turn lane on to Jade Trail North as shown on the approved Boulder Ponds Preliminary Plans must be constructed prior to release of building permits for Boulder Ponds 3rd Addition.

13) The driveway for Lot 6, Block 2 must access Jade Trail North and not Jade Cove North, as frontage along Jade Cove North is not adequate for a driveway.

OPTIONS:

The Planning Commission may:

- Recommend approval of Boulder Ponds 3rd Addition Final Plat and PUD Plans with findings and conditions as recommended by Staff.
- Amend Staff-recommended findings and conditions and recommend approval of Boulder Ponds 3rd Addition as amended.
- Not recommend approval of Boulder Ponds 3rd Addition Final Plat and PUD Plans.
- Table the item to a future meeting.

RECOMMENDATION:

Staff is recommending approval of the Boulder Ponds 3rd Addition Final Plat and Final PUD Plan with the 13 conditions of approval as listed in the Staff report. The suggested motion is the following:

"Move to recommend approval of the Boulder Ponds 3rd Addition Final Plat and Final PUD Plan with the 13 conditions of approval as drafted by Staff based on the findings listed in the Staff Report."

ATTACHMENTS:

1. Application Forms and Project Narrative
2. Final Plat
3. Landscape Plans
4. City Engineer Review Memorandum, dated May 25, 2018
5. City Engineer Review Memorandum, dated July 24, 2014
6. Landscape Consultant Review Memorandum, dated May 7, 2018

   (Final Construction Plans are available upon request)

Date Received: ______________
Received By: ______________
LU File #: ______________

THE CITY OF LAKE ELMO

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

FINAL PLAT APPLICATION

Applicant: OP4 Boulder Ponds, LLC
Address: 1660 Hwy 100 South, Suite 400 St. Louis Park, MN 55416
Phone #: (952) 525-3239
Email Address: steph.griffin@excelsiorllc.com

Fee Owner: Same as above
Address:
Phone #:
Email Address:

Property Location (Address): Outlot C Boulder Ponds
Complete (long) Legal Description: Outlot C Boulder Ponds

PID#: 340291320038

General information of proposed subdivision:
Applicant proposes to plat Outlot C of Boulder Ponds to develop the 3rd addition, creating 33 detached villa contemplated on the approved Boulder Ponds Preliminary Plat. The product will be similar to the existing detached villa product in Boulder Ponds 1st and 2nd additions.

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.

OP4 Boulder Ponds, LLC
Signature of applicant: By [signature] Date: 4/25/18

OP4 Boulder Ponds, LLC
Fee Owner Signature By [signature] Date: 4/25/18

Boulder Ponds 3rd Addition
Final Plat Narrative/Written Statement

Consisting of nearly 60 acres, Boulder Ponds offers a uniquely planned mixed-use neighborhood. The variety of land uses provides a seamless transition to the existing surrounding areas. From the south, the commercial parcels complement the existing commercial uses. Moving north, the medium density residential serves to buffer the commercial from the lower density single family homes. 5th Street further provides the separation between the commercial and residential uses. Overall, the Boulder Ponds project is zoned as follows: Urban Low Density Residential – PUD, High Density Residential – PUD, and Commercial – PUD. The 3rd Addition Final Plat application is consistent with the Preliminary Plat Approval, consisting of the remaining LDR development activity to include 13.58 acres to be platted into 33 single family lots and 1 outlot.

The design concept and goals for Boulder Ponds has generally remained consistent throughout the approval process. As opposed to the more standard grid approach, the curvilinear nature of the streets is designed around the existing topography of the site, which offers premium lots with maximum open space. Further, the design works to limit double fronted lots. The oversized cul-de-sacs, meandering sidewalks and varying setbacks not only enhance site lines, but also create a quality neighborhood with aesthetically pleasing characteristics.

The detached single family lots consist of two types of housing; traditional single family homes and detached Villa homes. The single family homes are geared toward families typically with children. The detached Villa product will include association maintained grounds which is largely geared toward empty nesters.

Boulder Ponds has its own neighborhood theming evident in the signage, landscaping and site furnishings. Neighborhood signage includes monuments clad in natural stone at the main entry points as shown in the landscape plan set. Community gathering spaces are located in key areas of Boulder Ponds including a larger centrally located gathering space along Jade Trail. Consistent theming in all these elements creates a neighborhood with a stronger sense of identity. The homeowners associations are responsible for the ownership and maintenance these special features.

Boulder Ponds 1st and 2nd Additions are substantially complete, and 3rd Addition Final Plat is anticipated to begin development construction activity summer 2018. The 3rd Addition Final Plat will consist of 33 lots to be incorporated into the existing Boulder Ponds Villa Homeowners Association. While lot lines have been reconfigured from the approved Preliminary Plat, there are changes to density and minimal changes to the trail system and storm water basin designs.

INCLUDED ATTACHMENTS:

- Attachment A – Lot Tabulation, Zoning & Density
- Final Plat
- Final Construction Plans
- Final Landscape Plan

Written Statements

a. *Landowner's Name(s), Project Representatives and Contact Information.*

LANDOWNER/ DEVELOPER	OP4 Boulder Ponds, LLC c/o The Excelsior Group, LLC 1660 Highway 100 South, Suite 400 St. Louis Park, MN 55416 Ben Schmidt, Senior Vice President 952.525.3225 Ben.Schmidt@ExcelsiorLLC.com Steph Griffin, Development Manager 952.525.3239 Steph.Griffin@ExcelsiorLLC.com
ENGINEER	SEH Dave Blommel 320.229.4349 dblommel@sehinc.com
SURVEYOR	EG Rud Jason Rud 651.361.8200 jrud@egrud.com
LANDSCAPE ARCHITECT	Westwood Professional Services Cory Meyer 952.906.7437 cory.meyer@westwoodps.com

b. *Property Address, Zoning, Parcel Size, PID and Legal Description*

	Boulder Ponds 3nd Addition
ADDRESS	n/a
CURRENT ZONING	LDR - PUD
PARCEL SIZE Acres	13.58
Sq. Ft	Approx. 591,545
PID	04-029-21-32-0038
LEGAL DESCR	Outlot C, BOULDER PONDS

c. ***Final Subdivision & Lot Information***

Please refer to ATTACHMENT A Lot tabulation sheet for lot information.

d. ***How issues have been addressed since Preliminary Plat***

This 3rd Addition Plat application is consistent with the Preliminary Plat and PUD approval dated September 17, 2014. All outstanding conditions of the Preliminary Plat Resolution are satisfied. Below are the conditions of preliminary approval per Resolution 2014-73 with responses:

	CONDITION	RESPONSE/STATUS
1	The applicant must enter into a separate grading agreement with the City prior to the commencement of any grading activity in advance of final plat and plan approval. The City Engineer shall review any grading plan that is submitted in advance of a final plat, and said plan shall document extent of any proposed grading on the site.	COMPLETE
2	The developer shall be required to submit an updated parkland dedication calculation in advance of Final Plat. Upon submission of the calculation, the applicant must work with the City to achieve the required parkland dedication amount per the City's Subdivision Ordinance. The developer shall be required to pay a fee in lieu of land dedication equivalent to the fair market value for the amount of land that is required to be dedicated for such purposes in the City's Subdivision Ordinance less the amount of land that is accepted for park purposes by the City. Any cash in lieu of land dedication shall be paid by the applicant prior to the release of the Final Plat for recording.	The greenway park lot (Outlot A Boulder Ponds 3rd) will be dedicated with the 3rd Addition plat of development along with trail improvements.
3	The developer shall follow all the rules and regulations of the Wetland Conservation Act and adhere to the conditions of approval for the South Washington Watershed District Permit.	PERMIT RECEIVED
4	The applicant will work with the Planning Staff to name all streets in the subdivision in a manner acceptable to the City prior to the submission of Final Plat. Modifications to the Preliminary Plat and Preliminary PUD Plans	COMPLETE
5	The applicant will work with staff to address the comments in the City Engineer's review memo dated 7/24/14 to the satisfaction of the City Engineer as part of the Final Plat and Final PUD Plan.	COMPLETE
6	In addition to standard easements required by the Subdivision Ordinance, additional drainage and utility easements must be provided extending 10 feet from meandering sidewalks, as well as all of the portion of private lots between meandering sidewalks and the public right-of-way.	Where sidewalks encroach onto lots, easements are shown on the Final Plat.

	CONDITION	RESPONSE/STATUS
7	The landscape plan shall be updated to locate all boulevard trees in between the public street and sidewalk to not interfere with private utilities.	COMPLETE
8	All islands and medians internal to the Boulder Ponds development shall be platted as part of the right-of-way and shall be maintained by the Home Owners Association. The applicant shall enter into a maintenance agreement with the City that clarifies the individuals or entities responsible for any landscaping installed in areas outside of land dedicated as public park and open space on the Final Plat.	HOA documents specify that public islands and medians (except 5th Street) are the responsibility of the HOA.
9	The design of the northern buffer trail shall be modified to a width of 8 feet as opposed to the regional trail standard of 10 feet.	COMPLETE
10	The eastern segment of the northern buffer trail shall be moved to the south to the greatest extent possible with plantings to screen the trail on the north side.	COMPLETE
Plat Restrictions		
11	Prior to recording the Final Plat for any portion of the area shown in the Preliminary Plat, the Developer shall enter into a Developers Agreement acceptable to the City Attorney that delineates who is responsible for the design, construction, and payment of public improvements.	COMPLETE for the 1st and 2nd Additions, will be done for 3rd Addition.
12	The Final PUD Plan will include a development lot book to clarify proper building placement for use in granting building permits for the development.	COMPLETE for the 1st and 2nd Additions, will be done for 3rd Addition as well.

e. ***Site Density Calculation***

The Lot Tabulation submitted with the 1st Addition approvals showed density information for the entire site.

In summary:

- The overall gross site density (for all phases of development) is calculated at 2.74 dwelling units per acre (DUA).
- Net of commercial, ponding and right-of way, the total site density is calculated at 5.18 DUA.

f. ***Phasing of Infrastructure and Other Improvements***

Grading. Grading for the entire site was completed in 2015.

Streets & Utilities. Utility and street construction is complete for the 1st and 2nd Addition, except for the final lift of asphalt in 2nd Addition. The 3rd Addition includes improvements for 33 Villa lots. It is anticipated that the 1st lift of asphalt will be complete by October 2018.

Site Amenities. The main monument on 5th Street and Jade Trail is complete. The planned monument at the Hudson & Jade Trail are also complete. The 2nd Addition landscaping will be complete June 2018, and 3rd Addition expected to be completed by Spring 2019.

Model Homes. All the single family and Villa style lots are under contract with one builder. Model homes for each of these product styles are complete and currently used to market the site.

Future Phases. 3rd Addition is final plat of the Boulder Ponds project.

g. *How Concerns of Neighboring Properties Have Been Addressed*

The only concern raised was at the 2014 public hearing by a Stone Gate Estates neighbor. It was requested that the trail be located as far south as possible. With some grade adjustments, this has been achieved.

h. *How Conflicts with Nearby Land Uses and/or Disturbances to Wetlands or Natural Areas Have Been Mitigated*

Northerly Buffer. The future trail between Stone Gate Estates to the north softens the impact of the lot sizes between the two neighborhoods.

Transition. The future multi-family site (HDR) provides a transition between the commercial and residential (LDR) uses.

5th Street. 5th Street provides a separation of the residential neighborhood from the surrounding commercial uses.

Supplemental Uses. The Boulder Ponds commercial area compliments the other commercial uses along Hudson Blvd.

Preservation. The existing wetland is being preserved.

i. *Justification that Proposal will Not Place Excessive Burden on Infrastructure in the Area.*

Roads / Traffic. We participated in the construction of 5th Street, a regional MSA road that runs east/west. The City of Lake Elmo has studied the area and determined the new MSA road will be sufficient to serve the new developments in the area. In addition to participation with the construction of 5th Street, we are constructing a north/south road (Jade Trail) connecting Hudson Blvd to 5th Street. Future turn lanes are shown on Hudson Blvd, which are planned for installation when Hudson Blvd is expanded.

Sewer. The site has gravity sewer access along Hudson Blvd that is served by the regional sewer system. This additional capacity has been accounted for in the City of Lake Elmo's Comprehensive Plan.

Water Supply. Water will be served by Oakdale's water supply until such time the City of Lake Elmo can run its own trunk lines to the wider regional development area. Staff has indicated there is sufficient water to serve the development.

Parks. A linear park in this 3rd addition of development will connect to the regional system. Staff has indicated that the trail construction or other related improvement costs may be used as an offset to park dedication fees. It is understood that the City is not requiring additional parkland.

Fire / Police. The streets were designed to accommodate a ladder fire truck. Boulder Ponds is primarily residential, which tends to have less calls per capita than other property types.

j. *Proposed Lakeshore Access*

N/A

k. *Parks and Open Space Description*

The linear park located along the northerly property line (Outlot A) will be dedicated and improved with a trail and landscaping with the 3rd phase of development.

l. *Development Schedule*

- Grading - COMPLETE
- 1st Phase Utility Installation - COMPLETE
- 1st phase street & sidewalk construction (1st lift) - COMPLETE
- 1st Phase landscape and monument installation – COMPLETE
- 2nd lift asphalt on 1st phase streets – COMPLETE
- 2nd Addition Improvements (Street & Utilities) – COMPLETE
- 3rd Addition Improvements – Summer 2018 - Construction of Boulder Ponds 3rd Addition is anticipated to begin in July 2018 with grading and site work activities, followed by utility and street construction. First lift of asphalt is expected to be complete by September 2018.

ATTACHMENT A

Lot Tabulation

Boulder Ponds 3rd Addition				
Lot	Block	Size (sf)	Width (ft)	Depth (ft)
1	1	17402	40.53	141.28
2	1	12992	139.97	130.48
3	1	7228	48.63	130.48
4	1	7419	50.54	126.53
5	1	9231	55.8	132.1
6	1	7659	52.42	134.82
7	1	8803	43.02	125.96
8	1	7970	62	123.96
9	1	7376	81.36	123.96
10	1	7559	88.85	117.48
11	1	7923	96.44	118.44
12	1	8532	103.97	124.33
13	1	8340	102.42	108.5
1	2	1504	57.56	153.5
2	2	15257	36.2	127.34
3	2	9310	51.29	112.42
4	2	8340	56.54	135.43
5	2	8568	79.32	153.46
6	2	10376	116.55	142.19
7	2	8806	62.77	121.83
8	2	7515	51.49	121.83
9	2	7659	50.91	119.87
10	2	7721	49.74	119.67
11	2	9138	52.91	134.68
12	2	7224	55.18	130.55
13	2	9153	80.55	134.16
14	2	8711	85.81	138.26
15	2	8816	78.66	138.21
16	2	9541	72.15	145.66
17	2	32368	115.79	135.99
1	3	12072	121.36	107.6
2	3	12839	129.83	107.64
3	3	9459	57.82	142.55
Average Lot Size (sf)		9782		

Area Calculations	Area (sf)
Trails/Sidewalk	24,258
Wetlands & Buffers	0
Dedicated ROW	87,209 (does not include Outlot A)

ATTACHMENT B

Tree Study Plan

All trees have been cleared from the site, most of which were around the former homestead. A summary of the significant trees surveyed in May 2014 was included with the 1st Addition application.

BOULDER PONDS THIRD ADDITION

KNOW ALL PERSONS BY THESE PRESENTS: OP4 Boulder Ponds, LLC, a Minnesota limited liability company, fee owner of the following described property situated in the County of Washington, State of Minnesota, to wit:

Outlot K, BOULDER PONDS, according to the recorded plat thereof, Washington County, Minnesota.

Has caused the same to be surveyed and platted as BOULDER PONDS THIRD ADDITION and does hereby dedicate to the public for public use the public ways and drainage and utility easements created by this plat.

In witness whereof said OP4 Boulder Ponds, LLC, a Minnesota limited liability company, has caused these presents to be signed by Ben Schmidt, Vice President this ____ day of ______________, 20____.

OP4 BOULDER PONDS, LLC

____
Ben Schmidt, Vice President

STATE OF MINNESOTA
COUNTY OF________________
This instrument was acknowledged before me on this______day of ______________, 20____, by Ben Schmidt, Vice President of OP4 Boulder Ponds, LLC, a Minnesota limited liability company, on behalf of the company.

____

____
Notary Public, ___________ County, Minnesota
My Commission Expires_________________

I Jason E. Rud do hereby certify that I have surveyed and platted or directly supervised the survey and platting of the property described on this plat as BOULDER PONDS THIRD ADDITION; that I am a duly Licensed Land Surveyor in the State of Minnesota; that this plat is a correct representation of the boundary survey; that all mathematical data and labels are correctly designated on the plat; that all monuments depicted on the plat have been or will be correctly set within one year as indicated on the plat; that all water boundaries and wet lands as defined in MS Section 505.01, Subd. 3 existing as of the date of this certification are shown and labeled on the plat; and that all public ways are shown and labeled on the plat.

Dated this _______ day of _________________, 20_____

____
Jason E. Rud, Licensed Land Surveyor
Minnesota License No. 41578

STATE OF MINNESOTA
COUNTY OF________________

The foregoing Surveyor's Certificate was acknowledged before me on this______day of______________, 20____
by Jason E. Rud, Licensed Land Surveyor, Minnesota License No. 41578.

____

____
Notary Public, ___________ County, Minnesota
My Commission Expires_________________

LAKE ELMO PLANNING COMMISSION
Approved by the Planning Commission of the City of Lake Elmo, Minnesota, this ______day of ________________________, 20____.

PLANNING COMMISSION, CITY OF LAKE ELMO, MINNESOTA

By ______________________ By______________________
Chairman Secretary

CITY OF LAKE ELMO, MINNESOTA
The foregoing plat of BOULDER PONDS THIRD ADDITION was approved by the City Council of Lake Elmo, Minnesota, this _____day of ________________________, 20_____, and hereby certifies compliance with all requirements as set forth in Minnesota Statutes, Section 505.03, Subdivision 2.

CITY OF LAKE ELMO, MINNESOTA

By ______________________ By______________________
Mayor Clerk

COUNTY SURVEYOR
Pursuant to Chapter 820, Laws of Minnesota, 1971, and in accordance with Minnesota Statutes, Section 505.021, Subd. 11, this plat has been reviewed and approved this ______ day of __________________, 20_____.

By ______________________ By______________________
Washington County Surveyor

COUNTY AUDITOR/TREASURER
Pursuant to Minnesota Statutes, Section 505.021, Subd. 9, taxes payable in the year 20____ on the land hereinbefore described have been paid. Also pursuant to Minnesota Statutes, Section 272.12, there are no delinquent taxes and transfer has been entered on this _______day of ________________________, 20_____.

By ______________________ By______________________
Washington County Auditor/Treasurer Deputy

COUNTY RECORDER
Document Number ________________
I hereby certify that this instrument was recorded in the Office of the County Recorder for record on this _____ day of _______________, 20_____, at _______ o'clock _____ M., and was duly recorded in Washington County Records.

By ______________________ By______________________
Washington County Recorder Deputy

VICINITY MAP

NOT TO SCALE

SECTION 34, TOWNSHIP 29N, RANGE 21W
CITY OF LAKE ELMO

NORTH

GRAPHIC SCALE

60 0 30 60 120 240

1 INCH = 60 FEET

○ DENOTES 1/2 INCH BY 14 INCH IRON PIPE TO BE SET AND MARKED BY RLS NO. 41578.

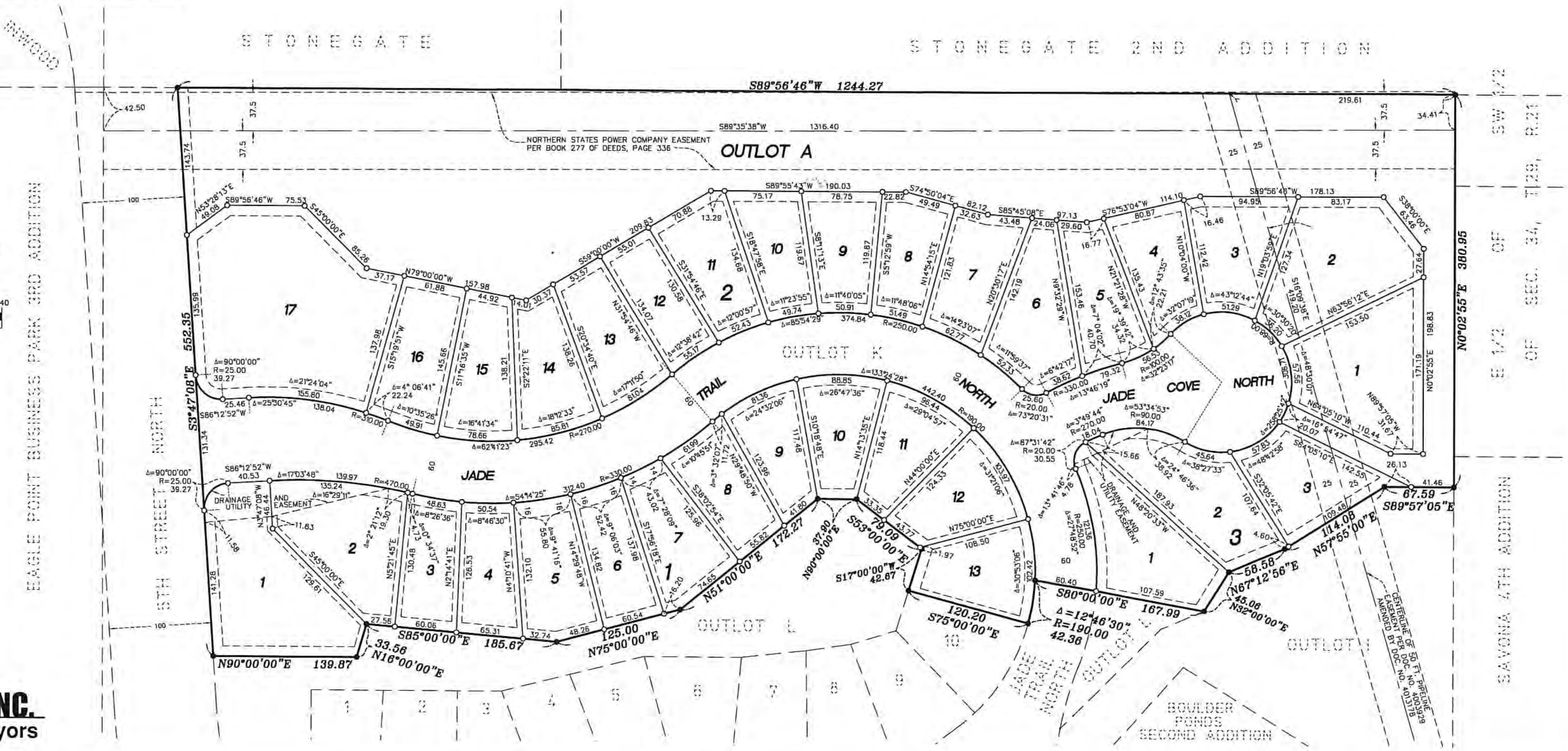
● DENOTES FOUND IRON MONUMENT MARKED BY RLS NO. 41578.

ORIENTATION OF THIS BEARING SYSTEM IS BASED ON THE WASHINGTON COUNTY COORDINATE SYSTEM. (NAD 83)

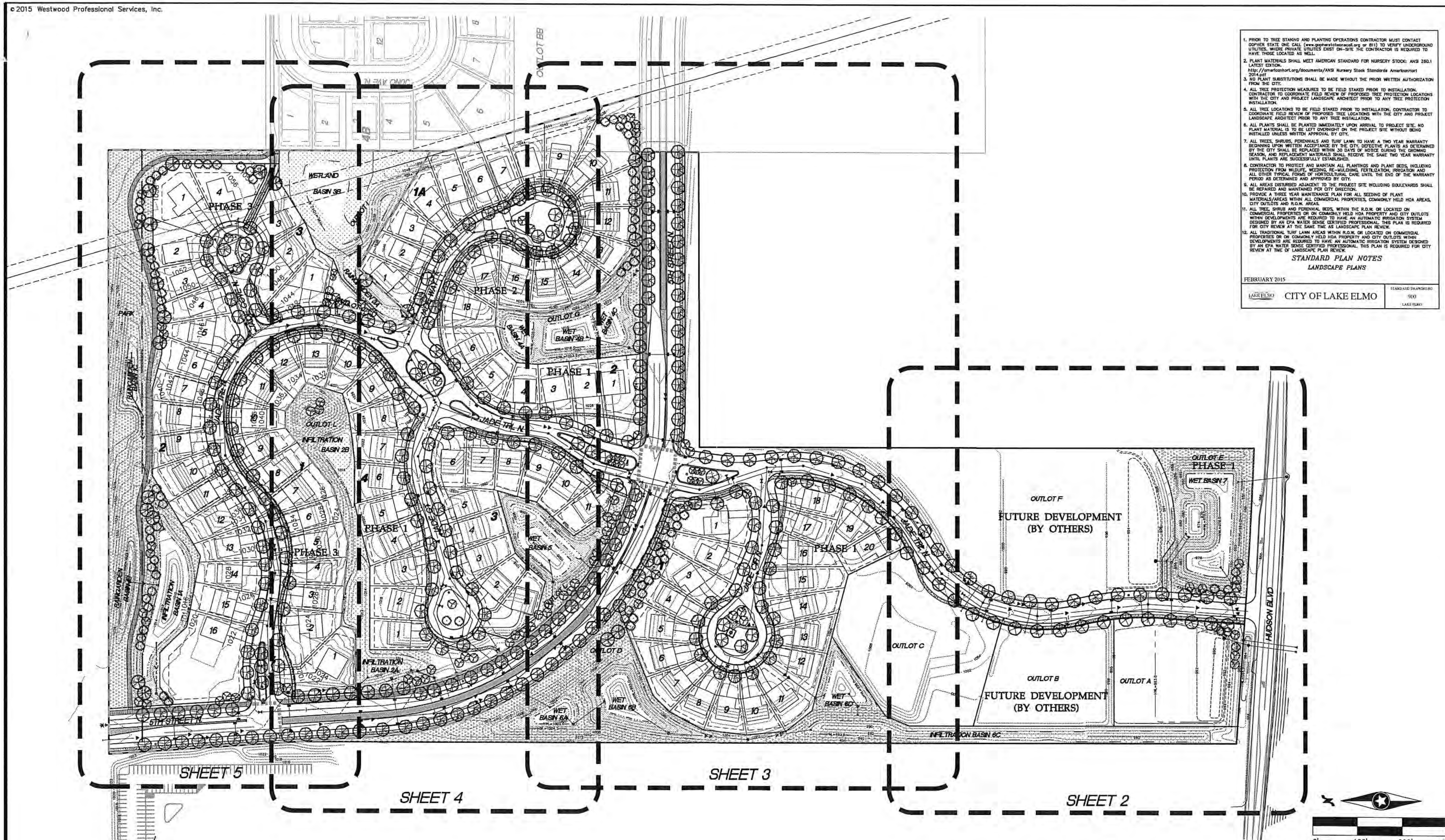
EASEMENT DETAIL

DRAINAGE AND UTILITY EASEMENTS ARE SHOWN THUS:

BEING 5 FEET IN WIDTH AND ADJOINING SIDE LOT LINES AND 10 FEET IN WIDTH AND ADJOINING PUBLIC WAYS AND REAR LOT LINES, UNLESS OTHERWISE SHOWN ON THIS PLAT.



E. G. RUD & SONS, INC.
EST. 1977
Professional Land Surveyors



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STANDARD PLAN NOTES

LANDSCAPE PLANS

FEBRUARY 2015

CITY OF LAKE ELMO | STANDARD DRAWING NO. 900 LAKE ELMO

Latest Revision Date: 04/23/18

0005402PLF01.dwg

Date: 01/30/15 Sheet: LS1 OF 10

Westwood

Phone (952) 937-5150 7699 Anagram Drive
Fax (952) 937-5822 Eden Prairie, MN 55344
Toll Free (888) 937-5150 westwoodps.com

Westwood Professional Services, Inc.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly licensed LANDSCAPE ARCHITECT under the laws of the State of Minnesota.

Cory Meyer

Date: 04/23/18 License No. 26971

Revisions:
04/13/15 – CITY COMMENTS
05/07/15 – CITY COMMENTS
09/01/15 – 5TH ST MEDIAN
03/01/16 – CITY COMMENTS
03/17/16 – CITY COMMENTS
04/11/16 – CITY COMMENTS
04/23/18 – SITE REVISIONS

Designed: CLM
Checked: CLM
Drawn: SYE
Record Drawing by/date:

Prepared for:

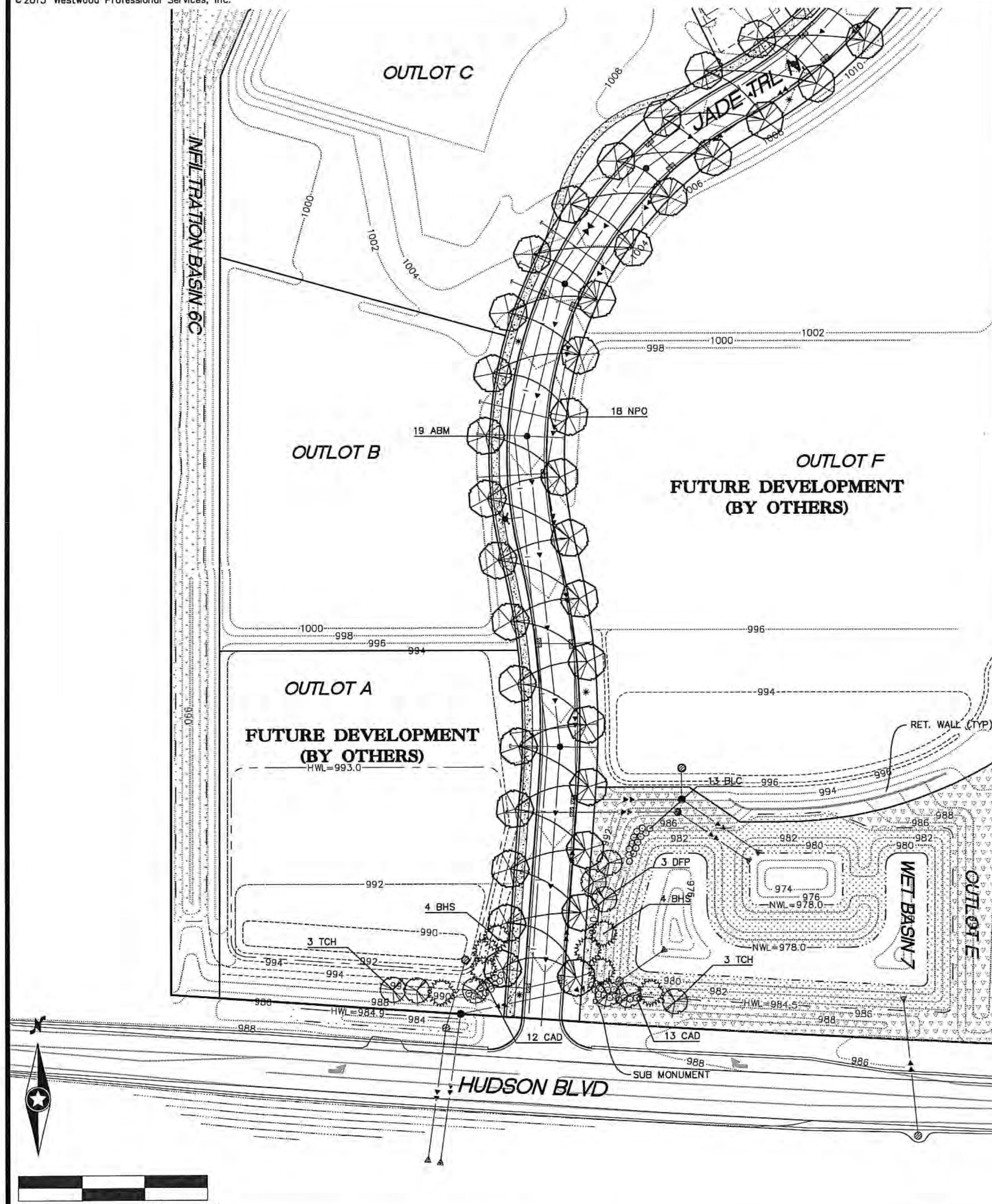
The Excelsior Group, LLC

11455 Viking Dr., Suite 350
Eden Prairie, MN 55344

Boulder Ponds

Lake Elmo, Minnesota

Overall Planting Plan



Wet Stormwater Native Grass Mix

33-261 Stormwater South & West

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
big bluestem	*Andropogon gerardii*	2.24	2.00	5.72%	7.35
fringed brome	*Bromus ciliatus*	2.24	2.00	5.73%	5.10
bluejoint	*Calamagrostis canadensis*	0.07	0.06	0.19%	6.40
slender wheatgrass	*Elymus trachycaulus*	1.12	1.00	2.85%	2.53
Virginia wild rye	*Elymus virginicus*	1.68	1.50	4.28%	2.31
switchgrass	*Panicum virgatum*	0.43	0.38	1.07%	1.93
fowl bluegrass	*Poa palustris*	1.19	1.06	3.03%	50.70
indian grass	*Sorghastrum nutans*	0.13	0.12	0.36%	0.55
prairie cordgrass	*Spartina pectinata*	0.43	0.38	1.07%	0.91
	Total Grasses	**9.53**	**8.50**	**24.29%**	**80.78**
awl-fruited sedge	*Carex stipata*	0.28	0.25	0.71%	3.10
dark green bulrush	*Scirpus atrovirens*	0.21	0.19	0.54%	31.70
woolgrass	*Scirpus cyperinus*	0.07	0.06	0.18%	39.00
	Total Sedges and Rushes	**0.56**	**0.50**	**1.43%**	**73.80**
Canada anemone	*Anemone canadensis*	0.08	0.07	0.19%	0.20
marsh milkweed	*Asclepias incarnata*	0.12	0.11	0.32%	0.20
leafy beggarticks	*Bidens frondosa*	0.12	0.11	0.31%	0.20
flat-topped aster	*Doellingeria umbellata*	0.07	0.06	0.17%	1.50
spotted joe pye weed	*Eutrochium maculatum*	0.07	0.06	0.18%	2.19
autumn sneezeweed	*Helenium autumnale*	0.15	0.13	0.30%	5.97
obedient plant	*Physostegia virginiana*	0.08	0.07	0.21%	0.30
tall coneflower	*Rudbeckia laciniata*	0.08	0.07	0.21%	0.37
New England aster	*Symphyotrichum novae-angliae*	0.08	0.07	0.19%	1.56
blue vervain	*Verbena hastata*	0.06	0.05	0.15%	1.65
golden alexanders	*Zizia aurea*	0.22	0.20	0.56%	0.79
	Total Forbs	**1.12**	**1.00**	**2.85%**	**15.13**
Oats or winter wheat (see note at beginning of list for recommended dates)		28.02	25.00	71.43%	11.14
	Total Cover Crop	**28.02**	**25.00**	**71.43%**	**11.14**
	Totals:	**39.23**	**35.00**	**100.00%**	**180.85**
Purpose:	Stormwater pond edges, temporarily flooded dry ponds, and temporarily flooded ditch bottoms.				
Planting Area:	Tallgrass Aspen Parklands, Prairie Parkland, and Eastern Broadleaf Forest Provinces. Mn/DOT Districts 2(west), 3B, 4, Metro, 6, 7 & 8.				

Dry Stormwater Native Grass Mix

33-262 Dry Swale / Pond

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
big bluestem	*Andropogon gerardii*	1.68	1.50	3.40%	5.50
American slough grass	*Beckmannia syzigachne*	1.68	1.50	3.42%	27.60
fringed brome	*Bromus ciliatus*	1.68	1.50	3.40%	6.05
nodding wild rye	*Elymus canadensis*	4.49	4.00	9.09%	7.64
slender wheatgrass	*Elymus trachycaulus*	4.48	4.00	9.10%	10.15
Virginia wild rye	*Elymus virginicus*	2.80	2.50	5.67%	3.85
switchgrass	*Panicum virgatum*	0.45	0.40	0.91%	2.05
fowl bluegrass	*Poa palustris*	1.79	1.60	3.64%	76.50
indian grass	*Sorghastrum nutans*	1.68	1.50	3.40%	6.60
	Total Grasses	**20.74**	**18.50**	**42.03%**	**145.94**
marsh milkweed	*Asclepias incarnata*	0.07	0.06	0.13%	0.10
purple prairie clover	*Dalea purpurea*	0.10	0.09	0.21%	0.50
Canada tick trefoil	*Desmodium canadense*	0.10	0.09	0.21%	0.19
ox-eye	*Heliopsis helianthoides*	0.10	0.09	0.20%	0.20
black-eyed susan	*Rudbeckia hirta*	0.08	0.07	0.17%	2.49
blue vervain	*Verbena hastata*	0.11	0.10	0.23%	3.50
	Total Forbs	**0.56**	**0.50**	**1.15%**	**6.98**
Oats or winter wheat (see note at beginning of list for recommended dates)		28.02	25.00	56.82%	11.14
	Total Cover Crop	**28.02**	**25.00**	**56.82%**	**11.14**
	Totals:	**49.32**	**44.00**	**100.00%**	**164.06**
Purpose:	Temporarily flooded swales in agricultural settings.				
Planting Area:	Tallgrass Aspen Parklands, Prairie Parkland, and Eastern Broadleaf Forest Provinces. Mn/DOT Districts 2(west), 3B, 4, Metro, 6, 7 & 8.				

Dry Prairie Native Grass Mix

35-621 Dry Prairie Southeast

Common Name	Scientific Name	Rate (kg/ha)	Rate (lb/ac)	% of Mix (% by wt)	Seeds/ sq ft
side-oats grama	*Bouteloua curtipendula*	1.27	1.13	10.23%	2.48
blue grama	*Bouteloua gracilis*	0.76	0.68	6.19%	10.00
kalm's brome	*Bromus kalmii*	0.35	0.31	2.78%	0.90
nodding wild rye	*Elymus canadensis*	1.68	1.50	13.61%	2.86
slender wheatgrass	*Elymus trachycaulus*	1.32	1.18	10.76%	3.00
junegrass	*Koeleria macrantha*	0.46	0.41	3.71%	30.00
little bluestem	*Schizachyrium scoparium*	1.69	1.51	13.70%	6.30
sand dropseed	*Sporobolus cryptandrus*	0.25	0.22	1.98%	16.00
prairie dropseed	*Sporobolus heterolepis*	0.29	0.26	2.32%	1.50
	Total Grasses	**8.07**	**7.20**	**65.28%**	**75.04**
butterfly milkweed	*Asclepias tuberosa*	0.07	0.06	0.52%	0.09
whorled milkweed	*Asclepias verticillata*	0.01	0.01	0.11%	0.05
bird's foot coreopsis	*Coreopsis palmata*	0.06	0.05	0.50%	0.20
white prairie clover	*Dalea candida*	0.10	0.09	0.78%	0.80
purple prairie clover	*Dalea purpurea*	0.17	0.15	1.32%	0.80
ox-eye	*Heliopsis helianthoides*	0.07	0.06	0.51%	0.13
round-headed bush clover	*Lespedeza capitata*	0.03	0.03	0.31%	0.10
rough blazing star	*Liatris aspera*	0.02	0.02	0.17%	0.11
dotted blazing star	*Liatris punctata*	0.02	0.02	0.23%	0.06
wild bergamot	*Monarda fistulosa*	0.03	0.03	0.30%	0.85
horsemint	*Monarda punctata*	0.02	0.02	0.22%	0.80
stiff goldenrod	*Oligoneuron rigidum*	0.07	0.06	0.59%	0.98
large-flowered beard tongue	*Penstemon grandiflorus*	0.04	0.04	0.35%	0.20
black-eyed susan	*Rudbeckia hirta*	0.10	0.09	0.86%	3.20
gray goldenrod	*solidago nemoralis*	0.01	0.01	0.14%	1.65
skyblue aster	*Symphyotrichum oolentangiense*	0.01	0.01	0.06%	0.20
silky aster	*Symphyotrichum sericeum*	0.02	0.02	0.19%	0.20
bracted spiderwort	*Tradescantia bracteata*	0.01	0.01	0.12%	0.05
heart-leaved alexanders	*Zizia aptera*	0.02	0.02	0.21%	0.10
	Total Forbs	**0.90**	**0.80**	**7.49%**	**10.37**
Oats or winter wheat (see note at beginning of list for recommended dates)		3.36	3.00	27.23%	1.33
	Total Cover Crop	**3.36**	**3.00**	**27.23%**	**1.33**
	Totals:	**12.33**	**11.00**	**100.00%**	**86.75**
Purpose:	Regional dry prairie reconstruction for wetland mitigation, ecological restoration, or conservation program plantings.				
Planting Area:	Eastern Broadleaf Forest Province excluding Hardwood Hills subsection. Mn/DOT Districts Metro & 6.				

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STANDARD PLAN NOTES
LANDSCAPE PLANS

FEBRUARY 2015

CITY OF LAKE ELMO — STANDARD DRAWING NO. 900 LAKE ELMO

Phase 1 Final Plant Schedule

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
ABM	30	Autumn Blaze Maple / Acer x freemanii 'Jeffersred'	2.5" BB	AS SHOWN
SGM	24	Sienna Glen Maple / Acer x freemanii 'Sienna'	2.5" BB	AS SHOWN
SKH	25	Skyline Honeylocust / Gleditsia triacanthos var. inermis 'Skycole'	2.5" BB	AS SHOWN
NPO	21	Northern Pin Oak / Quercus ellipsoidalis	2.5" BB	AS SHOWN
SWO	2	Swamp White Oak / Quercus bicolor	2.5" BB	AS SHOWN
PRE	39	Princeton Elm / Ulmus americana 'Princeton'	2.5" BB	AS SHOWN
TCH	24	Thornless Cockspur Hawthorn / Crataegus crusgalli 'Inermis'	2" BB	AS SHOWN
ALS	9	Allegheny Serviceberry / Amelanchier laevis	6' HT., BB CLUMP	AS SHOWN
PRC	2	Prairie Rose Crab / Malus 'Prairie Rose'	2" BB	AS SHOWN
STC	6	Show Time Crab / Malus 'Shotizam'	2" BB	AS SHOWN
DFP	27	Double Flowering Plum / Prunus triloba	#7 CONT.	AS SHOWN
BHS	28	Black Hills Spruce / Picea glauca densata	8' HT., BB	AS SHOWN
NOS	8	Norway Spruce / Picea abies	8' HT., BB	AS SHOWN
WHP	6	White Pine / Pinus strobus	8' HT., BB	AS SHOWN
CAD	64	Cardinal Dogwood / Cornus sericea 'Cardinal'	#5 CONT.	5'-0" O.C.
ARV	39	Arrowood Viburnum / Viburnum dentatum	#5 CONT.	5'-0" O.C.
BLC	32	Black Chokeberry / Aronia melanocarpa	#5 CONT.	4'-0" O.C.

NOTE: QUANTITIES ON PLAN SUPERSEDE LIST QUANTITIES IN THE EVENT OF A DISCREPANCY.

Phase 2 Final Plant Schedule

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
ABM(2)	11	Autumn Blaze Maple / Acer x freemanii 'Jeffersred'	2.5" BB	AS SHOWN
SGM(2)	13	Sienna Glen Maple / Acer x freemanii 'Sienna'	2.5" BB	AS SHOWN
SKH(2)	26	Skyline Honeylocust / Gleditsia triacanthos var. inermis 'Skycole'	2.5" BB	AS SHOWN
NPO(2)	18	Northern Pin Oak / Quercus ellipsoidalis	2.5" BB	AS SHOWN
REO(2)	3	Red Oak / Quercus rubra	2.5" BB	AS SHOWN
SWO(2)	2	Swamp White Oak / Quercus bicolor	2.5" BB	AS SHOWN
ACE(2)	19	Accolade Elm / Ulmus japonica x wilsoniana 'Morton'	2.5" BB	AS SHOWN
RIB(2)	4	River Birch / Betula nigra	2.5" BB	AS SHOWN
TCH(2)	5	Thornless Cockspur Hawthorn / Crataegus crusgalli 'Inermis'	2" BB	AS SHOWN
ALS(2)	15	Allegheny Serviceberry / Amelanchier laevis	6' HT., BB CLUMP	AS SHOWN
STC(2)	5	Show Time Crab / Malus 'Shotizam'	2" BB	AS SHOWN
DFP(2)	4	Double Flowering Plum / Prunus triloba	#7 CONT.	AS SHOWN
BHS(2)	16	Black Hills Spruce / Picea glauca densata	8' HT., BB	AS SHOWN
AML(2)	12	American Larch / Larix laricina	8' HT., BB	AS SHOWN
WHP(2)	9	White Pine / Pinus strobus	8' HT., BB	AS SHOWN
ARV(2)	25	Arrowood Viburnum / Viburnum dentatum	#5 CONT.	5'-0" O.C.
BLC(2)	27	Black Chokeberry / Aronia melanocarpa	#5 CONT.	4'-0" O.C.

NOTE: QUANTITIES ON PLAN SUPERSEDE LIST QUANTITIES IN THE EVENT OF A DISCREPANCY.

Landscape Requirement Calculations

OVERALL LANDSCAPE REQUIREMENTS:

FIVE TREES PER ACRE X SITE AREA (48.8 AC) = 610 CAL IN. REQUIRED
(244 trees @ 2-1/2" cal inches)

OVERALL STREET TREE REQUIREMENTS:

1 TREE PER 50' LOCAL STREET FRONTAGE (10,043 LF) = 502 CAL IN. REQUIRED
(201 trees @ 2-1/2" cal inches)

1 TREE PER 40' 5TH STREET FRONTAGE (3,965 LF) = 396 CAL IN. REQUIRED
(99 trees @ 4" cal inches)

SUBTOTAL LANDSCAPE REQUIREMENTS: = 1508 CAL IN. REQUIRED

TREE REPLACEMENT REQUIREMENTS: = 121 CAL IN. REQUIRED

OVERALL LANDSCAPING REQUIREMENTS: = 1629 CAL IN. REQUIRED

OVERALL LANDSCAPING PROVIDED: = 1518 CAL IN. PROVIDED
(INCLUDES 5TH STREET PLANTINGS, NOT INCLUDING 1,602 SHRUB & PERENNIAL PLANTS)

PHASE 1 TOTAL LANDSCAPING PROVIDED:	=	894 CAL IN. PROVIDED
5TH ST BLVD TREES (48 trees @ 4"):	=	192.0 CAL IN.
STREET TREES (136 trees @ 2.5"):	=	340.0 CAL IN.
OTHER SHADE TREES (5 trees @ 2.5"):	=	12.5 CAL IN.
ORNAMENTAL TREES (68 trees @ 2.0"):	=	136.0 CAL IN.
EVERGREEN TREES (42 trees @ 3.3"):	=	138.5 CAL IN.
EVERGREEN TREES (15 trees @ 5"):	=	75 CAL IN.
ADDTL PLANTINGS NOT CREDITED:	=	1,256 PLANTS
SHRUBS:	=	391 PLANTS
PERENNIALS:	=	865 PLANTS

PHASE 2 TOTAL LANDSCAPING PROVIDED:	=	624 CAL IN. PROVIDED
5TH ST BLVD TREES (51 trees @ 4"):	=	204.0 CAL IN.
STREET TREES (81 trees @ 2.5"):	=	202.5 CAL IN.
OTHER SHADE TREES (15 trees @ 2.5"):	=	37.5 CAL IN.
ORNAMENTAL TREES (29 trees @ 2.0"):	=	58.0 CAL IN.
EVERGREEN TREES (37 trees @ 3.3"):	=	122.0 CAL IN.
ADDTL PLANTINGS NOT CREDITED:	=	346 PLANTS
SHRUBS:	=	125 PLANTS
PERENNIALS:	=	221 PLANTS

DENOTES DRY PRAIRIE NATIVE GRASS MIX (35-621)

DENOTES DRY STORMWATER NATIVE GRASS MIX (33-262)

DENOTES WET STORMWATER NATIVE GRASS MIX (33-261)

Latest Revision Date: 04/23/18
0005402PLF02.dwg

Date: 01/30/15 Sheet: LS2 OF 10

Boulder Ponds
Lake Elmo, Minnesota

Final Landscape Plan

Westwood
Phone (952) 937-5150 7699 Anagram Drive
Fax (952) 937-5822 Eden Prairie, MN 55344
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly licensed LANDSCAPE ARCHITECT under the laws of the State of Minnesota.

Cory Meyer
Date: 04/23/18 License No. 26971

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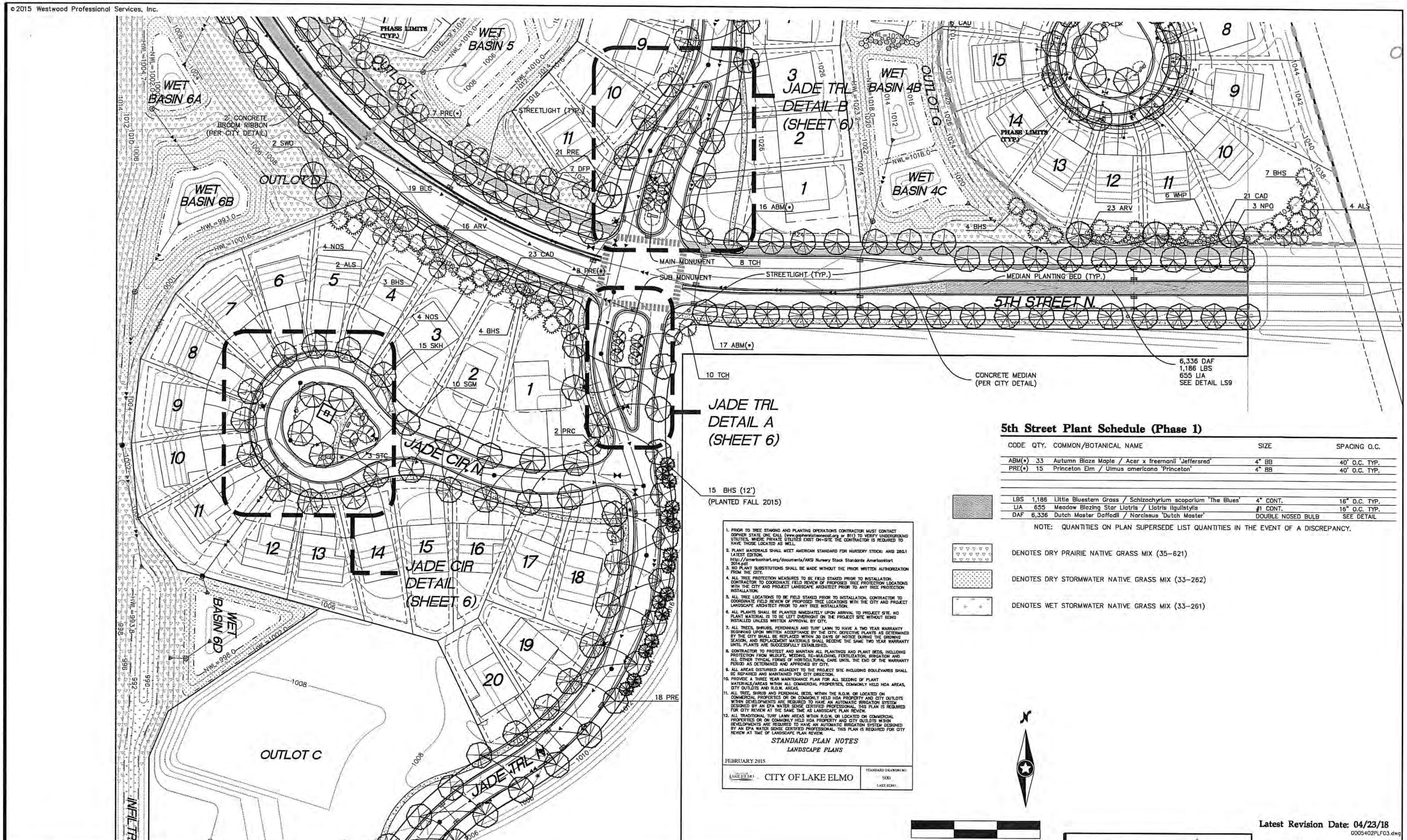
Designed: CLM
Checked: CLM
Drawn: SYE
Record Drawing by/date:

Prepared for:
The Excelsior Group, LLC
11455 Viking Dr., Suite 350
Eden Prairie, MN 55344



5th Street Plant Schedule (Phase 1)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
ABM(*)	33	Autumn Blaze Maple / Acer x freemanii 'Jeffersred'	4" BB	40' O.C. TYP.
PRE(*)	15	Princeton Elm / Ulmus americana 'Princeton'	4" BB	40' O.C. TYP.
LBS	1,186	Little Bluestem Grass / Schizachyrium scoparium 'The Blues'	4" CONT.	16" O.C. TYP.
LIA	655	Meadow Blazing Star Liatris / Liatris ligulistylis	#1 CONT.	16" O.C. TYP.
DAF	6,336	Dutch Master Daffodil / Narcissus 'Dutch Master'	DOUBLE NOSED BULB	SEE DETAIL

NOTE: QUANTITIES ON PLAN SUPERSEDE LIST QUANTITIES IN THE EVENT OF A DISCREPANCY.

DENOTES DRY PRAIRIE NATIVE GRASS MIX (35-621)

DENOTES DRY STORMWATER NATIVE GRASS MIX (33-262)

DENOTES WET STORMWATER NATIVE GRASS MIX (33-261)

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STANDARD PLAN NOTES

LANDSCAPE PLANS

FEBRUARY 2015

CITY OF LAKE ELMO — STANDARD DRAWING NO. 900 LAKE ELMO

Latest Revision Date: 04/23/18

0005402PLF03.dwg

Date: 01/30/15 Sheet: LS3 OF 10

Westwood

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Fax (952) 937-5822 Eden Prairie, MN 55344
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Westwood Professional Services, Inc.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly licensed LANDSCAPE ARCHITECT under the laws of the State of Minnesota.

Cory Meyer

Date: 04/23/18 License No. 26971

Revisions:
04/13/15 – CITY COMMENTS
05/07/15 – CITY COMMENTS
05/26/15 – 5TH STREET PLANT SCHEDULE
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03/01/16 – CITY COMMENTS
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04/23/18 – SITE REVISIONS

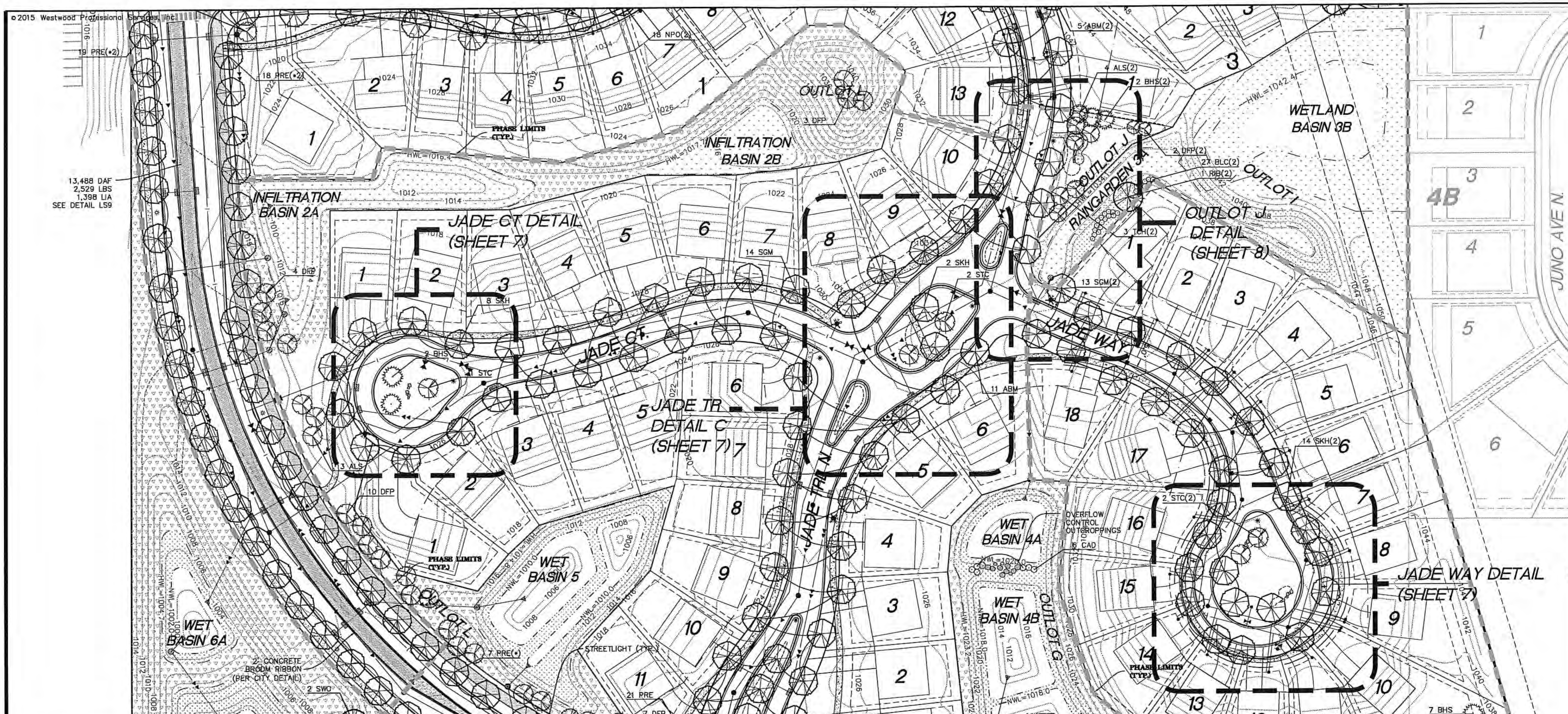
Designed: CLM
Checked: CLM
Drawn: SYE
Record Drawing by/date:

Prepared for:

The Excelsior Group, LLC
11455 Viking Dr., Suite 350
Eden Prairie, MN 55344

Boulder Ponds
Lake Elmo, Minnesota

Final Landscape Plan



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STANDARD PLAN NOTES
LANDSCAPE PLANS

FEBRUARY 2015

CITY OF LAKE ELMO

5th Street Plant Schedule (Phase 2)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
HTO(*2)	14	Heritage Oak / Quercus x macdanielli 'Clemons'	4" BB	40' O.C. TYP.
PRE(*2)	37	Princeton Elm / Ulmus americana 'Princeton'	4" BB	40' O.C. TYP.
LBS	2,529	Little Bluestem Grass / Schizachyrium scoparium 'The Blues'	4" CONT.	16" O.C. TYP.
LIA	1,398	Meadow Blazing Star Liatris / Liatris ligulistylis	#1 CONT.	16" O.C. TYP.
DAF	13,488	Dutch Master Daffodil / Narcissus 'Dutch Master'	DOUBLE NOSED BULB	SEE DETAIL

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DENOTES DRY PRAIRIE NATIVE GRASS MIX (35-621)

DENOTES DRY STORMWATER NATIVE GRASS MIX (33-262)

DENOTES WET STORMWATER NATIVE GRASS MIX (33-261)

0' 50' 100' 150'

Latest Revision Date: 04/23/18
0003402PLF04.dwg

Date: 01/30/15 Sheet: LS4 OF 10

Westwood
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Cory Meyer
Date: 04/23/18 License No. 26971

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Checked: CLM
Drawn: SYE
Record Drawing by/date:

Prepared for:
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Boulder Ponds
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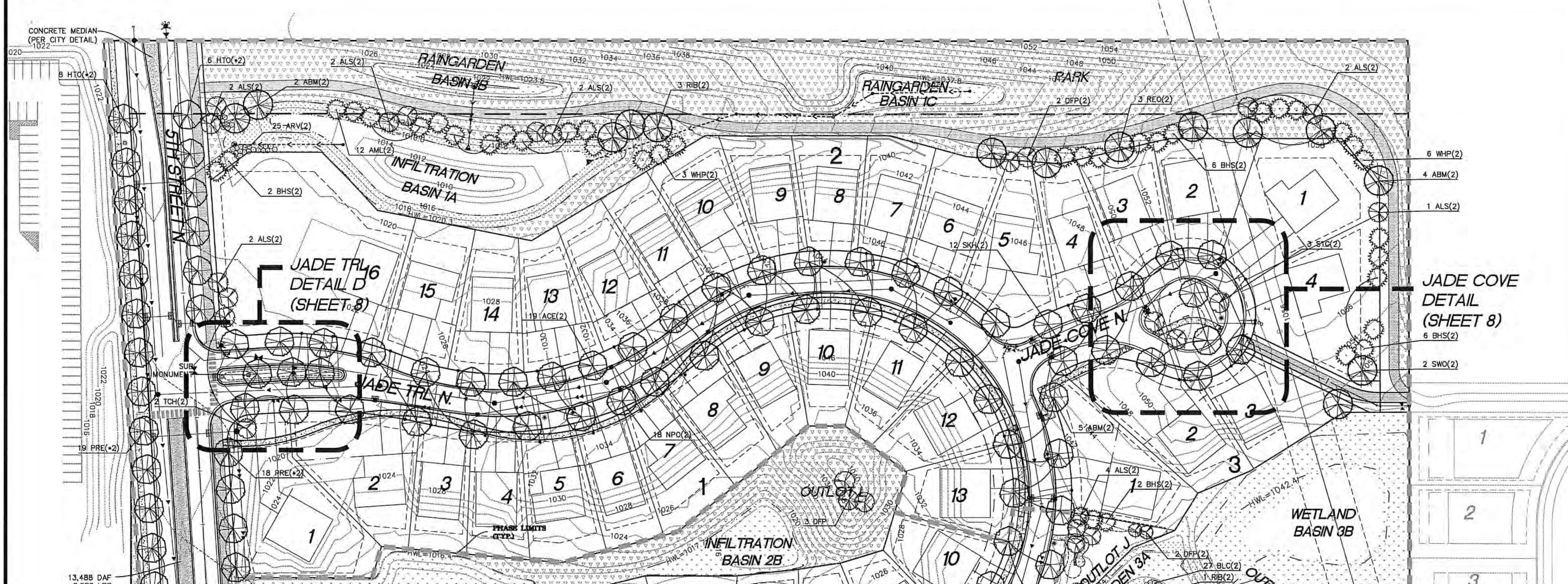
Final Landscape Plan



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STANDARD PLAN NOTES

LANDSCAPE PLANS

FEBRUARY 2015

LAKE ELMO — CITY OF LAKE ELMO	STANDARD DRAWING NO. 900 LAKE ELMO

N

0' 50' 100' 150'

Latest Revision Date: 04/23/18

0005402PLF05.dwg

Date: 01/30/15 Sheet: LS5 OF 10

Westwood

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Drawn: SYE
Record Drawing by/date:

Prepared for:

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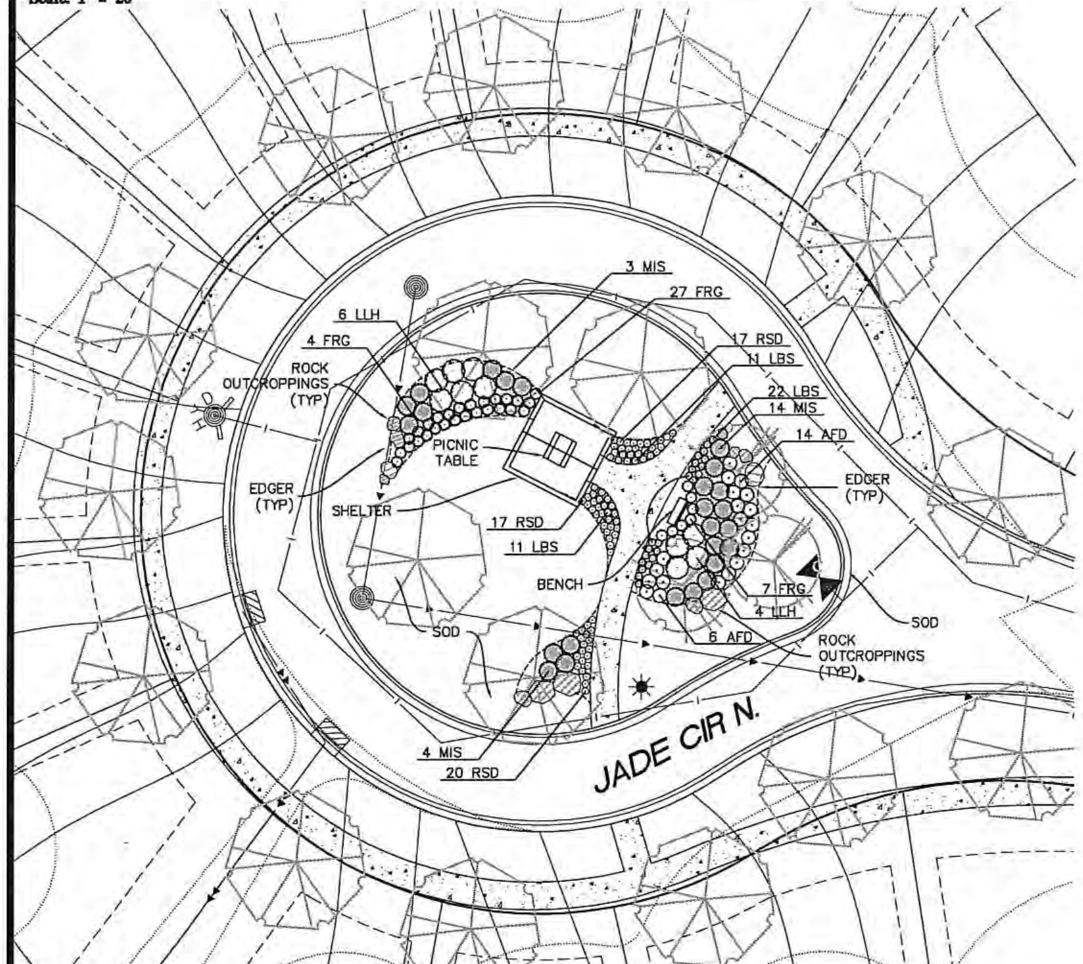
Boulder Ponds

Lake Elmo, Minnesota

Final Landscape Plan

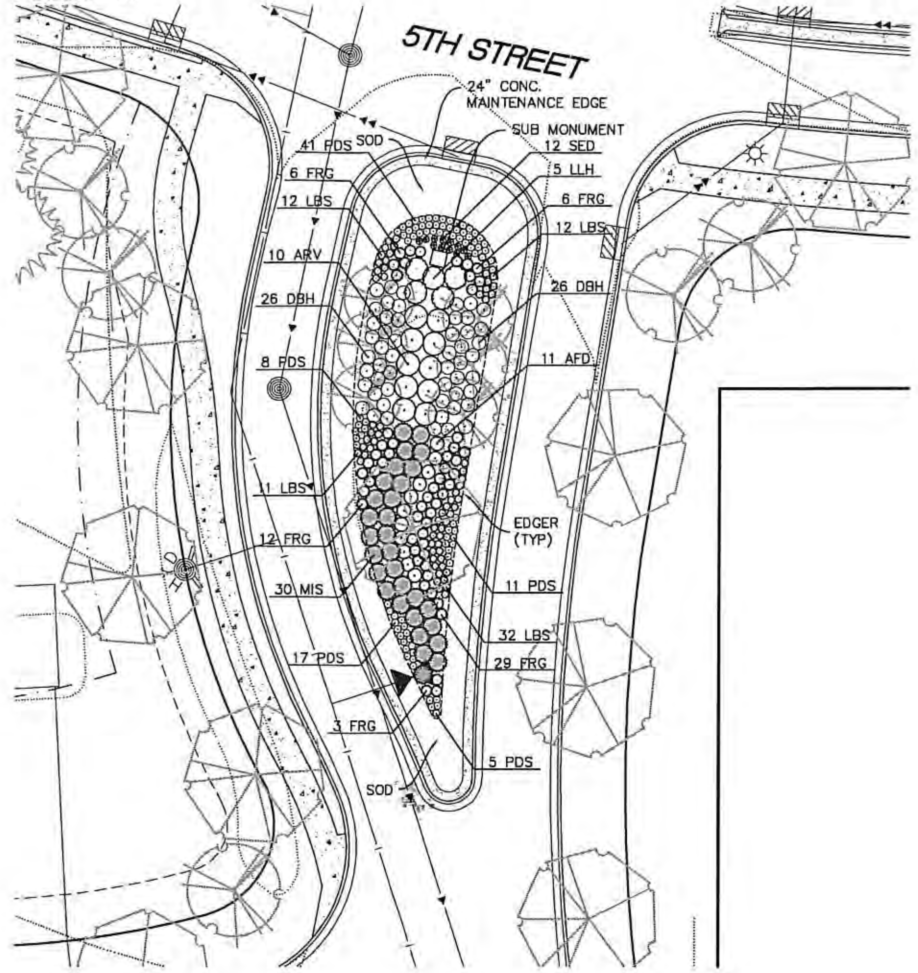
Jade Circle Island

Scale: 1" = 20'



Jade Trail Median A

Scale: 1" = 20'



Jade Trail Median B

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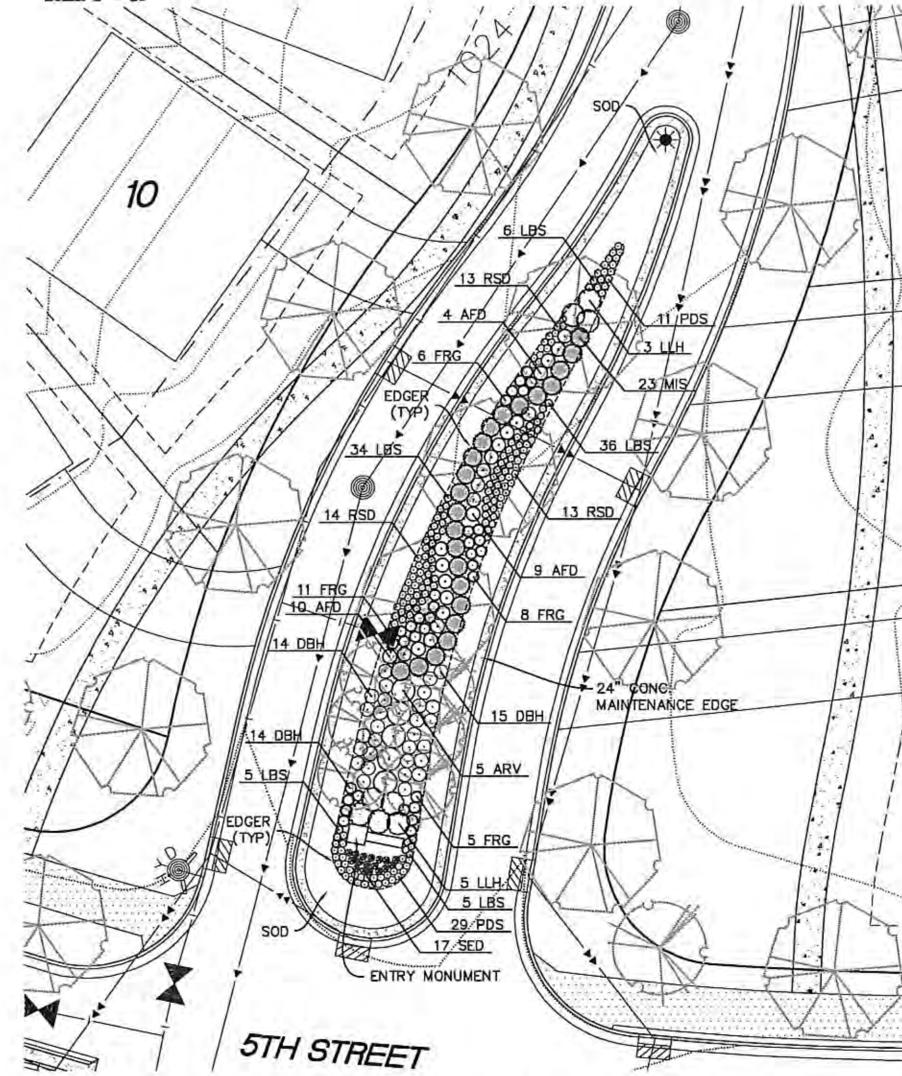

Jade Circle Island Plant Schedule (Phase 1)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
LLH	10	Limelight Hydrangea / Hydrangea paniculata 'Limelight'	#5 CONT.	5'-0" O.C.
AFD	20	Arctic Fire Dogwood / Cornus stolonifera 'Farrow'	#5 CONT.	3'-0" O.C.
MIS	21	Misconthus Flame Grass / Miscanthus sinensis 'Purpurascens'	#1 CONT.	48" O.C.
FRG	34	Karl Foerster Feather Reed Grass / Calamagrostis x acutiflora 'Karl Foerster'	#1 CONT.	18" O.C.
LBS	44	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.
RSD	54	Ruby Stella Daylily / Hemerocallis 'Ruby Stella'	#1 CONT.	18" O.C.

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STANDARD PLAN NOTES

LANDSCAPE PLANS

FEBRUARY 2015

CITY OF LAKE ELMO | STANDARD DRAWING NO. 900

Jade Trail Median A Plant Schedule (Phase 1)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
ARV	10	Arrowood Viburnum / Viburnum dentatum	#5 CONT.	5'-0" O.C.
LLH	5	Limelight Hydrangea / Hydrangea paniculata 'Limelight'	#5 CONT.	5'-0" O.C.
DBH	52	Dwarf Bush Honeysuckle / Diervilla lonicera	#5 CONT.	3'-0" O.C.
AFD	11	Arctic Fire Dogwood / Cornus stolonifera 'Farrow'	#5 CONT.	3'-0" O.C.
MIS	30	Miscanthus Flame Grass / Miscanthus sinensis 'Purpurascens'	#1 CONT.	48" O.C.
FRG	56	Karl Foerster Feather Reed Grass / Calamagrostis x acutiflora 'Karl Foerster'	#1 CONT.	18" O.C.
LBS	67	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.
PDS	82	Prairie Dropseed Grass / Sporobolus heterolepis	#1 CONT.	18" O.C.
RSD	--	Ruby Stella Daylily / Hemerocallis 'Ruby Stella'	#1 CONT.	18" O.C.
SED	12	Autumn Joy Sedum / Sedum x 'Autumn Joy'	#1 CONT.	18" O.C.

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Jade Trail Median B Plant Schedule (Phase 1)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
ARV	5	Arrowood Viburnum / Viburnum dentatum	#5 CONT.	5'-0" O.C.
LLH	8	Limelight Hydrangea / Hydrangea paniculata 'Limelight'	#5 CONT.	5'-0" O.C.
DBH	43	Dwarf Bush Honeysuckle / Diervilla lonicera	#5 CONT.	3'-0" O.C.
AFD	23	Arctic Fire Dogwood / Cornus stolonifera 'Farrow'	#5 CONT.	3'-0" O.C.
MIS	23	Miscanthus Flame Grass / Miscanthus sinensis 'Purpurascens'	#1 CONT.	48" O.C.
FRG	30	Karl Foerster Feather Reed Grass / Calamagrostis x acutiflora 'Karl Foerster'	#1 CONT.	18" O.C.
LBS	86	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.
PDS	40	Prairie Dropseed Grass / Sporobolus heterolepis	#1 CONT.	18" O.C.
RSD	40	Ruby Stella Daylily / Hemerocallis 'Ruby Stella'	#1 CONT.	18" O.C.
SED	17	Autumn Joy Sedum / Sedum x 'Autumn Joy'	#1 CONT.	18" O.C.

NOTE: QUANTITIES ON PLAN SUPERSEDE LIST QUANTITIES IN THE EVENT OF A DISCREPANCY.

N

Latest Revision Date: 04/23/18

0005402PLF06.dwg

Date: 01/30/15 Sheet: LS6 OF 10

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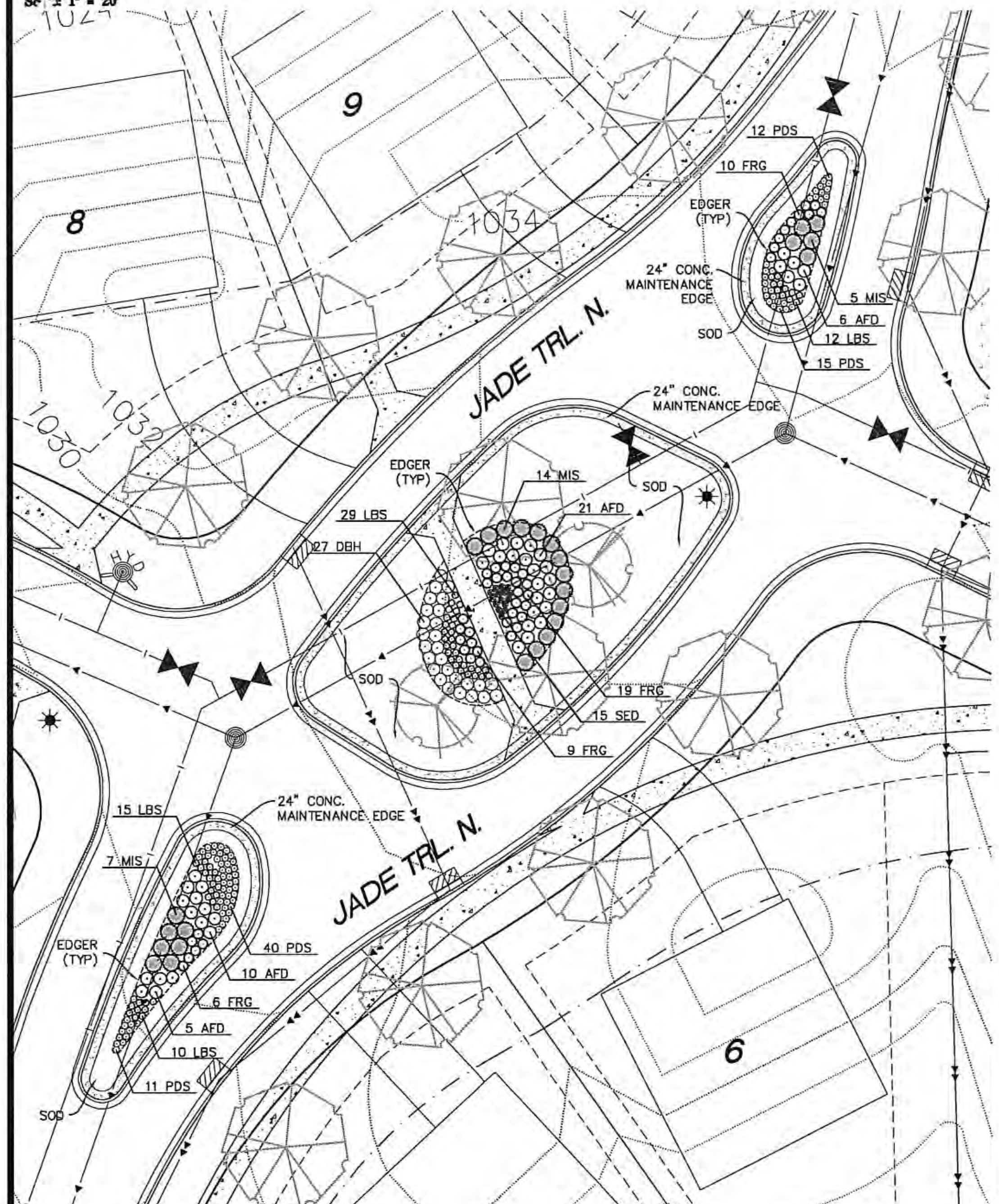
Boulder Ponds
Lake Elmo, Minnesota

Final Landscape Details

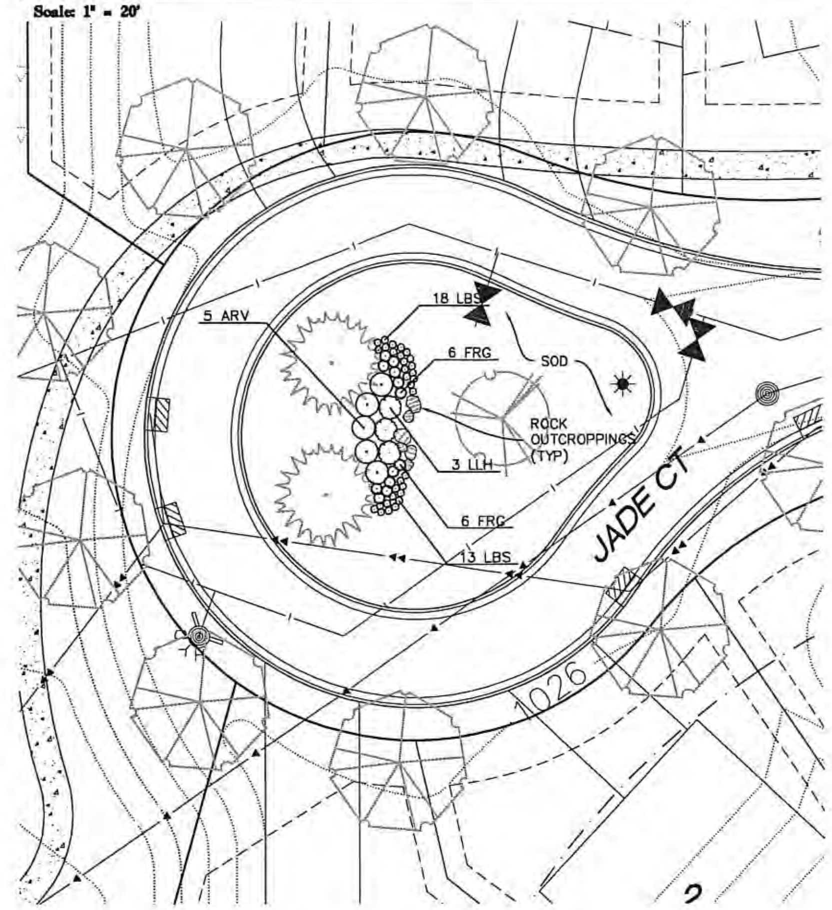
Jade Trail Median C

Scale: 1" = 20'



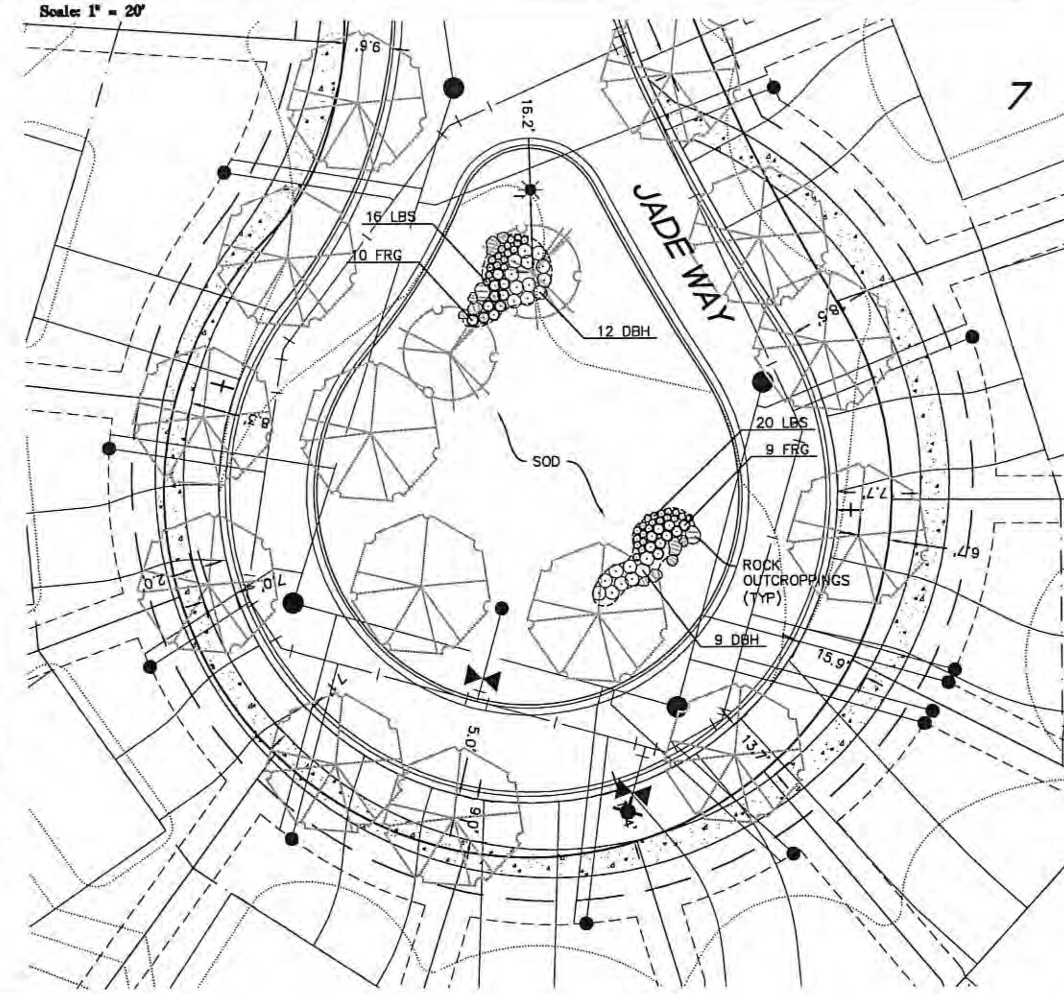
Jade Court Island

Scale: 1" = 20'



Jade Way Island

Scale: 1" = 20'



Jade Court Island Plant Schedule (Phase 1)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
ARV	5	Arrowood Viburnum / Viburnum dentatum	#5 CONT.	5'-0" O.C.
LLH	3	Limelight Hydrangea / Hydrangea paniculata 'Limelight'	#5 CONT.	5'-0" O.C.
FRG	12	Karl Foerster Feather Reed Grass / Calamagrostis x acutiflora 'Karl Foerster'	#1 CONT.	18" O.C.
LBS	31	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.

NOTE: QUANTITIES ON PLAN SUPERSEDE LIST QUANTITIES IN THE EVENT OF A DISCREPANCY.

Jade Way Island Plant Schedule (Phase 2)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
DBH	21	Dwarf Bush Honeysuckle / Diervilla lonicera	#5 CONT.	3'-0" O.C.
FRG	19	Karl Foerster Feather Reed Grass / Calamagrostis x acutiflora 'Karl Foerster'	#1 CONT.	18" O.C.
LBS	36	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.

NOTE: QUANTITIES ON PLAN SUPERSEDE LIST QUANTITIES IN THE EVENT OF A DISCREPANCY.

Jade Trail Median C Plant Schedule (Phase 1)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
DBH	27	Dwarf Bush Honeysuckle / Diervilla lonicera	#5 CONT.	3'-0" O.C.
AFD	42	Arctic Fire Dogwood / Cornus stolonifera 'Farrow'	#5 CONT.	3'-0" O.C.
MIS	26	Miscanthus Flame Grass / Miscanthus sinensis 'Purpurascens'	#1 CONT.	48" O.C.
FRG	44	Karl Foerster Feather Reed Grass / Calamagrostis x acutiflora 'Karl Foerster'	#1 CONT.	18" O.C.
LBS	66	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.
PDS	78	Prairie Dropseed Grass / Sporobolus heterolepis	#1 CONT.	18" O.C.
SED	15	Autumn Joy Sedum / Sedum x 'Autumn Joy'	#1 CONT.	18" O.C.

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FEBRUARY 2015

CITY OF LAKE ELMO | STANDARD DRAWING NO. 900 LAKE ELMO

Latest Revision Date: 04/23/18

0005402PLF07.dwg

Date: 01/30/15 Sheet: LS7 OF 10

Westwood

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Toll Free (888) 937-5150 westwoodps.com

Westwood Professional Services, Inc.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly licensed LANDSCAPE ARCHITECT under the laws of the State of Minnesota.

Cory Meyer

Date: 04/23/18 License No. 26971

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Drawn: SYE
Record Drawing by/date:

Prepared for:

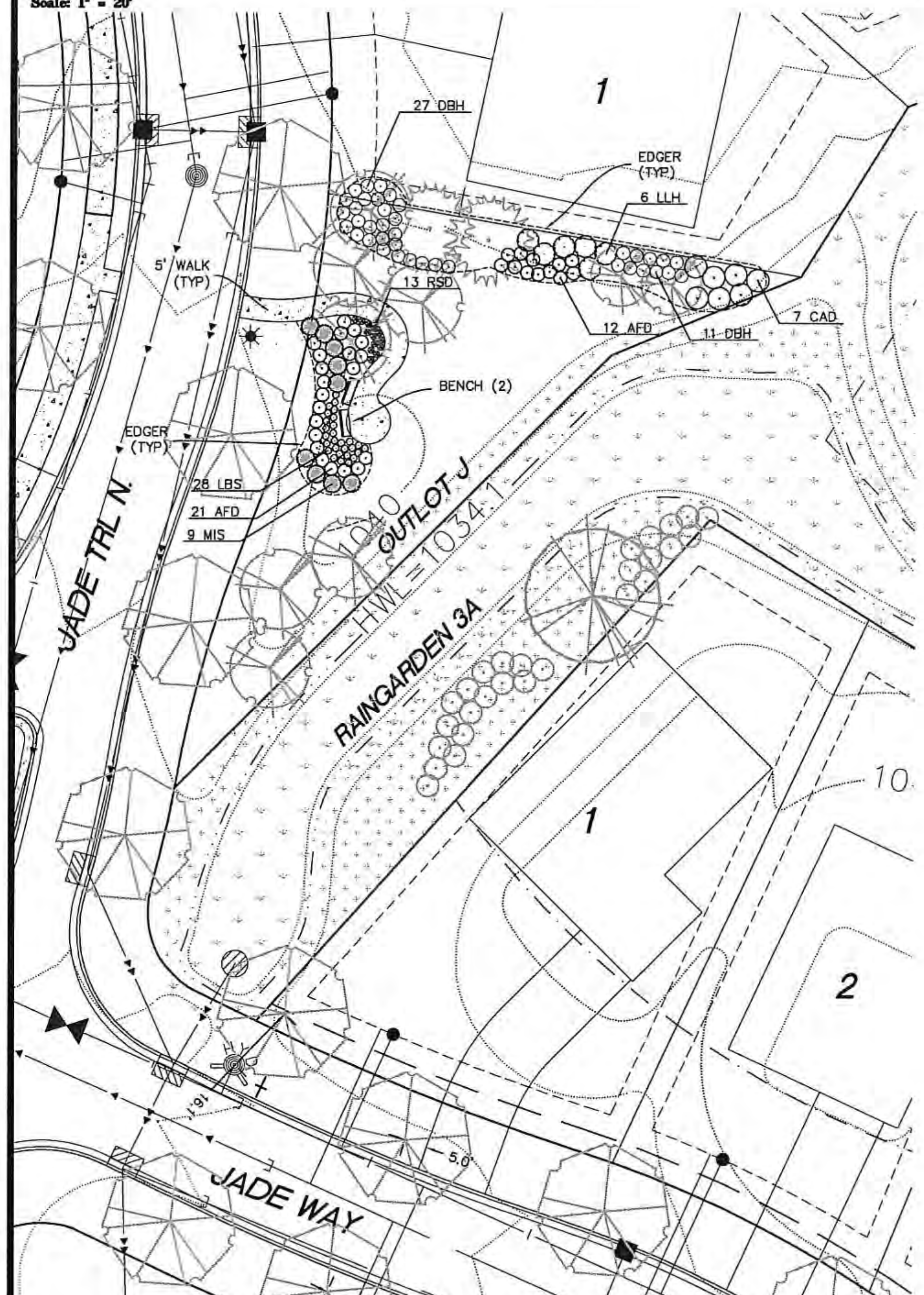
The Excelsior Group, LLC
11455 Viking Dr., Suite 350
Eden Prairie, MN 55344

Boulder Ponds
Lake Elmo, Minnesota

Final Landscape Details

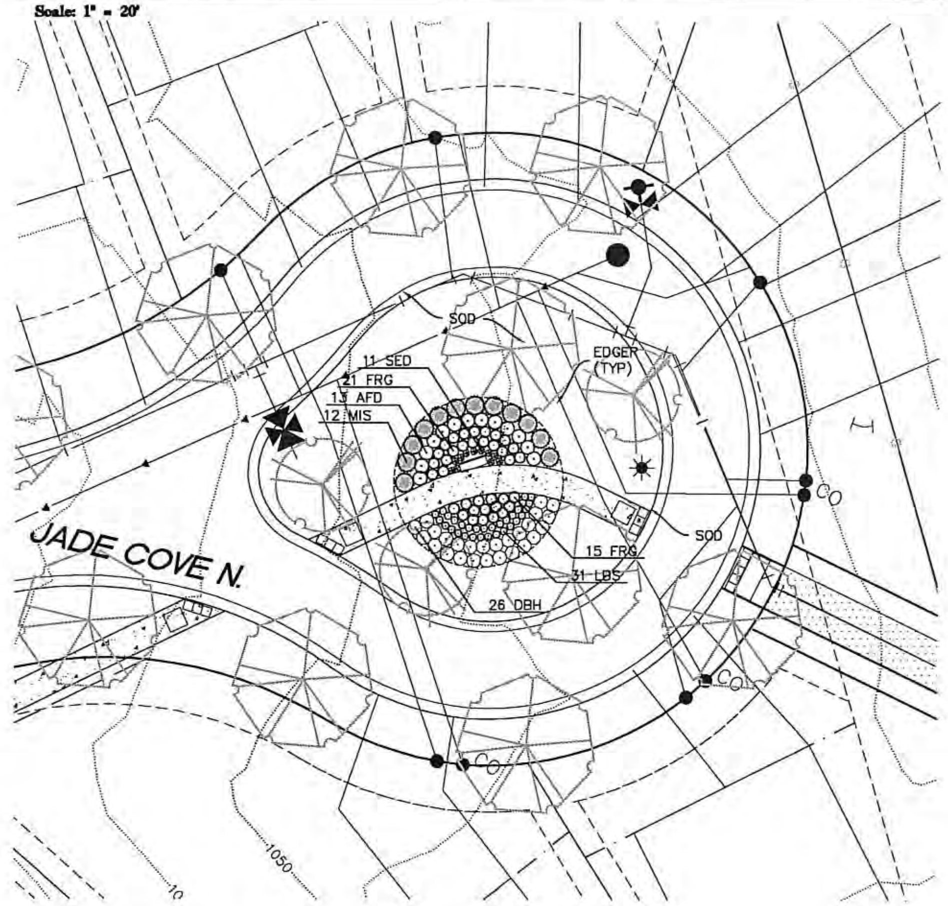
Outlot J Detail

Scale: 1" = 20'



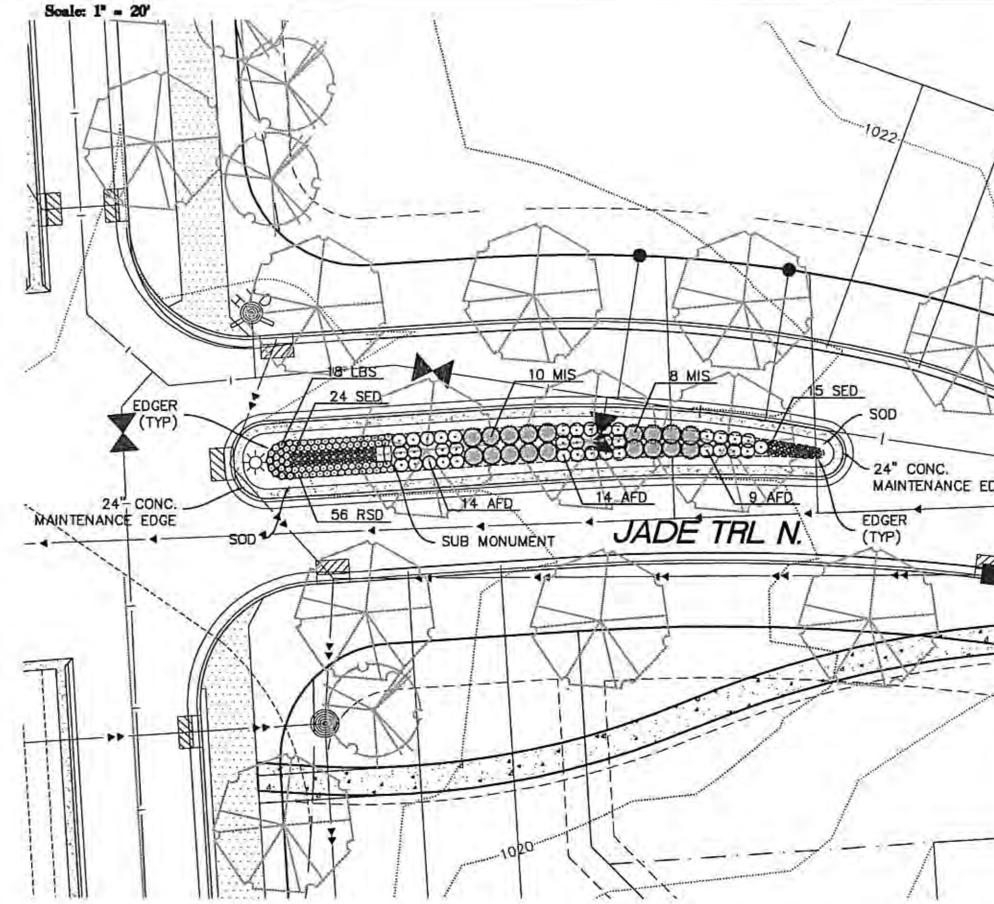
Jade Cove Island

Scale: 1" = 20'



Jade Trail Median D

Scale: 1" = 20'



Jade Cove Island Plant Schedule (Phase 2)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
DBH	26	Dwarf Bush Honeysuckle / Diervilla lonicera	#5 CONT.	3'-0" O.C.
AFD	13	Arctic Fire Dogwood / Cornus stolonifera 'Farrow'	#5 CONT.	3'-0" O.C.
MIS	12	Miscanthus Flame Grass / Miscanthus sinensis 'Purpurascens'	#1 CONT.	48" O.C.
FRG	36	Karl Foerster Feather Reed Grass / Calamagrostis x acutiflora 'Karl Foerster'	#1 CONT.	18" O.C.
LBS	31	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.
SED	11	Autumn Joy Sedum / Sedum x 'Autumn Joy'	#1 CONT.	18" O.C.

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Jade Trail Median D Plant Schedule (Phase 2)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
AFD	37	Arctic Fire Dogwood / Cornus stolonifera 'Farrow'	#5 CONT.	3'-0" O.C.
MIS	18	Miscanthus Flame Grass / Miscanthus sinensis 'Purpurascens'	#1 CONT.	48" O.C.
LBS	18	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.
RSD	56	Ruby Stella Daylily / Hemerocallis 'Ruby Stella'	#1 CONT.	18" O.C.
SED	39	Autumn Joy Sedum / Sedum x 'Autumn Joy'	#1 CONT.	18" O.C.

NOTE: QUANTITIES ON PLAN SUPERSEDE LIST QUANTITIES IN THE EVENT OF A DISCREPANCY.

Outlot J Plant Schedule (Phase 2)

CODE	QTY.	COMMON/BOTANICAL NAME	SIZE	SPACING O.C.
CAD	7	Cardinal Dogwood / Cornus sericea 'Cardinal'	#5 CONT.	5'-0" O.C.
LLH	6	Limelight Hydrangea / Hydrangea paniculata 'Limelight'	#5 CONT.	5'-0" O.C.
DBH	38	Dwarf Bush Honeysuckle / Diervilla lonicera	#5 CONT.	3'-0" O.C.
AFD	33	Arctic Fire Dogwood / Cornus stolonifera 'Farrow'	#5 CONT.	3'-0" O.C.
MIS	9	Miscanthus Flame Grass / Miscanthus sinensis 'Purpurascens'	#1 CONT.	48" O.C.
LBS	28	Blue Heaven Bluestem Grass / Schizachyrium scoparium 'Minniblue A'	#1 CONT.	18" O.C.
RSD	13	Ruby Stella Daylily / Hemerocallis 'Ruby Stella'	#1 CONT.	18" O.C.

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Record Drawing by/date:

Prepared for:

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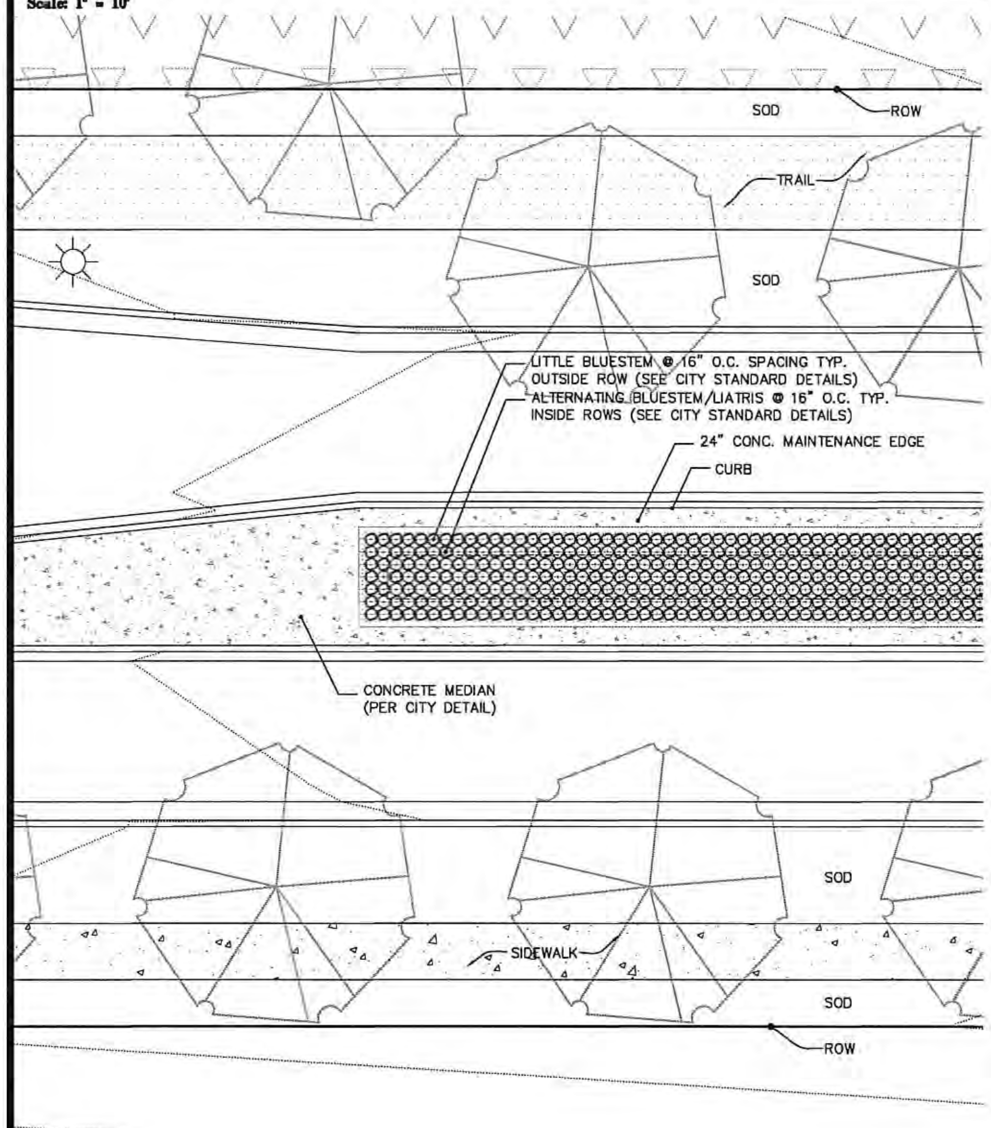
Lake Elmo, Minnesota

Final Landscape Details

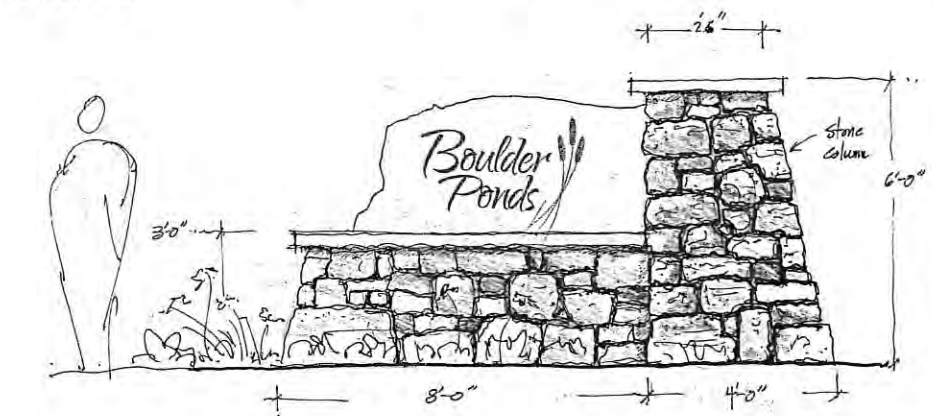
5th Street Detail

Scale: 1" = 10'



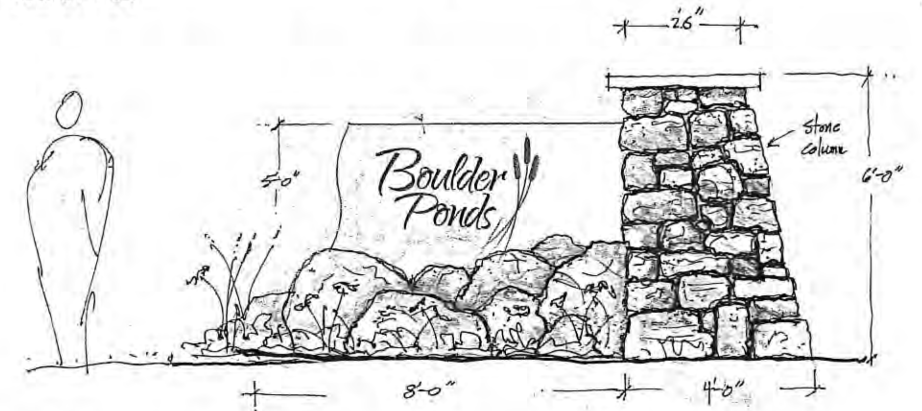
Main Entry Monument Alternate A (typ. of 2)

Scale: 3/4" = 1'-0"



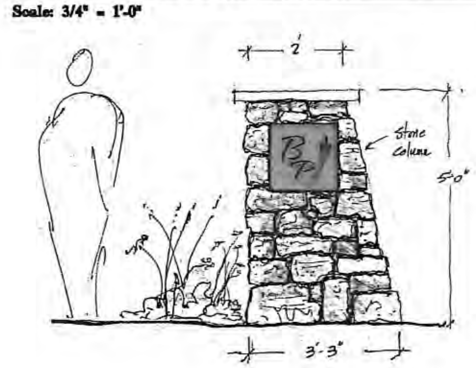
Main Entry Monument Alternate B

Scale: 3/4" = 1'-0"



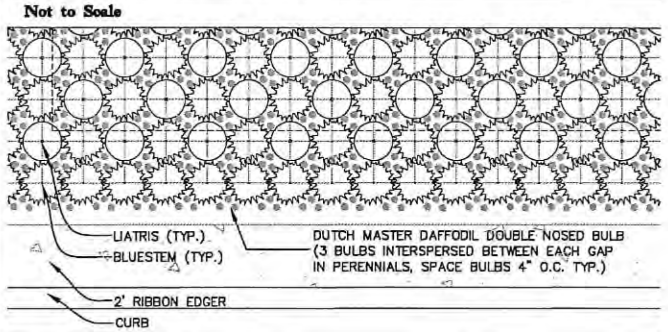
Sub-Monument (typ of 2)

Scale: 3/4" = 1'-0"



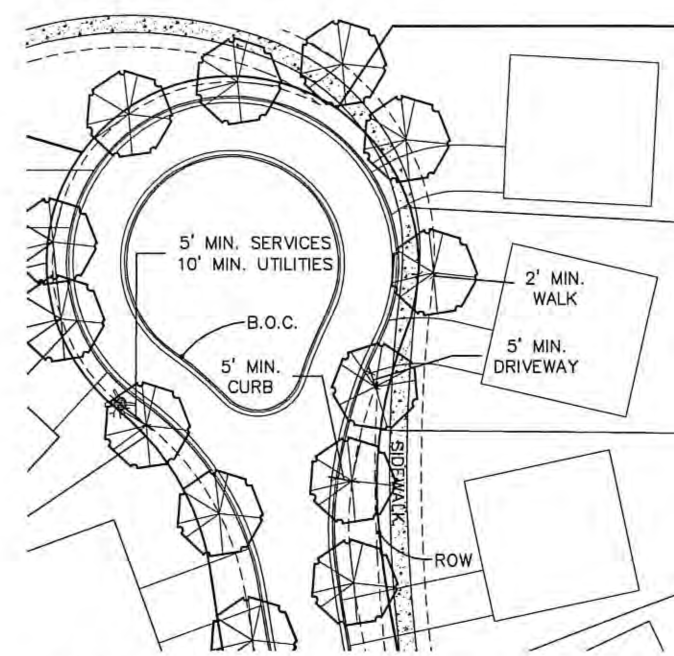
Median Bulb Planting Detail

Not to Scale



Typical Street Tree Planting Detail

Scale: NTS



PLANTING STANDARDS (TYP.):

- MINIMUM 5' OFF CURB, & MINIMUM 2' FROM SIDEWALK.
- TREE TO BE PLACED BEYOND SIDEWALK WHEN BOULEVARD WIDTH LIMITS TREE PLACEMENT MINIMUMS.
- MINIMUM 5' OFF DRIVEWAY & 5' FROM SEWER AND WATER SERVICES.
- MINIMUM 10' FROM MAJOR UTILITIES (SANITARY, STORM, HYDRANTS, LIGHT POLES)

NOTES:

1. TIMING OF PLANT INSTALLATION WILL BE DEPENDENT UPON SEASON AND PLANT AVAILABILITY.
2. ALL TREES TO BE FIELD FLAGGED PRIOR TO INSTALLATION. CONTRACTOR TO COORDINATE. FIELD REVIEW OF PROPOSED TREE LOCATIONS WITH CITY PRIOR TO ANY TREE INSTALLATION.
3. ACTUAL LOCATION OF PLANT MATERIAL IS SUBJECT TO FIELD AND SITE CONDITIONS.
4. NO PLANTING WILL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
5. TREES INSTALLED ON FRONTS OF INDIVIDUAL LOTS SHALL BE PLANTED IN A LOCATION THAT DOES NOT INTERFERE WITH CURBSTOPS & INDIVIDUAL SEWER & WATER CONNECTIONS.

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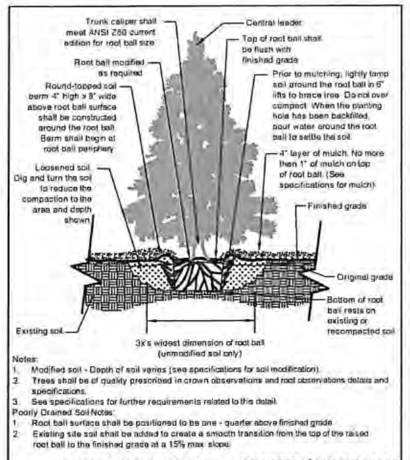
12. ALL TRADITIONAL TURF LAWN AREAS WITHIN R.O.W. OR LOCATED ON COMMERCIAL PROPERTIES OR ON COMMONLY HELD HOA PROPERTY AND CITY OUTLOTS WITHIN DEVELOPMENTS ARE REQUIRED TO HAVE AN AUTOMATIC IRRIGATION SYSTEM DESIGNED BY AN EPA WATER SENSE CERTIFIED PROFESSIONAL. THIS PLAN IS REQUIRED FOR CITY REVIEW AT TIME OF LANDSCAPE PLAN REVIEW.

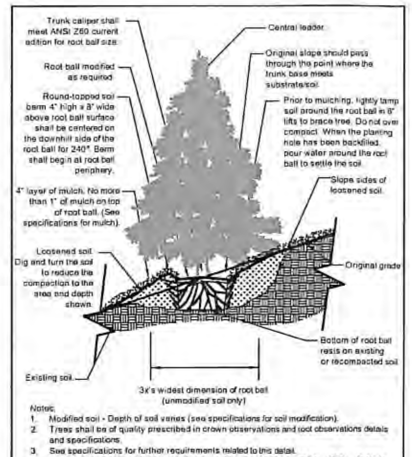
STANDARD PLAN NOTES
LANDSCAPE PLANS

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 900



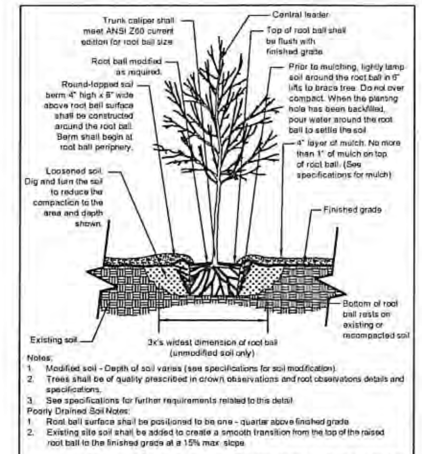
CONIFEROUS TREE – MODIFIED/UNMODIFIED SOIL & POORLY DRAINED SOIL

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 901A



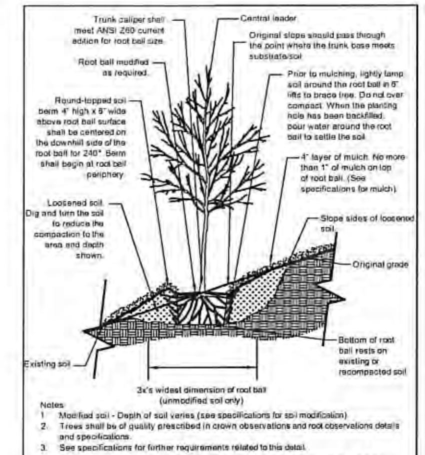
CONIFEROUS TREE ON SLOPE 5% TO 50%: MODIFIED AND UNMODIFIED SOIL

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 901B



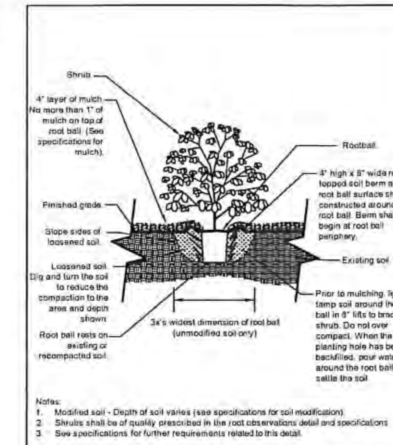
DECIDUOUS TREE – MODIFIED/UNMODIFIED SOIL & POORLY DRAINED SOIL

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 902A



DECIDUOUS TREE ON SLOPE 5% TO 50%: MODIFIED AND UNMODIFIED SOIL

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 902B

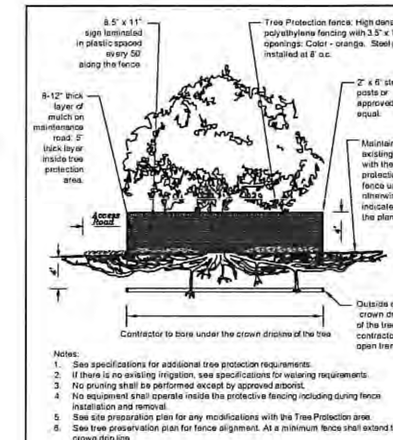


SHRUB – MODIFIED AND UNMODIFIED SOIL

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 903A

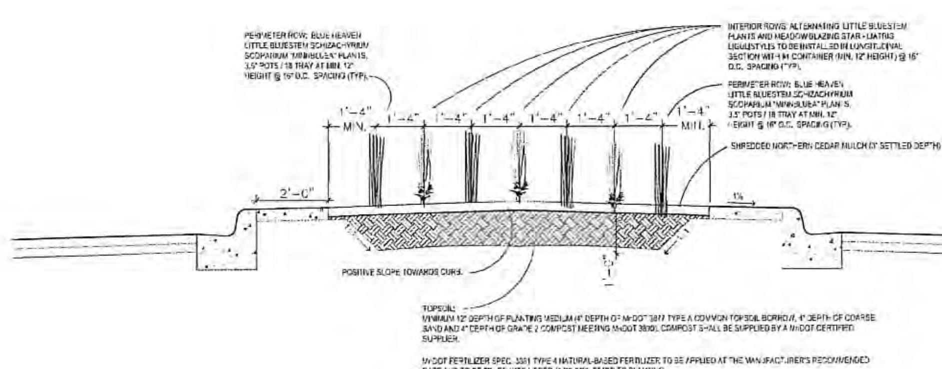
Supplemental Planting Notes

1. ACTUAL LOCATION OF PLANT MATERIAL IS SUBJECT TO FIELD AND SITE CONDITIONS.
2. NO PLANTING WILL BE INSTALLED UNTIL ALL GRADING AND CONSTRUCTION HAS BEEN COMPLETED IN THE IMMEDIATE AREA.
3. PRUNE PLANTS AS NECESSARY – PER STANDARD NURSERY PRACTICE AND TO CORRECT POOR BRANCHING OF EXISTING AND PROPOSED TREES.
5. THE NEED FOR SOIL AMENDMENTS SHALL BE DETERMINED PRIOR TO ANY PLANTING OPERATIONS AND SHALL BE BASED UPON EXAMINATION AND/OR TESTING OF THE EXISTING SOIL CONDITIONS. LANDSCAPE CONTRACTOR SHALL NOTIFY THE LA FOR A FIELD REVIEW OF SOIL CONDITIONS PRIOR TO PLANTING. LA WILL DETERMINE THE NEED FOR ANY SOIL AMENDMENTS.
6. BACKFILL SOIL AND TOPSOIL TO ADHERE TO CITY STANDARD SPECIFICATION AND SHALL BE FREE OF ROOTS, ROCKS LARGER THAN ONE INCH, SUBSOIL DEBRIS, AND LARGE WEEDS. MINIMUM OF 6" DEPTH OF TOPSOIL IS REQUIRED FOR ALL PERENNIALS, LAWN GRASS, AND NATIVE SEEDING AREAS. MINIMUM OF 12" DEPTH BACKFILL TOPSOIL IS REQUIRED FOR TREE AND SHRUB PLANTINGS.
7. MULCH TO BE AT ALL TREE, SHRUB, PERENNIAL, AND MAINTENANCE AREAS. SHREDDED HARDWOOD MULCH TO BE USED AROUND ALL PLANTS WITHIN TURF AREAS. PERENNIAL AND ORNAMENTAL GRASS BEDS SHALL HAVE 3" DEPTH SHREDDED HARDWOOD MULCH. MULCH TO BE FREE OF DELETERIOUS MATERIAL.
8. EDGING TO BE SPADED EDGE, UNLESS OTHERWISE INDICATED. SPADED EDGE TO PROVIDE V-SHAPED DEPTH AND WIDTH TO CREATE SEPARATION BETWEEN MULCH AND GRASS. INDIVIDUAL TREE, SHRUB, OR RAIN-GARDEN BEDS TO BE SPADED EDGE, UNLESS NOTED OTHERWISE.
9. PROVIDE IRRIGATION TO ALL STREET TREE AND BUFFER LANDSCAPING ON SITE. REAR YARD AND ALL PLANTINGS WITHIN NATIVE SEEDING LIMITS WILL NOT BE IRRIGATED. IRRIGATION SYSTEM TO BE DESIGN/BUILD BY LANDSCAPE CONTRACTOR. LANDSCAPE CONTRACTOR TO PROVIDE SHOP DRAWINGS TO CITY OF LAKE ELMO FOR APPROVAL PRIOR TO INSTALLATION OF IRRIGATION SYSTEM. CONTRACTOR TO PROVIDE OPERATION MANUALS, AS-BUILT PLANS, AND NORMAL PROGRAMMING. SYSTEM SHALL BE WINTERIZED AND HAVE SPRING STARTUP DURING FIRST YEAR OF OPERATION. SYSTEM SHALL HAVE ONE-YEAR WARRANTY ON ALL PARTS AND LABOR. ALL INFORMATION ABOUT INSTALLATION AND SCHEDULING CAN BE OBTAINED FROM THE GENERAL CONTRACTOR.
10. ALL DISTURBED AREAS TO BE SEEDED OR SODDED, SEE PLAN. SOD TO BE STANDARD MINNESOTA GROWN AND HARDY BLUEGRASS MIX, FREE OF LAWN WEEDS. ALL TOPSOIL AREAS TO BE RAKED TO REMOVE DEBRIS AND ENSURE DRAINAGE. SLOPES OF 3:1 OR GREATER SHALL BE STAKED. SEED AS INDICATED ON PLANS WITH RESPECTIVE SEED MIX(ES) & PER MNDOT SEEDING SPECIFICATIONS (SEE SEED MIX TABLES ON SHEET LS2).



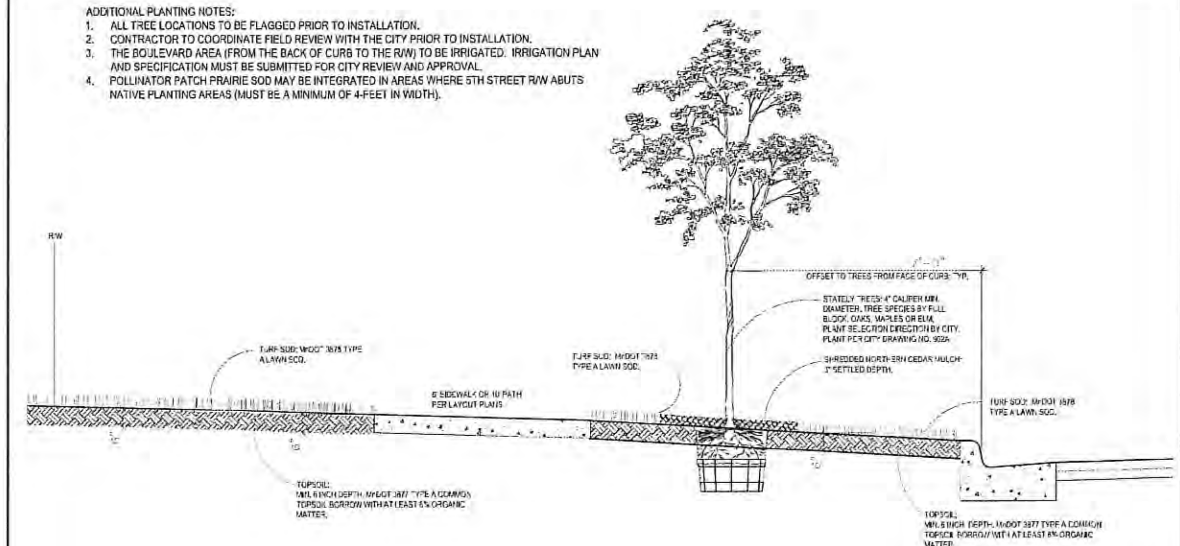
TREE PROTECTION – MAINTENANCE ROAD & BORING UNDER CROWN/DRIPLINE

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 904

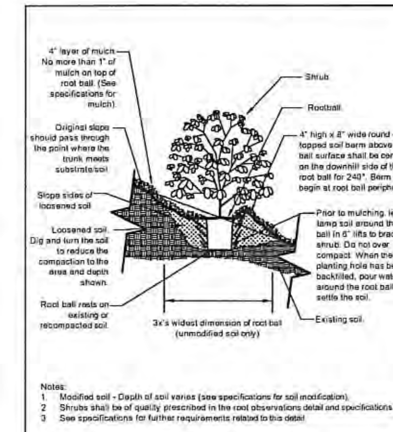


THE CITY OF LAKE ELMO — 5TH STREET STANDARD DETAILS — AUGUST 2015 — CENTER MEDIAN LANDSCAPE PLAN

ADDITIONAL PLANTING NOTES:
1. ALL TREE LOCATIONS TO BE FLAGGED PRIOR TO INSTALLATION.
2. CONTRACTOR TO COORDINATE FIELD REVIEW WITH THE CITY PRIOR TO INSTALLATION.
3. THE BOULEVARD AREA (FROM THE BACK OF CURB TO THE R/W) TO BE IRRIGATED. IRRIGATION PLAN AND SPECIFICATION MUST BE SUBMITTED FOR CITY REVIEW AND APPROVAL.
4. POLLINATOR PATCH PRAIRIE SOD MAY BE INTEGRATED IN AREAS WHERE 5TH STREET R/W ABUTS NATIVE PLANTING AREAS (MUST BE A MINIMUM OF 4-FEET IN WIDTH).



THE CITY OF LAKE ELMO — 5TH STREET STANDARD DETAILS — AUGUST 2015 — STREET BOULEVARD LANDSCAPE PLAN



SHRUB ON SLOPE 5% TO 60%: MODIFIED AND UNMODIFIED SOIL

FEBRUARY 2015 — CITY OF LAKE ELMO — STANDARD DRAWING NO. 903B

Latest Revision Date: 04/23/18
0005402PLF10.dwg

Date: 01/30/15 Sheet: LS10 OF 10

Westwood
Phone (952) 937-5150 7699 Anagram Drive
Fax (952) 937-5822 Eden Prairie, MN 55344
Toll Free (888) 937-5150 westwoodps.com
Westwood Professional Services, Inc.

I hereby certify that this plan was prepared by me or under my direct supervision and that I am a duly licensed LANDSCAPE ARCHITECT under the laws of the State of Minnesota.

Cory Meyer
Date: 04/23/18 License No. 26971

Revisions:
04/13/15 – CITY COMMENTS
05/07/15 – CITY COMMENTS
09/01/15 – 5TH ST MEDIAN
03/01/18 – CITY COMMENTS
03/17/18 – CITY COMMENTS
04/11/18 – CITY COMMENTS
04/23/18 – SITE REVISIONS

Designed: CLM
Checked: CLM
Drawn: SYH
Record Drawing by/date:

Prepared for:
The Excelsior Group, LLC
11455 Viking Dr., Suite 350
Eden Prairie, MN 55344

Boulder Ponds
Lake Elmo, Minnesota

Final Landscape Notes & Details

MEMORANDUM

FOCUS ENGINEERING, inc.

Cara Geheren, P.E.	**651.300.4261**
Jack Griffin, P.E.	**651.300.4264**
Ryan Stempski, P.E.	**651.300.4267**
Chad Isakson, P.E.	**651.300.4283**

Date: May 25, 2018

To: Emily Becker, Planning Director
Cc: Chad Isakson, P.E., Assistant City Engineer
From: Jack Griffin, P.E., City Engineer

Re: Boulder Ponds 3rd Addition – Final Plat Engineering Review Comments

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An engineering review has been completed for the Boulder Ponds 3rd Addition. Final Plat/Final Construction Plans were received on May 1, 2018. The submittal consisted of the following documentation:

- Boulder Ponds 3rd Addition Preliminary Plat, dated SetpApril 19, 2018, prepared by E.G. Rud & Sons, Inc.
- Boulder Ponds 3rd Addition Final Plat, dated April 19, 2018, prepared by E.G. Rud & Sons, Inc.
- Boulder Ponds 3rd Addition Construction Plans dated April 26, 2018, prepared by SEH, Inc.
- Boulder Ponds Landscape Plans, dated April 23, 2018, prepared by Westwood Professional Services.

STATUS/FINDINGS: Engineering review comments have been provided in two separate memos; one for Final Plat approval, and one to assist with the completion of the final Construction Plans. Please see the following review comments relating to the Final Plat application.

FINAL PLAT: BOULDER PONDS 3RD ADDITION

- Outlot A (trail & storm water management) must be dedicated to the City as part of the Final Plat.
- The Jade Cove North center island (street geometrics & sidewalk) will be platted as right-of-way as required by preliminary plat approval. The center island landscaping should be HOA maintained and addressed in the Landscape Maintenance Agreement.
- The Boulder Ponds 3rd Addition Final Plat approval should be conditioned upon the construction of a Hudson Boulevard eastbound left turn lane and westbound right turn lane onto Jade Trail North. These turn lanes must be constructed meeting Municipal State Aid design standards for 50 mph road.
  - ➢ The Hudson Boulevard turn lanes are a requirement of Preliminary Plat per Resolution 2014-73 and addressed specifically in the Engineer's Preliminary Plat review memo dated 07/24/2018.
  - ➢ The turn lanes were not required to be constructed as part of the Boulder Ponds 1st or 2nd Additions. Boulder Ponds 3rd Addition is the last phase for which the improvements can be incorporated.
- As presented, the driveway for Lot 6, Block 2 must access Jade Trail North and not Jade Cove North even though the higher grade side of the lot is along Jade Cove North. Frontage along Jade Cove North is not adequate for a driveway.
- Boulder Ponds 3rd Addition includes meandering sidewalks which, when implemented, does not comply with the City standard boulevard layout. Therefore, an alternate boulevard layout plan must detail the proposed changes for City review and approval and easements must be amended as necessary to accommodate all right-of-way infrastructure, including sidewalk location, boulevard trees, hydrants, street lights, street signs, water and sewer service stubs, and location for the private utility trench.

- Also, to address the meandering sidewalks, Final Plat must be conditioned on the building setbacks being a minimum of 25 ft. from the sidewalk, when the sidewalk resides outside of the right-of-way (i.e. Lots 1, 2, and 4-7, Block 1).
- Final Construction Plans and Specifications must be revised in accordance with the Construction Plan engineering review email dated May 25, 2018 and any subsequent engineering review completed upon receipt of updated construction plans.
- All easements as requested by the City Engineer and Public Works department shall be documented on the Final Plat prior to the release of the Final Plat for recording. Easements may need to be revised pending review by the City of a detailed right-of-way boulevard plan and updated grading plans showing the storm water high water levels.
- The Final Plat shall not be recorded until final construction plan approval is granted.
- Final Plat should be contingent upon the City receiving copies of fully executed temporary construction easements or property owner permissions in a form acceptable to the City Attorney that allows for the construction and grading activities for all work off-site from the proposed Plat limits.
- Final Plat should be contingent upon receipt and City Attorney review of any agreements between the Developer and the BP Pipeline easement area and the Xcel Energy Transmission Easement area, demonstrating that said agreements in no way unacceptably encumbers the City.

FINAL CONSTRUCTION PLANS & SPECIFICATIONS

- All Outlots to be owned by the City, all easements and all right-of-way as requested by the City Engineer and Public Works department shall be documented on the Final Construction Plans.
- Final Construction Plans and Specifications must be prepared in accordance with the City Engineering Design Standards Manual dated March 2017, using City details, plan notes and specifications and meeting City Engineering Design Guidelines.
- Final Construction Plans and Specifications must be revised in accordance with the Construction Plan engineering review memorandum dated May 25, 2018.
- No construction for Boulder Ponds 3rd Addition may begin until the applicant has received City Engineer approval for the Final Construction Plans; the applicant has obtained and submitted to the City all applicable permits, easements and permissions needed for the project; and a preconstruction meeting has been held by the City's engineering department.

MEMORANDUM

FOCUS ENGINEERING, inc.

Cara Geheren, P.E.	**651.300.4261**
Jack Griffin, P.E.	**651.300.4264**
Ryan Stempski, P.E.	**651.300.4267**
Chad Isakson, P.E.	**651.300.4285**

Date: July 24, 2014

To: Nick Johnson, City Planner
Cc: Kyle Klatt, Planning Director

Re: Bolder Ponds
Preliminary Plat Review

From: Jack Griffin, P.E., City Engineer

An engineering review has been completed for the Bolder Ponds development. A Preliminary Plan submittal was received consisting of the following documentation prepared by Evolution Engineering and Design or as noted:

- Preliminary Site and Construction Plans dated June 2, 2014.
- Project Manual for Grading, Roadway and Utility Improvements dated June 2, 2014.
- Preliminary Plat dated June 2, 2014 prepared by E.G.Rud and Sons, Inc.
- Hydrology Report, no date.
- Wetland Delineation Report dated May 29, 2014 prepared by SEH, Inc.
- Turning Templates dated May 30, 2014 prepared by SEH, Inc.
- Xcel Energy Transmission Easement Agreement dated July 21, 2014.

STATUS/FINDINGS: Engineering review comments have been limited for the purpose of Preliminary Plat issues. Additional Final Construction Plan review and comments will be provided once Preliminary Plat approval is granted for the development. Engineering review comments are as outlined below.

PRELIMINARY PLAT

- The construction of 5th Street North is required as part of the Bolder Ponds development. The construction plans include 5th Street North as part of the Plan set. The Preliminary Plat must be revised to include the full R/W area to accommodate the construction of 5th Street North, including the added R/W required from the Bremer Financial Services property. This added area needs to be Platted as R/W.
- The street median Outlots should be Platted as public R/W. The City should use maintenance agreements with the HOA to facilitate the landscape maintenance of the median areas. The Preliminary Plat should be revised accordingly.
- Additional R/W must be obtained along the east side of Cobblestone Plaza such that the R/W extends an additional 80 feet, well past the Cobblestone Path intersection.
- Additional easement is required to provide a minimum 30-foot utility easement for the storm sewer pipe run from CS-600 to FES-600C. Part of this easement must be acquired from the adjacent Eagle Point Town Office property.
- Additional easement is required to provide a minimum 30-foot utility easement for the storm sewer pipe run from CBMH 806 to CBMH 801.

WATERMAIN AND SANITARY SEWER PLANS

- Sanitary sewer and watermain stubs to adjacent property and pipe oversizing will continue to be reviewed by City staff as the development progresses forward and oversizing routes may need to be changed as part of the final construction plans. Sewer and watermain oversizing is paid by the City as a reimbursement addressed within the development agreement.
  - Sewer oversizing may be required from Hudson Boulevard to the Azur property or an 8-inch sewer may need to be stubbed north on 5th Street to the Azur property.
  - The 12-inch watermain oversize is appropriate as shown on the proposed plans. Additional oversizing may need to be extended to the site of Well No. 3, pending further staff review.
  - The 12-inch watermain stub location at Outlot Q must be coordinated with Lennar to verify that the stub is placed in the appropriate location.
  - Sewer and water stubs may be needed to the north edge of the Lampert Lumber and or Cranky Ape properties.
  - Sewer and water stubs may be needed from 5th Street to Outlot N for service to the property south of Bremer Financial Services.
- Sanitary sewer and watermain stubs have been proposed along Cobblestone Plaza to serve future commercial developments at Outlots K, J and M. The size and location of these stubs require further review with the applicant.
- Detailed Sanitary Sewer and Watermain construction plans were submitted as part of the Preliminary Plat application. A detailed construction plan review will be completed upon Preliminary Plat approval. However, comments below have been provided for the applicant's use and information:
  - Hydrant and system valve placement will be made per City standards and as laid out by City staff. Applicant shall submit an overall watermain plan for staff redlines.
  - Utility alignments will be necessary to better maintain the sewer and water within the street section, in particular in areas where the street meanders or divides. Sanitary sewer MH's must be moved to centerline or center of drive lanes (i.e. MH 10, MH 23 and MH 36).
  - Utility alignments will be necessary to eliminate or minimize the use of watermain insulation. Watermain insulation will only be allowed when alignment alternatives are not available. Watermain shall be placed to maintain appropriate storm sewer pipe separation.
  - Sanitary sewer along Boulder Ponds Parkway may terminate after the service stub to Lot 11, Block 4, eliminating roughly 60 feet of sewer pipe.
  - Sanitary sewer along Pebblestone Place may terminate after the service stub to Lot 8, Block 4, eliminating roughly 70 feet of sewer pipe.
  - Sewer and water service stubs should be revised to eliminate bends and shall be perpendicular to the street whenever feasible.
  - Stationing must be added to all profiles.
  - Profile elevation labels must be corrected for accuracy.
  - The existing watermain must be shown in plan and profile along Hudson Boulevard.
  - Correct "Existing Ground" and "Proposed Grade" call-outs on Sheet 9, Pebblestone Ridge Cove – 12" Watermain Loop Profile.
  - Add hydrant at 12" plug on 5th Street (at approximate STA 21+90) for flushing purposes.
  - Add vertical bends to accommodate severe grade changes at the Pebblestone Place watermain loop.

GRADING, STORM WATER MANGEMENT AND EROSION CONTROL AND STORM SEWER SYSTEM

- Preliminary Plat approval should be contingent upon additional plan revisions needed to provide a grading plan, storm water management plan and storm sewer system that complies with the requirements of the City of Lake Elmo Engineering Design Standards Manual.

- Grading plans must be resubmitted to include existing and proposed contours for a distance of 150 feet from all edges of the proposed Plat. Staff review can continue upon receipt.
- Relocate Outlot L retaining wall to Outlot M. This should be owned privately, not by the City.
- Outlot M retaining wall requires greater separation from the proposed storm sewer pipe.
- Permission to grade and install storm sewer pipe is required from the adjacent Eagle Point Town Office Park for infrastructure behind Lots 9 and 10, Block 1, First Addition and potentially for the storm sewer run from this location to Hudson Blvd.
- There are three new proposed storm water discharge points to Hudson Boulevard:
  - Two new discharges to the south side of Hudson Blvd requires MnDOT permission. This permission is required before plan approval can be provided and any grading work can begin.
  - One discharge point is along the north side of Hudson Blvd. owned by the City. Additional detail is needed before the City can determine acceptance of this new storm water discharge.
- Lot 1, Block 1, Second Addition does not conform to City requirements for flood protection from Infiltration Basin 3C. The lot building type or grading for this lot and adjacent Outlot must be revised accordingly.
- Storm sewer pipe alignments must be revised to better maintain the storm sewer within the street footprint. Areas include:
  - Bolder Ponds Parkway, between Outlot F and 5th Street.
  - Pebblestone Place, from Bolder Ponds Parkway to cul-de-sac.
  - Pebblestone Terrace, near the cul-de-sac.
  - Storm sewer must be a minimum of 15 feet from proposed retaining walls (near MH 1004).
  - Storm sewer catch basins should be relocated from corners per the City standard details.
  - All proposed pipe crossings must be perpendicular to street alignment (i.e. CB 516A and CB 515A).
- Infiltration basin 2A Retaining Wall should be eliminated or relocated onto the adjacent private property. It appears that the wall can be eliminated if the adjacent lot is not a walk out. It is not recommended that the City take on ownership of this retaining wall.
- The double retaining walls located in the Xcel Transmission easement area should be eliminated or relocated onto the adjacent private property. It appears that the walls can be eliminated if the adjacent lots are not walk out lots. It is not recommended that the City take on ownership of these retaining walls.
- The HWL must be provided for Infiltration Basin 1B.
- The storm sewer system or grading plans must be revised to provide the City standard minimum pipe cover of 3.5 feet. Changes must be made as part of the final construction plans. Several structures or pipe runs do not meet this minimum, but it appears these changes can be made without impact to the Plat.
- Drain tile is required as part of the City standard street section at all localized low points in the street. Drain tile considerations may impact the storm sewer design and depth requirements at low points.
- Storm sewer castings must comply with City of Lake Elmo Design Standards (i.e. proposed beehive castings).
- The watershed has indicated that additional testing is required to verify the assumed infiltration rates at each basin. The City standard is to require multiple tests at each location and not allowing tests taken in the vicinity. Plan revisions may be required if rates do not support the design assumptions.
- The plan must be updated to indicate wetland buffers for staff review.

STREET, SIDEWALK AND TRAIL PLANS

5TH STREET NORTH:

- 5th Street seeks to become the backbone of future development along the I94 corridor, essentially becoming the primary access in and out of the future neighborhoods. The street is required for the sole purpose to provide mobility to support the growth and development within the corridor. The quality of the street and its connections are critically important. The purpose of the proposed street standards are to 1) improve the function, mobility and appearance of the street, 2) encourage pedestrian and bicycle use, and 3) reduce the potential for speeding.

- The plan indicates a minimum 100 foot R/W as required, except for the additional R/W to be acquired from Bremer Financial Services. This area must be Platted as public R/W.
- The proposed 2-lane collector Parkway street (5th Street) design and geometrics must meet all Municipal State Aid design standards for urban streets (8820.9936) for ADT > 10,000; 40 mph design speed; and must be consistent with the detailed Parkway cross section installed throughout the remaining corridor segments.
- The plans must include the City standard typical cross sections for 5th Street to ensure construction details are followed accordingly, including turn lane configurations.
- The proposed alignment is consistent with the State Aid design intent. However, the proposed plan indicates impacts to adjacent properties. The applicant must coordinate the design of 5th Street with each adjacent property and must show the proposed plan and profile for a distance of 150 feet beyond the Plat for both Azur properties/Bremer and Lennar/Alan Dale. The matching profiles must be agreed to by all impacted properties.
- Access spacing to 5th Street meets the guidelines for the Cities Transportation Plan. A full access is proposed at Boulder Ponds Parkway near the middle of the Plat and a partial access with Boulder Ponds Parkway at the north end. Additional access to 5th Street is not recommended throughout the remaining corridor. It is recommended that potential future access by Lampert Lumber and/or Cranky Ape properties be through Boulder Ponds Parkway or a future street to the east, then to 5th Street as part of a full access.
- The signing and striping plan for 5th Street, Sheet SS1, must be updated to meet state aid standards and the 5th Street typical section detail for turn lanes. Signage and pavement markings for cross walks should meet the City standard for cross walk markings.
- It is recommended that the 5th Street trail and sidewalks maintain the consistent boulevard alignment and layout per the City approved 5th Street typical section.
    - The trail and sidewalk intersection crossings should occur within the R/W at the corners (see attached TKDA Traffic Engineering review memo). 5th Street does not have a stop condition and therefore the safer pedestrian crossing locations will be at the intersection corners.
    - The sidewalk along the south of 5th Street should connect the median walk to the west boulevard walk.
    - The second crosswalk should be provided along the east side of the 5th Street/Boulder Ponds Parkway and the signing and striping plan updated accordingly.
    - Pavement marking crosswalks should also be added for east-west crossings.
    - A second 5th Street pedestrian crossing location should be considered near the north end of the Plat at the Xcel Transmission easement area before 5th Street begins the next horizontal curve into Azur properties.
- Per the TKDA Traffic engineering review memo, the 5th Street and cross street medians must be adjusted so that they do not extend into the intersection. Medians should terminate at the cross street curb line. The proposed medians interfere with left turn movements and plowing operations.
- Revise the 5th Street vertical sag curve to K=64 at STA 14+50. Minimum sag curve for 40 mph road is 64.
- Corner curb radius must be 25 feet at 5th Street and must be shown on the plans.
- Additional streetscape amenities are required along 5th Street consistent with the remaining corridor segments and the City design standard for 5th Street.
    - A detailed review of these plans are completed by the City's Landscape Architect.
    - The plans must be detailed and dimensioned to indicate the specific locations for all trees, light poles, signs and utilities. This R/W corridor is very tight and specific spacing between amenities is critical to a successful design. A 2-foot clear zone must be maintained on each side of the trail and sidewalk at all locations to meet state aid design standards.

HUDSON BOULEVARD TURN LANE:

- Dedicated turn lanes are being provided along Hudson Boulevard to access the development at Cobblestone Plaza. The signing and striping plan for Hudson Blvd, Sheet TL1, must be updated to meet the current posted 50 mph design speed.

RESIDENTIAL STREETS

- The applicant is proposing a roadway configuration that is generally acceptable and in accordance with City standard requirements. Primary and secondary access appears adequate for the site.
- The plan indicates that residential streets are being proposed to a 28 foot width from back of curb to back of curb. Surmountable concrete curb and gutter are proposed in single family residential areas and B618 curb is proposed in commercial and multi-family areas.
- The plan indicates a minimum 60 foot R/W as required.
- The residential streets propose several medians that spilt the traffic into 2-one way drive lanes. It is recommended that plans be revised such that each lane is a minimum of 20 feet from face of curb to face of curb to meet minimum fire lane requirements.
- The intersection of Pebblestone Terrace and Pebblestone Place create a very unique and unfamiliar intersection.
    - ➢ Turning templates must be submitted to verify appropriate curb radius at all median curb corners and curb radius lengthened when required (i.e T-S and H-I).
    - ➢ The sidewalk crossing(s) at this intersection must be reviewed and relocated to provide safe crossing(s) with snow storage considerations. The proposed crossing at Outlot F is not recommended.
- The intersection of Cobblestone Path should be moved south as far as possible to provide added separation from the median at Outlot I. This becomes more important if a full access is contemplated in the future to serve the Cranky Ape and Lampert Lumber properties.
    - ➢ Consideration should be given to shortening the Outlot I median.
    - ➢ The R/W along the east side of Boulder Ponds Parkway, across from Cobblestone Path, should be extended further south at least 80 feet to facilitate a potential future road connection.
- Corner curb radius must be indicated on the plans. For local streets a 20-foot radius must be used.
- Minimum K-value for sag curves is 37. Revise sag curves along Pebblestone Place, Pebblestone Terrace, and Pebblestone Ridge Cove. Grades between 1+00 and 3+50 along Pebblestone Terrace should be revised to create a smoother transition and lesson the 5.45% grade, in particular since this road grade is a result of the area being filled.
- Minimum K-value for crest curves is 19. Revise crest curve along Pebblestone Ridge Cove. Grades along this road should be somewhat reduced, in particular since the area is being filled.
- The Pebbelstone Ridge Cove Plan View on sheet 24 must be revised to plan scale to facilitate plan review.
- Cul-de-sac geometry must be revised as follows:
    - ➢ The pavement width must be a minimum of 20 feet from face of curb to face of curb around cul-de-sacs to accommodate emergency vehicle access.
    - ➢ With a 20 foot minimum pavement width, all cul-de-sacs must be signed as "No Parking Any Time".
    - ➢ The proposed cul-de-sac medians show a tear drop design at the cul-de-sac entrance. The tear drop must be revised to create a more rounded median to better facilitate snow plowing and emergency access.

BOULEVARD LAYOUT ALONG RESIDENTIAL STREETS

- Applicant is proposing a non-standard boulevard layout which is not consistent with several City design standards. It should be the applicant's responsibility to submit proposed alternative design details as part of the plan set that replaces the City standard design details that are not being met. This is required to detail the proposed design both for City review and for construction purposes. Multiple details will be required for the various boulevard layouts.
- Construction plans must also be completely detailed for each varying condition because it cannot be left to the various contractors to field locate all the different infrastructure components that must be closely coordinated within the R/W corridor. Additional plan details must be submitted for staff review.
- Meandering sidewalks and trails are proposed throughout the development. Sidewalks and trails outside of the R/W create on-going operation and maintenance difficulties. The following is strongly recommended if the sidewalks are allowed to meander outside of the R/W:

- ➢ Sidewalk and trail easements shall be in a form created by the City.
  - ➢ The easements shall extend from the R/W to the sidewalk/trail and extend an additional 10 feet past the sidewalk/trail to accommodate the utility corridor.
  - ➢ A plan must be submitted showing the sidewalk/trail setback from each garage front demonstrating a minimum of 25 feet clearance to accommodate driveway parking without obstructing the walkway.
  - ➢ Sidewalks along cul-de-sacs should extend around the outside of the cul-de-sac paved areas as shown along Pebblestone Terrace to keep the sidewalk available for snow removal. Sidewalks should not pass across the cul-de-sac island. This area must be preserved for significant snow storage.
  - ➢ The plans must provide a detailed small utility corridor plan for City review and consideration which addresses small utility installation when crossing/interfering with sidewalks.
- On Sheet 28 the trail must be revised to maintain a maximum trail grade at 6%. Location to edge of Plat must be coordinated with the Lennar development.

PROJECT MANUAL / SPECIFICATIONS AND STANDARD DETAILS

- A detailed Project Manual / Specifications were submitted as part of the Preliminary Plat application. A detailed review will be completed upon Preliminary Plat approval. However, comments below have been provided for the applicant's use and information:
  - ➢ The governing specifications shall be the City Standard Specifications. These specifications, currently placed in the back of the project manual in Section 8, shall be placed near the front of the manual.
  - ➢ The general requirements shall state the following: *"The City Standard Specifications shall apply to the work performed under this contract. Any supplemental specifications are intended to supplement the City Standard Specifications; however they do NOT supersede the City Standard Specifications, Details, Design Standards, or ordinances unless specific written approval has been provided by the City."*
  - ➢ Any additional specifications for the project shall be clearly identified as "Supplemental Provisions" not "Special Provisions".
- Geotechnical Report. The report must be resubmitted so that exhibits are legible. A plan must be submitted showing the soil boring locations with respect to the proposed improvements. Once received, additional borings may be requested to support the proposed pavement designs (i.e. along 5th Street or other local roadways).
- Retaining Walls must be designed by a Professional Registered Engineer licensed in Minnesota. The design engineer of record will be required to certify that the walls were constructed in accordance with the approved plans and specifications.
- Standard Details:
  - ➢ Water Services to be extended to edge of utility easement, at least 10 feet beyond property line. Applicant's standard detail must be corrected.
  - ➢ Sign details to be per City standards. Add City standard sign details and plan notes.

444 Cedar Street, Suite 1500
Saint Paul, MN 55101
651.292.4400
tkda.com

TKDA

Memorandum

To:	Ryan Stempski	**Reference:**	Boulder Ponds Development
Copies To:			Traffic Review
			City of Lake Elmo
From:	Bryant Ficek	**Project No.:**	15545.000
Date:	June 27, 2014	**Routing:**	

Geometric plans and cross sections for the proposed 5th Street corridor of the Boulder Ponds development were sent for our review on June 18. In addition to the plans, the City's desired typical sections and design guidelines were provided. Per your request, this information was reviewed in terms of conformance to State Aid standards. The design of the medians at intersections and the locations of crosswalks were additional issues raised for our review. The provided information is attached to this memorandum for reference.

The proposed development is located on the north side of I-94 and the Hudson Boulevard frontage road, between Inwood Avenue and Keats Avenue. As identified in the City's Transportation Plan of the 2030 Comprehensive Plan, a future collector roadway is expected to be located about halfway between 10th Street N and Hudson Boulevard. This new road is expected to provide for east-west travel between Inwood Avenue and Keats Avenue and beyond. The projected daily volume for this new roadway is 5,000 vehicles. The proposed development's 5th Street is anticipated to become part of that new collector roadway.

<u>State Aid Standards</u>

The MnDOT State Aid office provides design guidance in terms of lane widths and other roadway design details. Satisfaction of these guidelines means that a roadway is eligible to become a State Aid route, which then makes the road eligible for future maintenance and improvement funding.

Based upon the information provided, the design of 5th Street meets the City's desired standards, which also satisfy the State Aid standards. The provided right-of-way, lane widths, and median widths meet or exceed the State Aid minimums, assuming a posted speed limit of 40 mph or less. Horizontal and vertical curves also meet the minimum standards for a 40 mph roadway. Pavement sections were not provided to check against the State Aid standard of a 9-ton roadway. However, the City's desired standards call for a 10-ton roadway. Assuming that 5th Street continues to match the City's desired standards, this detail would also satisfy the State Aid standards.

Pedestrian Movements

The design shows a 10-foot trail on one side of 5th Street and a 6-foot sidewalk on the other. A wide boulevard separates the trail and sidewalk from the road except where right-turn lanes are introduced. Based on our review of the layout of the trail and sidewalk, our comments are:

- The trail moves away from 5th Street at intersections, providing approximately 30 feet between the pedestrian crossing area and the vehicle stopping point. This is similar to pedestrian crossing treatments at roundabouts, allowing vehicles to focus on pedestrian movements first, followed by a focus on other vehicle movements. At stop controlled intersections, this approach is acceptable. Appropriate signing and striping should be used to notify drivers of the pedestrian crossing area.

- Only one crossing of 5th Street is shown, on the west side of the Boulder Ponds Parkway intersection. Assuming that this intersection is under side-street stop control, with 5th Street traffic not stopping, the crossing should be located at the intersection rather than set back approximately 30 feet as shown. When traffic will not stop or slow at the intersection, setting the pedestrian crossing back in this manner does not offer benefits to the driver or the pedestrian.

- Additional crossings of 5th Street should be considered, including mid-block crossings. Connections to and from development outlots not at intersections could also be considered. For instance, a sidewalk/trail connection linking outlot C to the trail on the north side of 5th Street with a mid-block crossing to the sidewalk on the south side of 5th Street may provide additional benefits for those residents. Proper signing and striping should be used for all crossings to improve safety.

- At all crossings, the ramp to and from the roadway should be properly designed using the latest ADA standards. The provided plans do not uniformly identify pedestrian ramps at each crossing point, nor do they provide information regarding the pedestrian ramp design for those that are identified.

- The south crossing of Boulder Ponds Parkway is not continuous across the intersection. Pedestrian routes should be reviewed to ensure that the routes are continuous and do not strand a pedestrian in a potentially dangerous situation, such as the middle of an intersection.

Medians

As mentioned, the raised median on 5th Street meets the City's desired standards in addition to the minimum State Aid standards. At the intersections, the minimum 4-foot width (face-of-curb to face-of-curb) is sufficient for those standards. However, a minimum width of 6 feet is desired if the median is to be used as a pedestrian refuge at crossing locations. A minimum width of 6 feet is also better in terms of space for sign mounting. The minimum 6-foot width could be achieved by reducing the left-turn lane and through lane to 11-foot widths at the intersections. This change in lane width would still satisfy State Aid standards.

Vehicle turning movements should be considered at the intersections in regard to the median design as well. As currently shown in the plans, the median on 5th Street extends too far into the intersection and would interfere with left turn and through movements from the side streets.

If you have any questions or comments regarding the information presented in this memorandum, please contact me at 651.726.7944 or bryant.ficek@tkda.com.

WENCK

Responsive partner.
Exceptional outcomes.

To: Emily Becker, City of Lake Elmo Planning Director

From: Lucius Jonett, Wenck Landscape Architect

Date: May 7, 2018

Subject: City of Lake Elmo Landscape Plan Review
Boulder Ponds – 3rd Addition, Final Review #1

Submittals

- Final Boulder Ponds Landscape Plans, dated 04/26/2018, received 05/01/2018.

Location: Area between Hudson Blvd North and 5th Street, east of Bremer Bank (8555 Eagle Point Blvd # 110, Lake Elmo, MN 55042) and west of Lampert Lumber (9220 Hudson Blvd N, Lake Elmo, MN 55042).

Land Use Category: Urban Low Density

Surrounding Land Use Concerns: There were some issues with utilities in the review of the preliminary landscape plan and there is potential conflict in the median with Jade Cove Trail cul-de-sac.

Additionally, a condition of preliminary plat indicated that the eastern portion of the northern buffer trail needs to be moved to the south to the greatest extent possible with plantings to the screen the trail on the north side.

Special Landscape Provisions in addition to Zoning Code: None

Tree Preservation:

A tree survey/preservation plan has not been provided, but landscape design plans indicate that 121 caliper inches of tree replacement are required.

Irrigation Plan:

5th Street Design Standards required landscape irrigation for the boulevard and center landscaped medians; site irrigation for boulevard areas, and drip irrigation for center landscaped medians.

A landscape plan has not been submitted for the 5th Street area showing the system layout, the irrigation connections to municipal water supply, critical station analysis and detailing control system components.

WENCK
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Exceptional outcomes.

Landscape Requirements:

The 2nd addition final landscape plans do not meet the code required number of trees in a tree by tree count; ornamental trees do not count toward tree replacement or landscape requirements. Landscape requirements were calculated by caliper inches using larger evergreen tree sizes to achieve larger numbers and do not meet the overall landscaping requirements either.

	Master Plan Required	1st Addition Proposed	2nd Addition Proposed	
Street frontage	10,043			Lineal Feet
Lake Shore	0			Lineal Feet
Stream Frontage	0			Lineal Feet
Total Linear Feet	10,043			Lineal Feet
/50' = Required Frontage Trees	201			Trees
Development or Disturbed Area	-			SF
Development or Disturbed Area	48.8			Acres
x5 = Required Development Trees	244			Trees
5th Street frontage	3,965			Lineal Feet
/40' = Required Frontage Trees	99			Trees
Required Mitigation Trees (2.5" cal.)*	49			Trees

				Total Proposed
Code Required Number of Trees (2.5" cal.)**	494	198	133	**331**
Frontage Required Number of Trees (4" cal.)	99	48	51	**99**
Total Proposed	**593**	**246**	**184**	**430**

**Proposed 97 ornamental trees not included in tree count to satisfy landscape requirement.*

1. A minimum one (1) tree is proposed for every fifty (50) feet of street frontage.
2. A minimum of five (5) trees are proposed to be planted for every one (1) acre of land that is developed or disturbed by development activity.

The final landscape plans meet the minimum of twenty-five percent (25%) of the required number of trees shall be deciduous shade trees and a minimum of twenty-five percent (25%) of the required number of trees be coniferous trees.

Phase 1	Qty	% Composition	
Deciduous Shade Tree	141	71%	>25% required
Coniferous Tree	57	29%	>25% required
Ornamental Trees*	68		
5th St Blvd Trees*	48		
Tree Count	**198**		

Phase 2	Qty	% Composition	
Deciduous Shade Tree	96	72%	>25% required
Coniferous Tree	37	28%	>25% required
Ornamental Trees*	29		
5th St Blvd Trees*	51		
Tree Count	**133**		

**Ornamental & 5th St. Blvd. trees are not included in composition calculations*

A. A landscape plan has been submitted that meets all requirements.

Findings:

1. Submitted landscape plans are consistent with the previous final landscape plans dated 03-01-2016. With some minor changes including a trail alignment change on Jade Cove Island and some amenities (picnic table, shelter and grill station) being relocated or removed from Outlot J.
2. Landscape tree requirements are not met in either tree count or caliper inch calculations.
3. Irrigation design plans or details have not been included to document the 5th Street Design requirements.

Recommendation:

It is recommended that conditions of approval include:

1. Amend landscape plans to provide required number of trees (111 caliper inches more) to meet requirements. Ornamental trees do not count towards required number of trees.
2. Submit irrigation plans for 5th Street boulevard and median areas.

Sincerely,

Lucius Jonett

Lucius Jonett, PLA (MN)
Wenck Associates, Inc.
City of Lake Elmo Municipal Landscape Architect

THE CITY OF LAKE ELMO

STAFF REPORT

DATE: 5/30/2018
REGULAR
ITEM #:
MOTION

TO:	City Council
FROM:	Emily Becker, Planning Director
AGENDA ITEM:	2040 Comprehensive Plan Update Public Hearing
REVIEWED BY:	Jennifer Haskamp, Swanson Haskamp Consulting

BACKGROUND:

The Planning Commission is being asked to hold a public hearing and consider a draft of the 2040 Comprehensive Plan Update and make recommendation to Council.

ISSUE BEFORE COMISSION:

Should the Draft 2040 Comprehensive Plan Update go to Council to be submitted for adjacent jurisdictional review?

PROPOSAL DETAILS/ANALYSIS:

Changes Since Last Public Hearing. Through direction of the Planning Commission and Council, the Urban Reserve land use designation, which guided land to develop post-2040, has been removed. This has been replaced with various land uses including Village Low Density Residential, Village Medium Density Residential, Low Density Residential, Medium Density Residential, and some High Density Residential. The Housing Chapter was also updated. Additionally, drafts of Chapters 7-10 are provided.

Option to Make Changes After Jurisdictional Review. The submittal for adjacent jurisdictional review can be sent in draft form. Therefore, Council can still require minor changes to the submittal after it has been sent out for adjacent jurisdictional review. These changes cannot be significant however, in that they cannot significantly impact adjacent jurisdictions. Changes such as the goals and strategies can still be made.

Changes Since the 2030 Comprehensive Plan. The following provides a brief summary of updates made.

- *Chapter 1: Community & Planning Context*
  - This provides a summary of current demographic and socio-economic trends; current market snapshot (both local and regional) and planning context (regional context requirements by the Metropolitan Council and local context and objectives

guiding plan development). The regional context requirements reflect the Metropolitan 2015 Systems statement, which forecast that Lake Elmo will more than double its population and add more than 2.5 times the number of households counted in the last census of 2010, and employment will add another 1,000 jobs, increasing by 125% from now until 2040. The local context and objectives guiding plan development describe the process through which the Update was drafted. It also outlines changes from the 2030 Plan, which explains that the Update is a re-write from the previous Plan, taking in to consideration current market place and expected demand.

- *Chapter 2: Vision, Goals & Strategies*
    - This chapter is similar to the 2030 Plan's City-Wide Planning Policy. The former plan's City-Wide Planning Policy outlined goals that pertained to that planning period, including agricultural preservation, goals for residential and non-residential development, housing, environmental protection, municipal services, transportation, I-94 Freeway Corridor Planning Policy, and Village Area Planning Policy. The 2040 Update provides a Vision Statement and outlines goals and strategies. These goals and strategies were derived from a Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis exercise by the Advisory Panel. These goals and strategies pertain to character and governance; land use; balanced development and growth; and housing; parks, trails and open space; and transportation and infrastructure.
- *Chapter 3: Land Use*
    - *Sewered Development.* The previous existing land use plan did not include any developed areas that were in the Metropolitan Urban Services Area (MUSA), and the 2040 Update's existing land use includes sewered development (Inwood, Savona, Easton Village, etc.).
    - *Density.* Densities within the plan have changed as follows:
        - Density ranges for Medium Density Residential and High Density Residential were shifted from 4.5-7 units per acre (upa) to 4.5-8 upa and 7.5-15 upa to 8-15 upa, respectively, to allow for a better integration of uses and more flexibility to respond to market demands.
        - Density ranges for Village Low Density Residential and Village Medium Density Residential have hanged from 1.5-2.49 upa to 1.5-3 upa and 2.5-4.99 upa to 3-7.99 upa, respectively, and a Village High Density Residential Land Use with a density of 8-12 upa in order to provide for an increase in types of housing stock, provide opportunities for a more affordable and lifecycle housing, and bring higher concentration of people living close to Village destinations and amenities.
    - *Mixed Use.* Mixed Use south of 10th Street has changed. The 2030 Plan stated that mixed use areas south of 10th Street could be zoned in accordance with either the base or adjacent land use category. This is not actually mixed use. The 2040 Update actually proposes mixed use business and mixed use business park south of 10th Street, which assumes that land will develop with a minimum of 50% residential use.
    - *Business Park.* The Business Park land use category specifically exempts residential use, warehousing, manufacturing, distribution, assembly and truck terminals, whereas the 2030 Plan allowed such uses. The aforementioned mixed

use business park does, however, allow warehousing, showroom, light manufacturing and residential use.

- *Commercial.* The Commercial category specifies that this land use category is to be used for retail business and not to be used for residential, whereas the 2030 Plan allowed for a broader range of uses, including residential. The mixed use commercial category does allow residential use.
- *Village.*
  - Greenbelt Buffers. These are not within the 2040 Update. Buffering can still be required through ordinance development through required setbacks, landscaping, etc. to buffer less intensive uses from more intensive uses.
  - The center of the Village is guided for Commercial, while it was previously designated as Village Mixed Use. Parcels guided for Rural Single Family north of Stillwater Boulevard and in the southeast portion were changed to Village Mixed Use and Low Density Residential. The northeast area of the Village was changed from Low Density Residential and Commercial to Medium Density Residential and Commercial.
  - There is no longer a Village Plan. Rather, there is reference to creating three districts within the Village: Civic, Elmo Station, and Old Village, which are further described in the Balanced Development & Growth Chapter.
- *Rural Areas.* Residential Estates and Rural Single Family land use designations were combined into one Rural Single Family land use designation, which allows development at a density of 0.1-2 units per acre. Additionally, there is no longer a density requirement for Open Space Preservation developments. The Update simply states that these developments generally average more than one residential unit per 10 acres.
- *Musa.* There is no change to the MUSA except for amendments since the 2030 Plan that have been approved by Council.
- *Staging Plan.* The Staging Plan has changed slightly, and specifies specific development time periods and includes the Village Area. The 2030 Plan designated stages. The 2040 Update still designates the areas south of 10th Street in the same order as the 2030 Plan.

- *Chapter 4: Balanced Development & Growth*
  - This is a new chapter which describes what types of development patterns exist today, where those patterns are changing and evolving, and where they are likely to stay the same.
- *Chapter 5: Housing*
  - The housing chapter presents important housing principles that underscore the dynamics behind the role and importance of housing as a key element within the Plan; focuses on existing housing stock, summarizing important information regarding the overall number, types, affordability, and occupants of housing units; projected need for housing during this planning period; and practical implementation tools to help the City achieve its identified housing goals. The 2030 Plan had similar goals, including providing more affordable and a wider variety of housing.
- *Chapter 6: Parks, Trails, and Open Space*

  - The Parks and Trails chapter focuses on refining and synthesizing information contained within the 2030 Comprehensive Plan and preparing an update that is more concise, clear and direct about the City's goals and objectives for its future in regards to parks and trails. It now functions at a higher level of detail that will focus and more clearly demonstrate the interconnected quality of the Parks and Trails system. There are wider park search areas, and the trail plan identifies a regional trail search corridor and broader trail search corridors. This Chapter will evolve in to an updated Park System Plan and a Trail System Plan that implements this chapter as part of the implementation process.
- *Chapter 7: Transportation*
  - The 2030 Plan has been updated to use new numbers within the 2040 Plan and also includes updated road classification and new improvements to be made.
- *Chapter 8: Surface Water*
  - Information updated.
- *Chapter 9: Wastewater Facilities*
  - Information from the 2030 Plan was updated significantly, as the 2030 Plan only planned for, and did not include, infrastructure.
- *Chapter 10: Water Supply*
  - The City submitted a Water Supply Plan as required by the Metropolitan Council and Minnesota Department of Natural Resources (DNR) on December of 2017. This has not yet been approved. An updated draft has been sent to the DNR with updated population projections for review.
- *Chapter 11: Implementation*
  - Rather than designating implementation within each individual chapter, there is an implementation chapter that describes implementation for each chapter within the 2040 Update.

Recommendation Requested. The City's 2040 Comprehensive Plan Update (Update) is due to the Metropolitan Council by December 31, 2018. While the City would still like to meet that deadline, an extension request has been made to extend this deadline to February 28, 2019. Before the City can submit the Update to the Metropolitan Council, it must first submit the Update to adjacent jurisdictions for review. These jurisdictions have up to six months to complete this review, although it may not take this long. After this, a final public hearing is required, and Council must approve with a 4/5 vote that the Update may be officially submitted. In order to try and still meet the December 31st deadline, Staff is recommending that the Council approve the Update to be submitted to jurisdictional review so that the City may keep on track with the final deadline for adoption.

FISCAL IMPACT:

The City has hired a consultant to prepare the 2040 Update, and direction by Council is that the budget cannot exceed $90,000. This number is near being reached, as we are nearing the end of the process. Major changes and delays could cause this budget to be exceeded.

OPTIONS:

The Commission has the following options:

1) Recommend the 2040 Update go to Council for approval to submit to adjacent jurisdictional review.
2) Do not recommend the 2040 Update go to Council for approval to submit to adjacent jurisdictional review.

RECOMMENDATION:

Staff recommends that the Planning Commission recommend that the 2040 Update go to Council for approval to submit to adjacent jurisdictional review.

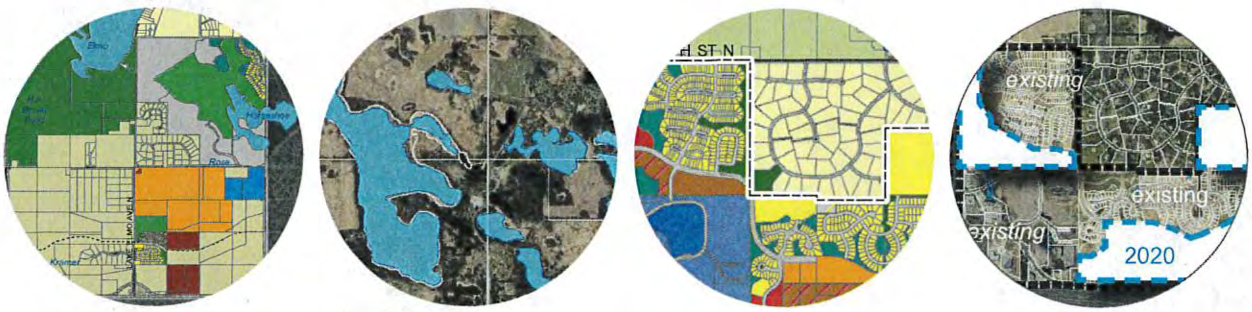
"Move to recommend that the 2040 Update go to Council for approval to submit to adjacent jurisdictional review."

ATTACHMENTS:

1. Draft 2040 Comprehensive Plan Updated Chapters
2. 2030 Land Use Plan (for reference)

Draft Chapter 3: Land Use

Existing & Future



INTRODUCTION

The City of Lake Elmo is a growing, engaged and dynamic community that has experienced significant change over the past planning period. The City's proximity to jobs and access to regional amenities means that the City will likely continue to experience external pressures to grow. Consequently, it is essential for the City to develop a thoughtful, well-planned approach to its future land uses and growth strategy. The following chapter will focus first on existing land uses that will provide a baseline from which the Future Land Use Plan ("FLU") was derived. The FLU guides anticipated densities of new neighborhoods, locations of future mixed-use and employment centers, and guides land for commercial and retail services through 2040. The community understands that while there is significant growth pressure and demand today for certain types of development, that demand is likely to ebb and flow and change over the next several decades as market trends fluctuate. More detail regarding current market trends and development can be found in Chapter 4. Balanced Development & Growth within this Plan; however, the pace of growth is addressed through the Staging Plan that is included in subsequent sections of this chapter. The Staging Plan provides sequential geographic areas available for development and growth during prescribed time periods that methodically allows for contiguous development and cost-effective expansion of municipal services to undeveloped areas of the community.

The Future Land Use, Staging and Special Area plans contained within this chapter, if consistently followed and implemented, directly support the goals and objectives contained within Chapter 1: Vision, Goals & Strategies. The intent of this chapter is to demonstrate where land use changes are anticipated, where existing land use patterns are guided to stay the same, and how these land uses patterns will continue to support the identity and character of the community through this planning period.

2040 Land Use Highlights – What's to Come

» The Existing Land Use Patterns in the Rural Residential areas should be protected through this planning period; some new rural residential neighborhoods, including open space developments, are anticipated to develop consistent with the City's rural tradition.

» New Future Land Use designations will allow for a better response to market conditions and will allow a greater options in land use choices.

» Integration of more diverse neighborhood patterns and densities will allow for a stronger commitment to the staging plan.

» Refinement of staging and infrastructure phasing to promote contiguous, efficient development patterns.

Existing Land Use

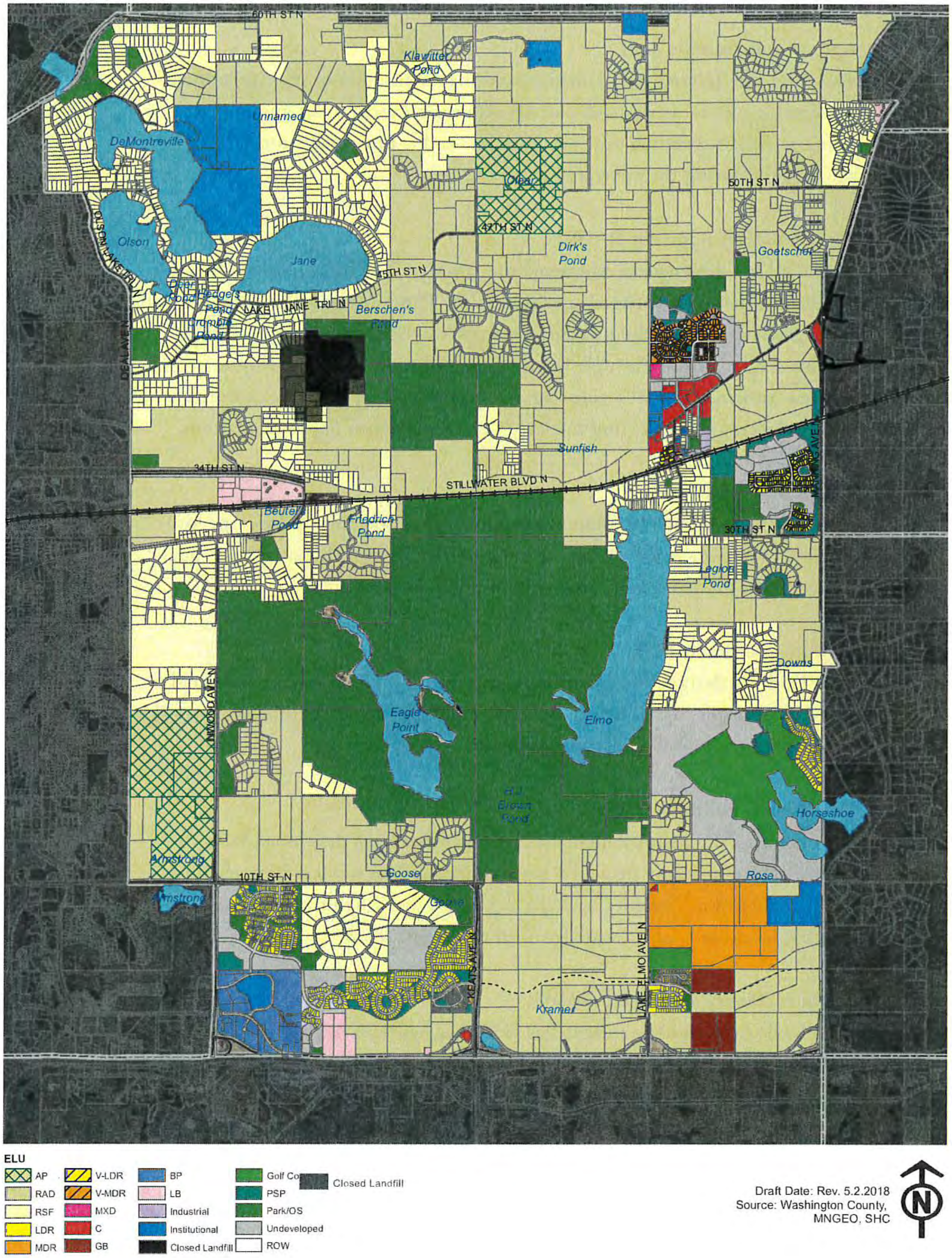
The existing land use patterns reflect the City's past commitment to the rural landscape and investment in development of primarily single-family detached housing. Rural residential neighborhoods with conventional rural subdivisions and open space development subdivisions are sprinkled throughout much of the community's landscape. The many lakes of the City are dotted with smaller residential lots that once were dominated by vacation homes that have now transitioned to full-time residences. The Lake Elmo Regional Park Reserve is centered in the City providing a hub of natural and recreational resources for both City and metro-area residents. The "Old Village" is the historical hub of activity in the City, and a mix of uses is present today including some residential, commercial and office users. Business uses, employment pockets and retail/service users are primarily located in or near the "Old Village", along the I-94 corridor, or at major intersections and thoroughfares.

In Lake Elmo's 2030 Comprehensive Plan, the City's existing land uses did not include any areas that were connected to municipal services or located within the Metropolitan Urban Service Area ("MUSA"). Now, in this 2040 Plan, the existing land use patterns include neighborhoods that have been developed or are under construction that were guided in the MUSA in the previous plan. The availability of municipal services has allowed for the addition of new land use patterns that can be found in developing neighborhoods such as Inwood, Savona, and Easton Village. Additionally, the Old Village area has been incrementally served and connected to municipal services over the past decade, which has allowed for existing small-lot residential neighborhoods to be served, as well as new neighborhoods under development. While the developing neighborhoods in the MUSA continue to be dominated by single-family detached uses, some diversification has started to emerge as a few small pockets of medium-density residential uses are under construction and development.

Table 3-1. Existing Land Use

Existing Land Uses	Residential Density (dwelling units/acre)	Acres	% Total Acres
Agricultural Preserve (AP)	0.025	414.70	2.67%
Rural Area Development (RAD)	0.1	6,103.13	39.36%
Rural Estate (RE)	0.1 -0.4	815.26	5.26%
Rural Single Family (RSF)	0.66 - 2.0	1,754.14	11.31%
Low Density Residential (LDR)	2 - 4	182.06	1.17%
Medium Density Residential (MDR)	4 - 8	231.41	1.49%
Village - Low Density Residential (V-LDR)	1 - 4	36.08	0.23%
Village - Medium Density Residential (V-MDR)	4 - 6	48.18	0.31%
Mixed Use (MU)	5 - 12	4.93	0.03%
Undeveloped (U)	Various	392.15	2.53%
Limited Business (LB)	NA	71.79	0.46%
Business Park (BP)	NA	88.01	0.57%
General Business (GB)	NA	70.09	0.45%
Commercial (C)	NA	50.27	0.32%
Institutional (INST)	NA	305.40	1.97%
Closed Landfill (CL)	NA	67.53	0.44%
Public/Semi-Public (PSP)	NA	123.55	0.80%
Golf Course (GC)	NA	267.36	1.72%
Parks & Open Space (POS)	NA	2,531.43	16.32%
Right of Way (ROW)	NA	594.18	3.83%
Open Water	NA	1,355.29	8.74%
TOTAL		**15,506.96**	**100.00%**

Map 3-1: Existing Land Use Map 2018



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THE CITY OF LAKE ELMO

Existing Land Use Definitions

Agricultural Preserve (AP)

This land use designation identifies land that is enrolled in the Agricultural Preserves program. Land in this designation is required to be guided for no more than 1 dwelling unit per 40 acres, and is protected from further subdivision during the contract period.

Rural Area Development (RAD)

This land use designation represents the large areas of rural residential development and agricultural uses within the City. Common uses found in these areas include working farms, alternative agricultural uses as defined by City Code, and rural single family detached residences. Development in these areas requires 10+ acres, or a conditional use permit to authorize a cluster development meeting the City's Preserved Open Space regulations.

Rural Estate (RE)

This land use designation defines areas developed specifically for large lot single-family detached housing typically on two or more acres of land, but developed at densities more than one unit per ten acres.

Rural Single Family (RSF)

This land use designation identifies land that was platted for conventional subdivision prior to 2005, and includes large lots that are primarily serviced by private on-site well and septic system.

Low Density Residential (LDR)

This land use designation identifies land that has been developed with primarily single-family detached housing with urban services between 2010 and 2018 at densities between 2.5 and 4 dwelling units per acre. This existing land use is only located within the South MUSA.

Medium Density Residential (MDR)

This land use designation identifies land that has been developed primarily with a mix of attached and detached single-family housing with urban services between 2010 and 2018 at densities between 4.5 and 7 dwelling units per acre, and the manufactured home park that was developed in the 1960s. This existing land use is only located within the South MUSA.

Village - Low Density Residential (V-LDR)

This land use designation identifies land that has been developed with primarily single-family detached housing with urban services between 2010 and 2018 at densities between 1.5 and 2.5 dwelling units per acre. This existing land use is only located within the Village Planning MUSA.

Village - Medium Density Residential (V-MDR)

This land use designation identifies land that has been developed with primarily single-family detached housing with urban services between 2010 and 2018 at densities between 2.5 and 5 dwelling units per acre. This existing land use is only located within the Village Planning MUSA.

Mixed Use (MU)

This land use designation identifies land developed with a mix of commercial and residential uses and is limited to land within the Village Planning Area.

Undeveloped (U)

This land use designation identifies land within the South MUSA and Village MUSA that has been approved for future sewered development through a Preliminary Plat or PUD process, but Final Plat has not been completed.

Limited Business (LB)

This land use designation identifies areas that are developed with commercial users that are not served by urban services. Users in this designation are generally less intense than would be permitted in the planned MUSA designations.

Business Park (BP)

This land use designation identifies areas used for professional businesses including medical and research facilities, offices and corporate headquarters. Users specifically excluded for existing park areas include warehousing, manufacturing, distribution, assembly and truck terminals. Retail sales of goods and services are allowed by conditional use permit.

General Business (GB)

This land use designation identifies areas used for general business activities that currently include warehousing, light industrial and manufacturing uses.

Commercial (C)

This land use designation identifies areas that are used for retail and service businesses. This land use can be found within the Village MUSA and South MUSA.

Institutional (INST)

This land use designation identifies lands that are developed with public or semi-public uses including users such as, but not limited to, religious institutions, schools, libraries and other civic buildings.

Public/Semi-Public (PSP)

This land use designation identifies lands that support adjacent development with stormwater ponds and other utilities and may include ancillary uses such as trails and small open spaces.

Golf Course (GC)

This land use designation identifies land that is used for a private golf course and ancillary uses that may include, but not be limited to, driving range, clubhouse and other amenity centers.

Park & Open Space (POS)

This land use designation identifies land that is used for park, recreation, trails, other natural resources preservation. Land within this designation is publicly owned by either the City, county, or other public agency.

Closed Landfill Restricted (CL)

This land use designation identifies former landfills that are qualified to be under the Closed Landfill Program of the Minnesota Pollution Control Agency (MPCA). The purpose of this category is to limit uses of land within the closed landfill, both actively filled and related lands, to minimal uses in order to protect the land from human activity where response action systems are in place and, at the same time, are protective of human health and safety.

Right of Way (ROW)

This land use designation includes all publicly dedicated areas that are used for roadways, shoulders, ditches, and other improvements. It should be noted that not all roads in the City are platted, and many are dedicated by easement and therefore this land area is accounted for through the associated land use designation. As a result there is more land dedicated to road use than identified within the acreages identified on the existing land use table.

FUTURE LAND USE

The Future Land Use Plan ("FLU") was developed by building on stated goals and strategies as identified through the planning process and documented in Chapter 1: Vision, Goals & Strategies. The resulting FLU carefully balances the recommendations and considerations of residents, stakeholders, staff, and policy-makers while responding to and incorporating the regulatory requirements of the Metropolitan Council.

> ***LU Goal #1.*** Work with residents, developers, land owners and other stakeholders through the development process and require development that is consistent with the future Land Use Plan.
>
> \- Chapter 1: Vision, Goals & Strategies

The FLU is in part shaped by the policy designations the City is required to meet as part of the Metropolitan Council's Thrive MSP 2040 Land Use Policy as provided within the 2015 Lake Elmo System Statement. Lake Elmo falls into two categories of Community Designation, as described in Chapter 2: Community Context. Each of these designations carries responsibility for the related Community Role in the regional growth of the metropolitan area in relation to future land use. These roles are outlined in the Metropolitan Council's Thrive 2040 Land Use Policy and include the following land use practices for Lake Elmo:

Emerging Suburban Edge

- Plan and stage development for forecasted growth through 2040 and beyond at overall average net densities of at least 3-5 dwelling units per acre in the community. Target higher-intensity developments in areas with better access to regional sewer and transportation infrastructure, connections to local commercial activity centers, transit facilities, and recreational amenities. Future land use must therefore plan to accommodate a minimum residential density of 3 du/acre within this designation.
- Identify and protect an adequate supply of land to support growth for future development beyond 2040, with regard to agricultural viability and natural and historic resources preservation.
- Incorporate best management practices for stormwater management and natural resources conservation and restoration in planning processes.
- Plan for local infrastructure needs including those needed to support future growth.

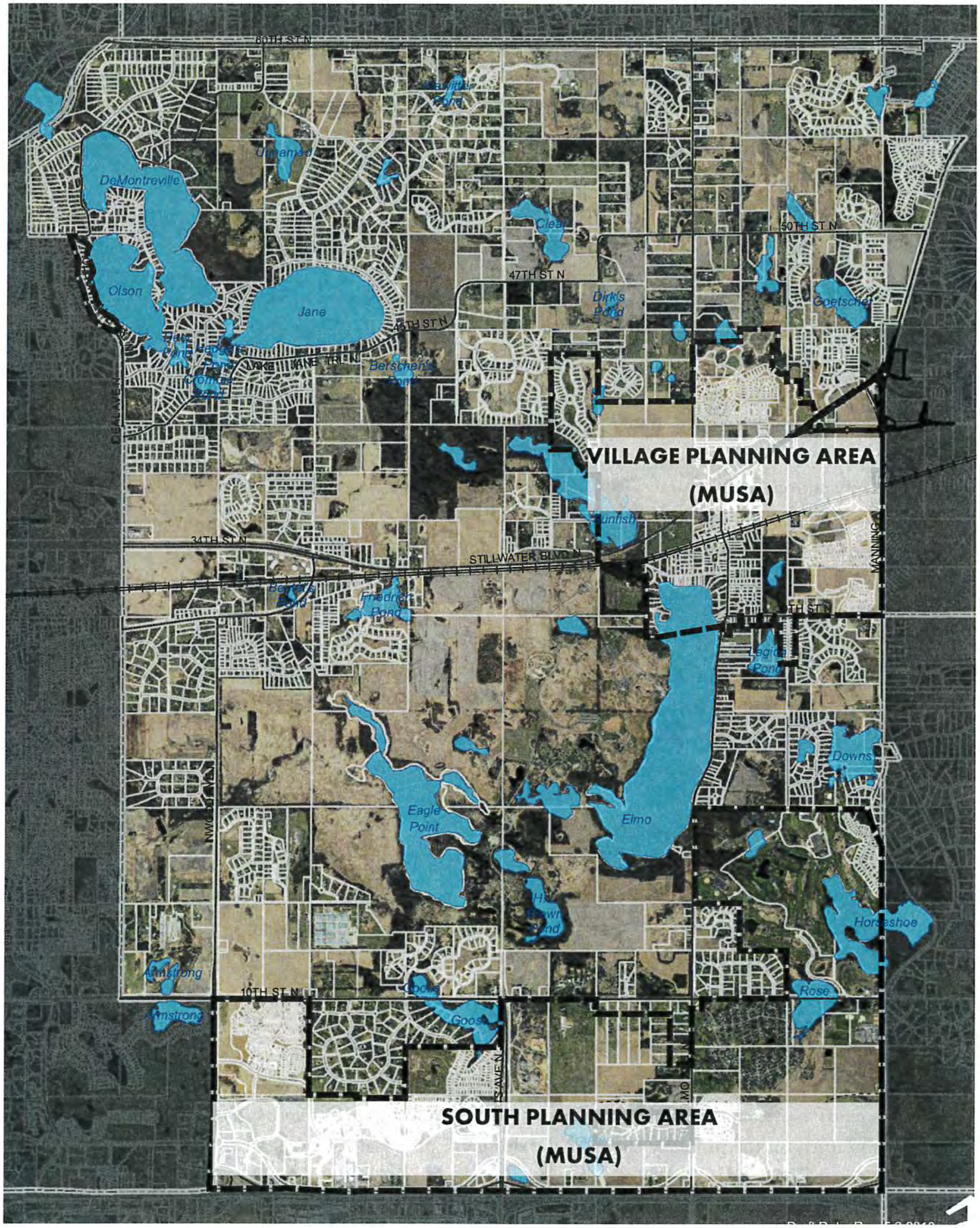
Rural Residential

- Discourage future development of rural residential patterns (unsewered lots of 2.5 acres or less) and where opportunities exist, plan for rural development at densities that are not greater than 1 unit per 10 acres. Future land use must therefore plan to limit development to a maximum residential density of 0.1 du/acre within this designation.
- Implement conservation subdivision ordinances, cluster development ordinances, and environmental protection provisions in local land use ordinances, consistent with the Council's flexible residential development guidelines.
- Promote best management practices for stormwater management, habitat restoration, and natural resource conservation in development plans and projects.

The two distinctive Community Designations require the City to adopt and implement a FLU that provides a minimum residential density within the areas defined as Emerging Suburban Edge (where MUSA is designated), while implementing a maximum residential density for the areas identified as Rural Residential (areas not included within the MUSA in this planning period).

The FLU must also identify appropriate land use designations and guide corresponding acreages that support the forecasted employment growth as identified within the System Statement. Additionally, the FLU must guide adequate land area, at appropriate densities, that may accommodate the City's allocated number of affordable housing units for the period between 2021 and 2030. The employment and affordable housing requirements will be provided for within the MUSA, and are not expected to be met within the Rural Residential Areas. The Emerging Suburban Areas are generally consistent with the MUSA areas identified in the 2030 Comprehensive Plan with two exceptions; 1) the existing single-family homes on the south side of Olson Lake are now served by MUSA; and 2) the newly designated Golf Course Community located on the east side of the community was incorporated into the MUSA through a Comprehensive Plan Amendment in October 2017. With the exception of these two areas, the MUSA and corresponding Emerging Suburban Area designations are unchanged from the previous planning period, and all projected urbanized growth can be accommodated within the boundaries as shown on Map 3-2. 2018-2040 MUSA.

Map 3-2. 2018 – 2040 MUSA



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Future Land Use Definitions

Agricultural Preserve (AP)

This land use designation identifies land that is enrolled in the Agricultural Preserves program. Land in this designation is required to be guided for no more than 1 dwelling unit per 40 acres, and is protected from further subdivision during the contract period.

Rural Area Development (RAD)

A large percentage of land in Lake Elmo falls within the Rural Area Development designation, including single-family detached homes, working farms and agricultural uses where land is undeveloped, cultivated in crops, or used for livestock. This designation includes open space developments that are developed, or may be developed, with clustered housing and may be served by a community septic system. Open space developments generally average more than 1 residential unit per 10 acres and include a dedicated open space protected through a conservation easement. This designation is inclusive of large-lot rural single family detached residential uses, and future conventional subdivision. Density accross this land use designation is planned to maintain maximum densities of 1 residential dwelling unit per 10 acres. This land use designation is limited to areas not within the MUSA planning areas.

Rural Single Family (RSF)

This land use designation combines the previous Residential Estate and Rural Single-Family categories into one designation to simplify intended land use guidance. Development with this designation includes single-family detached housing served by private on-site well and septic systems. Some areas with this designation are allowed to have two-family dwellings based on zoning.

Rural Single Family Sewered (RSFS)

This land use designation identifies existing previously unsewered rural single family land uses located within the Village Planning Area. These properties have either recently been served with municipal sewer and water, or are planned to be served as part of the planned MUSA extensions within the Village Planning Area.

Golf Course Community (GC)

In recognition that a Golf Course on the land formerly known as Tartan Park is a local and regional amenity the City wishes to maintain, this specialized land use category has been crafted to maximize the likelihood that a golf course can be maintained on the property should a development proposal for the land come forward.

Low Density Residential (LDR)

Approximately 20% of the planned land uses in the South Planning Area are guided or developed with low density residential land uses. This category includes development of single-family detached housing and two-family attached dwellings with a density of 2.5 to 4 units per acre (2.5 – 4 du/acre) and are planned to be serviced by public sewer and water. This land use is limited to the part of the City within the South Planning Area.

Medium Density Residential (MDR)

Approximately 12% of the planned land uses in the South Planning Area are guided for medium density residential uses. This category allows for a variety of housing types including single-family detached, duplexes, townhomes, and small two- and three-story apartment buildings and/or senior living centers. The Medium Density Residential development is intended for a density of 4.01 to 8 units per acre (4.01 – 8 du/acre). This land use is limited to the part of the City within the South Planning Area.

High Density Residential (HDR)

Approximately 4% of the planned land uses in the South Planning Area are guided for high density residential uses. This land use designation guides land for higher density residential development including townhomes, small apartment buildings, and multi-family dwellings. Residential density ranges between 8.01 and 15 units per acre (8.01 – 15 du/acre) and provides opportunities for affordable housing to be incorporated into future developments. This land use is limited to the part of the City within the South Planning Area.

Mixed Use Commercial (MU-C)

Approximately 8% of the planned land uses in the South Planning Area are guided as mixed-use commercial. This designation is a new land use designation and identifies where a mix of commercial and residential uses may be integrated to benefit from proximity and adjacencies to each other. Commercial uses in this category include service and retail uses such as, but not limited to, restaurants, shops, convenience stores, salons, studios and dry cleaners. Land with this designation is assumed to develop with a minimum of 50% residential use with a density ranging from 10 to 15 dwelling units per acre (10 – 15 du/acre).

Mixed Use - Business Park (MU-BP)

Approximately 8% of the planned land uses in the South Planning Area are guided as mixed-use business park. This land use designation is new and identifies where a mix of general business, business park, and residential uses may benefit or be compatible due to proximity of uses. Business uses in this category include office and service uses such as, but not limited to, offices and agencies, warehouse/showroom, light manufacturing, and live/work development. Land with this designation is assumed to develop with a minimum of 50% residential use with a density ranging from 6 to 10 dwelling units per acre (6 – 10 du/acre).

Village – Low Density Residential (V-LDR)

This land use designation is planned for areas within the Village Planning Area and identifies land intended for single-family detached housing development serviced by municipal sewer and water. Density ranges between 1.5 and 3 dwelling units per acres (1.5 – 3 du/acre). This land use already exists, or is developing, in much of the outside edges of the Village Planning Area, transitioning from the village center districts to the rural land use pattern not designated within the MUSA areas.

Village – Medium Density Residential (V-MDR)

This land use designation identifies proposed land use within the Village Planning Area guided for single-family detached, duplexes, and townhomes/villa housing types. Residential density ranges between 3.01 and 8 dwelling units per acre (3.01 – 8 du/acre). This land use allows for a greater variety in housing stock and brings more people closer to living within easy access of Village destinations and amenities.

Village – High Density Residential (V-HDR)

This land use designation is a new planned land use within the Village Planning Area and is guided for apartment buildings and multi-family dwellings with a density between 8.01 and 12 units per acre (8.01 – 12 du/acre). This land use is intended to provide for an increase in types of housing stock, provide opportunities for more affordable and lifecycle housing, and bring a higher concentration of people living closer to Village destinations and amenities.

Village – Mixed Use (V-MU)

This land use designation is used in the center of the Village Planning Area to identify an area where a mix of vertically integrated commercial/business and residential uses provide development types that benefit from proximity to each other. More residents in closer proximity to businesses bring greater traffic to the businesses while these same businesses offer convenient and necessary services and amenities to nearby residents. Together, the dynamics of a mixed-use district can establish unique vitality, synergy of activity, and a true community destination. Land with this designation is assumed to redevelop or develop with a minimum of 50% residential use with a density ranging from 5 to 10 dwelling units per acre (5 – 10 du/acre).

Limited Business (LB)

This land use designation identifies areas that are developed with commercial users that were not served by urban services. Users in this designation are generally less intense than would be permitted in the planned MUSA designations.

Commercial (C)

The commercial land use includes areas that are used for retail business and are primarily located within MUSA boundaries of the City. Small pockets of commercial land can also be found where retail goods and services are located at transportation intersections. This category excludes any residential use.

Business Park (BP)

This land use provides for a wide variety of professional businesses such as medical and research facilities, offices and corporate headquarters. Uses specifically excluded from existing business park areas include warehousing, manufacturing, distribution, assembly and truck terminals. Retail sales of goods and services are allowable uses by conditional use permit provided such uses are goods and services for the employees of the permitted business use. This category excludes any residential use.

Institutional (INST)

The Institutional land use category identifies land that is used for schools, religious institutions, City hall, municipal buildings, libraries, and other institutional uses. This land use is found throughout the City.

Public/Semi-Public (PSP)

The Public/Semi-Public land use category identifies land that is generally owned by the City or other agency, whose primary purpose is to support adjacent developments with stormwater management and other utilities. This land use may also include some secondary uses such as public trails or small open spaces.

Closed Landfill Restricted (CL)

This land use designation identifies former landfills that are qualified to be under the Closed Landfill Program of the Minnesota Pollution Control Agency (MPCA). The purpose of this category is to limit uses of land within the closed landfill, both actively filled and related lands, to minimal uses in order to protect the land from human activity where response action systems are in place and, at the same time, are protective of human health and safety.

Park & Open Space (Park)

This land use identifies land used for public recreation and protected open space managed for park uses. Most land within this designation is owned by Washington County or the City of Lake Elmo, but also includes land owned by other public and semi-public agencies.

OPEN

The following table identifies the total land area within the community and comprehensively includes all existing land uses, not guided for change, and planned land uses. The planned land use designations are generally consistent with the 2030 Land Use Plan, with some exceptions as noted:

- The nomenclature regarding sewered residential uses has been changed from "Urban Low Density" to "Low Density Residential, "Urban Medium Density" to "Medium Density Residential" and so forth. This change did not in all cases alter the definition or density ranges but was renamed to better describe the planned land uses.

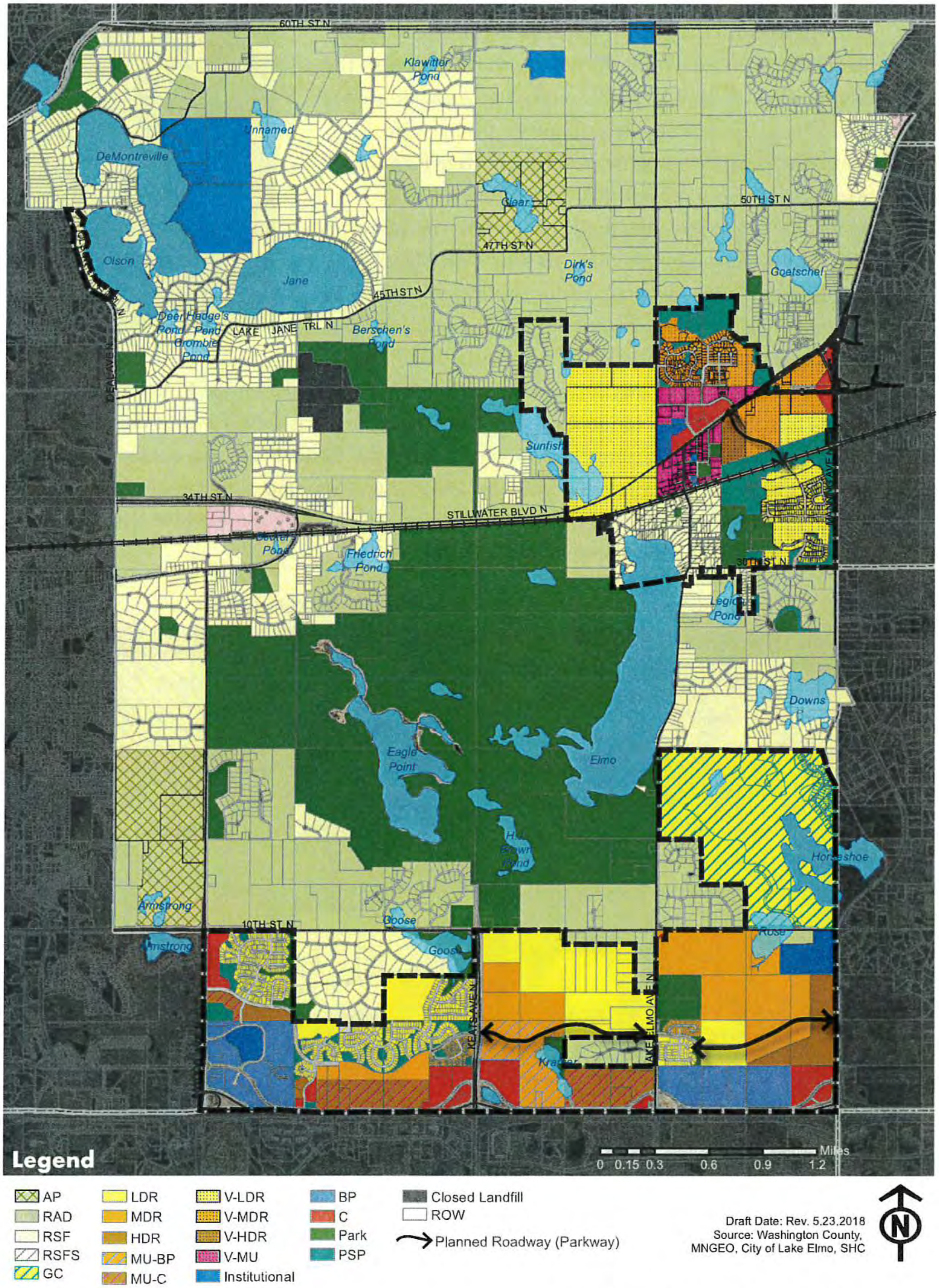
- The density ranges for Medium Density Residential and High Density Residential were shifted to align with the required affordable housing density requirements as noted within the Metropolitan Council's Housing Policy Plan.

- Two mixed use residential land uses were added to areas within the MUSA to allow for a better integration of uses and more flexibility to respond to market demands. These use designations require a minimum residential component as described within the Future Land Use definitions.

Table 3-2. Future Land Use Plan and Total Acreage

Future Land Use	Residential Density (dwelling units/acre)	Total Acres	% of Total Acres
Agricultural Preserve (AP)	0.025	414.73	2.67%
Rural Area Development (RAD)	0.1	4,835.22	31.18%
Rural Single Family (RSF)	0.1-2.0	2,398.76	15.48%
Rural Single Family Sewered (RSFS)	0.1-2.0	149.79	0.97%
Golf Course Community (GC)	1.5-2.49	442.96	2.86%
Low Density Residential (LDR)	2.5 - 4	477.90	3.08%
Medium Density Residential (MDR)	4.01 - 8	365.92	2.36%
High Density Residential (HDR)	8.01 - 15	80.07	0.52%
Mixed Use – Commercial (MU-C)	10 - 15	138.23	0.89%
Mixed Use - Business Park (MU-BP)	6 - 10	92.20	0.59%
Village – Low Density Residential (V-LDR)	1.5 - 3	377.54	2.43%
Village – Medium Density Residential (V-MDR)	3.01 - 8	157.13	1.01%
Village – High Density Residential (V-HDR)	8.01 - 12	21.99	0.14%
Village – Mixed Use (V-MU)	5 - 10	76.74	0.49%
Commercial (C)	NA	154.92	1.00%
Business Park (BP)	NA	206.93	1.33%
Limited Business (LB)	NA	45.76	0.30%
Institutional (INST)	NA	301.41	1.94%
Closed Landfill	NA	67.34	0.43%
Public/Semi-Public (PSP)	NA	206.56	1.33%
Park/Open Space (Park)	NA	2602.	16.79%
Open Water	NA	1355.29	8.74%
Right of Way (ROW) *Includes RR ROW*	NA	534.54	3.45%
Total		15,506.97	100.00%

Map 3-3. Future Land Use Map

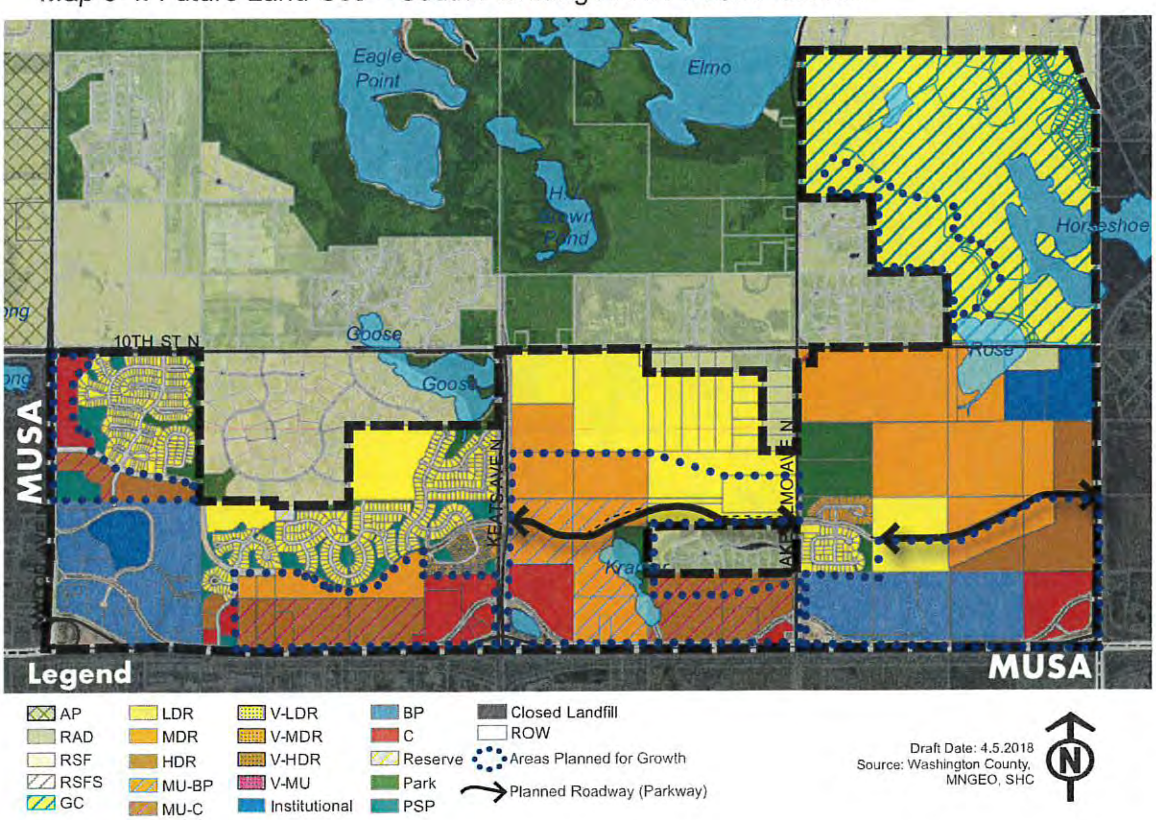


Planned Growth Areas

> ***LU Goal #3.*** Continue to educate residents, developers, and stakeholders about the guided land uses and where sewered and non-sewered development is guided.
>
> \- Chapter 1: Vision, Goals & Strategies

Growth within Lake Elmo is expected to primarily occur in areas designated within the MUSA, consistent with the Metropolitan Council's 2015 System Statement Projections. The City geographically describes their primary growth areas the South Planning Area and the Village Planning Area. Within both of these MUSA boundaries, there is adequate land to serve the projected population, households and employment through 2040. As shown on Map 3-4 and Map 3-5, the areas planned for growth and change in this planning period are identified. Corresponding Table 3-3. Net Developable Acreage of Residential Land Uses provides the calculated density, and expected households, based on the FLU in each of these areas. In addition to the anticipated growth in the areas served within the MUSA, the City also anticipates some growth within the Rural Residential areas consistent with previous lans, and as projected within the 2015 System Statement. Further description regarding the development of the FLU and the growth strategy are provided within Chapter 4: Balanced Development & Growth.

Map 3-4. Future Land Use – South Planning Area Planned Growth



Map 3-5. Future Land Use –Village Planning Area Planned Growth

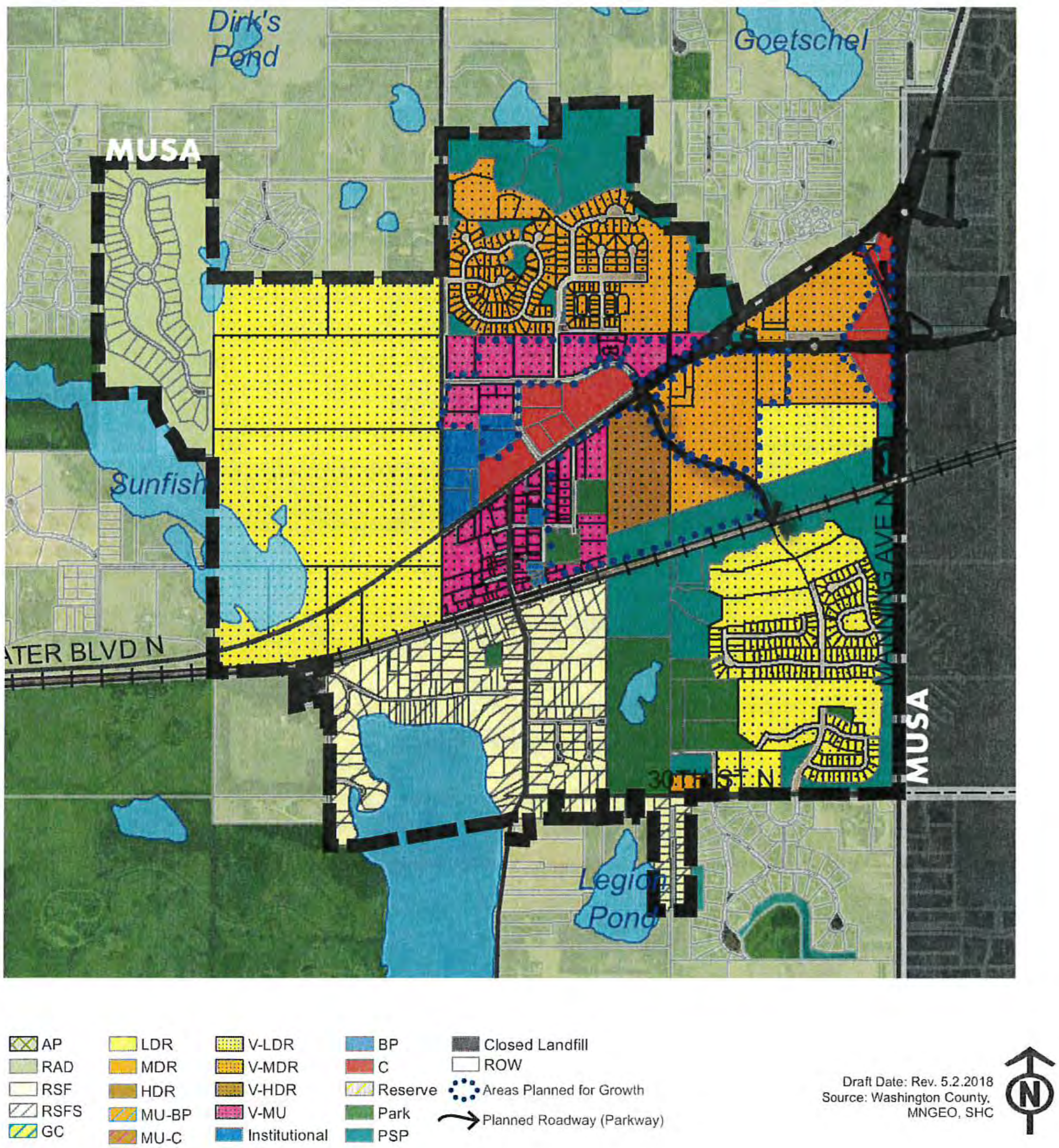


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Table 3-3. Net Developable Acreage of Residential Land Uses

Future Land Use	Residential Density (dwelling units/net acre)	Total Net Acres	Estimated Households
Low Density Residential (LDR)	2.5 - 4	233.43	584
Medium Density Residential (MDR)	4.01 - 8	148.50	596
High Density Residential (HDR)	8.01 - 15	79.99	640
Mixed Use – Commercial (MU-C)*	10 - 15	62.19	622
Mixed Use - Business Park (MU-B)*	6 - 10	46.05	276
Village – Low Density Residential (V-LDR)	1.5 - 3	137.60	206
Village – Medium Density Residential (V-MDR)	3.01 - 8	70.10	211
Village – High Density Residential (V-HDR)	8.01 - 12	19.99	49
Village – Mixed Use (V-MU)*	5 - 10	9.84	160
Total 2020-2040 Residential		**807.71**	**3,344**
Net Density 2020-2040			**4.14 du/acre**
Residential Plats 2010 - 2020		***1,180.75***	***2,444***
Total Sewered Households 2010-2040		**1,914.81**	**5,788**
Total Net Density 2010-2040			**3.02 du/acre**

**Only residential acreage included/calculated in table. Land Use designation assumption that a minimum of 50% of total acreage is developed with residential use.*

Total number of households does not exclude potential park areas as contemplated in Chapter 6: Parks Trails and Open Spaces. Actual acres and resulting households to be adjusted and calculated at time of development (Preliminary and Final Plat). Net density does exclude principal/arterial ROW, wetlands, and lake areas.

Density in Sewered Areas by 2040

Consistent with the Metropolitan Council's policies, the density calculation performed based on Table 3-3. Net Developable Acreage of Planned Residential Land Uses will result in an average net density of approximately 3.0 dwelling units per acre. As required, the household calculation in Table 3-3 was performed based on the minimum units allowable per the density range.

As shown on Map 3-4 and Map 3-5, there are three land use designations at sufficient densities to meet the City's allocation of affordable housing per the Metropolitan Council System Statement. Approximately 112 acres are collectively guided for these three designations between 2021 and 2030, which meets the required allocation in this planning period. (Further detail regarding affordable housing can be found in Chapter 5: Housing).

Revised Population and Household Projections

As noted in Table 3-3 the number of households, and thus the corresponding projected population, is greater than the projections identified by the Metropolitan Council in the 2015 System Statement. After much deliberation and discussion, the City concluded that it would be more advantageous to plan for a thoughtful, contiguous land use pattern throughout all MUSA areas rather than limiting the amount of land available for urbanized services within this planning period to match the 2015 System Statement. As denoted in subsequent sections of this chapter and the Sanitary Sewer chapter, the City's infrastructure may need additional improvements to its infrastructure to serve the entire MUSA area depending on the ultimate commercial and/or business user and density of the residential neighborhoods. Thus capacity of the infrastructure within later staging areas will need to be evaluated, and development approvals contingent on appropriate system upgrades. Regardless, this Plan identifies and guides all land within the MUSA with an urbanized land use designation, and therefore the following table provides the City's adjusted projections based on the Future Land Use Plan and Staging Plan contained in this chapter. (There are no revisions to the employment forecasts, as those are relatively consistent with the System Statement).

Table 3-4. Revised Population & Household Projections

	2020	2030	2040
Population Unsewered	6,788	7,140	7,992
Population Sewered	5,032	11,196	15,743
Total Population	**11,820**	**18,335**	**23,735**
Households Unsewered	2,441	2,760	3,379
Households Sewered	1,850	4,116	5,788
Total Households	**4,291**	**6,876**	**9,167**

Source: Lake Elmo System Statement, SHC, City of Lake Elmo

Employment Locations

Existing and planned employment locations are generally located within the Village Planning Area and South Planning Area. Land uses served by MUSA, or planned for extension of services, will continue to be the primary locations for employment through the forecasted planning period. There are some existing limited business land uses located outside of MUSA designations that are anticipated to remain in operations through this planning period, but are not accounted for in Table 3-4 because they are existing, and no intensification of the land use is projected in these areas.

To determine the intensity of the commercial and business park uses in the guided FLU, the maximum impervious surface coverage was estimated based on information contained in the City's Zoning Ordinance. The coverage calculation was converted to square feet and the Metropolitan Council Environmental Services Sewer Area Charge (SAC) 2017 Manual was used to determine allocated SAC units based on the designation and potential users.

These land uses are identified on Map 3-3: Future Land Use Plan, Map 3-4: Future Land Use Plan – South Planning Area and Map 3-5: Future Land Use Plan – Village Planning Area.

Table 3-5. Employment Locations and Intensity (Planned for Development)

Growth Area	Land Use	Planned Acres	Intensity (FAR)	Estimated Acres (Square Feet)	SAC
South Planning Area	Commercial	110	35%	38.5 (1,677,060)	559
	Business Park[b]	100	35%	35 (1,524,600)	320
	Mixed Use - Commercial[a]	69.12	35%	24.19 (1,053,804)	351
	Mixed Use - Business Park[ab]	46.1	35%	16.14 (702,841)	148
Village Planning Area	Commercial	14.9	35%	5.21 (227,165)	76
	Mixed Use - Village[a]	9.54	50%	4.77 (207,781)	69
Total SAC/Emp.					**1,523**

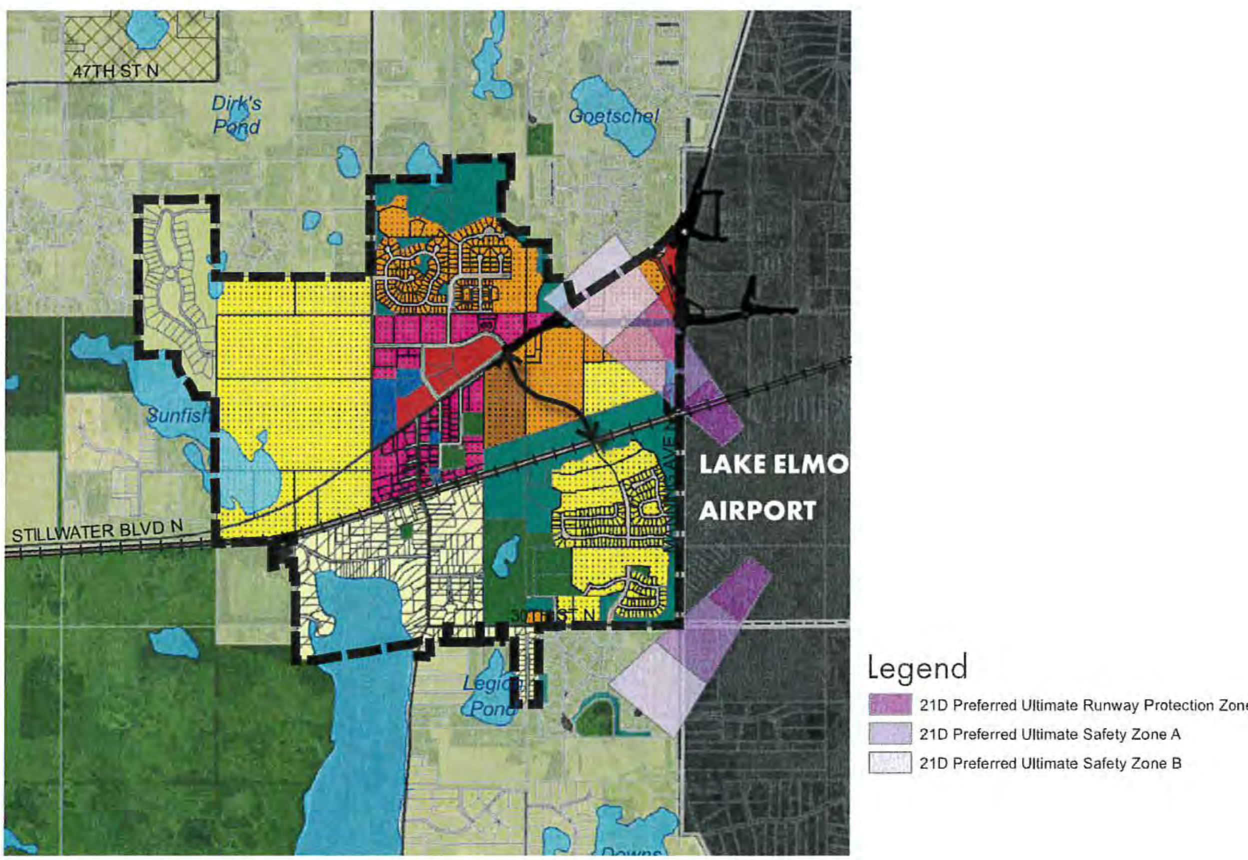
[a]Only commercial/business component is included in acreage. Approximately 50% of total land use designation used for calculation per land use definition.

[b]Business Park Designations calculation assumes office/manufacturing/warehousing mix of general business users.

Airport Impact

The Lake Elmo Regional Airport is located adjacent to the City's eastern boundary in West Lakeland Township. The airport is east of Manning Avenue and between the railroad and 30th Street N. Parts of the airport safety zone and noise impact areas impact a portion of the Village Planning Area in Lake Elmo. A new low density single-family detached residential neighborhood is partially developed with subsequent phases anticipated within this planning period. No development is allowed within the Runway Protection Zone (RPZ). All land designated within the RPZ are designated as Public/ Semi-Public uses and are included within the City's Greenway Overlay which restrict any future development of land within this designation. The FLU is consistent with allowed land uses within the safety zones for the Lake Elmo Regional Airport and reflects this restriction. The City will continue to work with the Metropolitan Airports Commission and MnDOT Aeronautics Division to update airport zoning regulations that address noise and safety concerns within these zones as required.

Map 3-6. Airport Safety and Runway Protection



**Runway protection zones and safety zones depicted are mos recently available shapefiles. Verification of location of runway improvements and revised RPZ to be completed after EA process.*

Phasing and Staged Growth

The majority of the City's growth in households and employment is anticipated to occur within the designated MUSA boundaries; however, there will be some continued development in the rural residential areas of the community consistent with the community's land use designations. Table 3-6 identifies gross acreages per land use designation, while calculations found in Table 3-3 provide net acreage calculations for each residential land use designation within the designated MUSA as noted. The City's objective is to plan for phased, contiguous growth to ensure adequate infrastructure and capacity are available to support development. Map 3-7 identifies four staging areas consistent with existing and planned water, wastewater and transportation infrastructure. The last phase is denoted as post-2035 and should be monitored for capacity and potential improvements based on actual development in earlier phasing periods.

Map 3-7. MUSA Growth & Phasing Plan

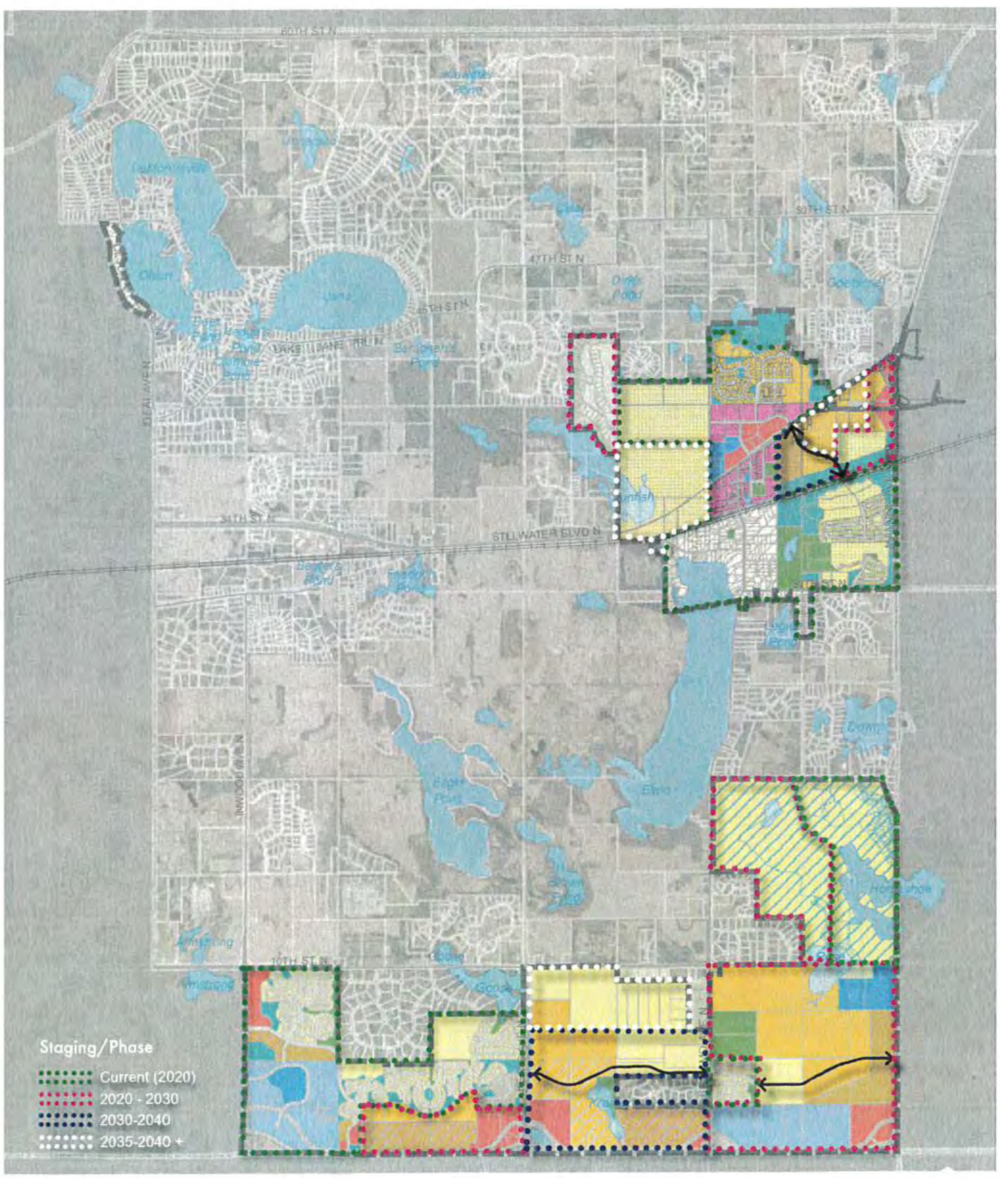


Table 3-6. Future Land Use Forecast Gross Acreage per Decade

Future Land Use	Residential Density (dwelling units/acre)	2020 Acres (%)	2030 Acres (%)	2040 Acres (%)
Agricultural Preserve (AP)	0.025	414.73 (2.67%)	414.73 (2.67%)	414.73 (2.67%)
Rural Area Development (RAD)	0.1	6,118.16 (39.45%)	5,490.01 (35.40%)	4,837.37 (31.19%)
Rural Single Family (RSF)	0.5 - 2	2,398.76 (15.47%)	2,398.76 (15.47%)	2,398.76 (15.47%)
Rural Single Family Sewered (RSFS)	0.5-2	149.79 (0.97%)	149.79 (0.97%)	149.79 (0.97%)
Golf Course Community	1.5-2.49	221.48 (1.43%)	442.96 (2.86%)	442.96 (2.86%)
Low Density Residential (LDR)	2.5 - 4	216.16 (1.39%)	256.20 (1.65%)	477.90 (3.08%)
Medium Density Residential (MDR)	4.01 - 8	298.89 (1.93%)	365.92 (2.36%)	365.92 (2.36%)
High Density Residential (HDR)	8.01 - 15	12.69 (0.08%)	80.07 (0.52%)	80.07 (0.52%)
Mixed Use - Commercial (MU-C)	12 - 15	63.73 (0.41%)	63.73 (0.41%)	138.23 (0.89%)
Mixed Use - Business Park (MU-BP)	6 - 10	0 (0%)	0 (0%)	92.20 (0.59%)
Village – Low Density Residential (V-LDR)	1.5 - 3	202.78 (1.31%)	225.45 (1.45%)	377.54 (2.43%)
Village – Medium Density Residential (V-MDR)	3.01 - 5	78.31 (0.50%)	92.71 (0.60%)	157.13 (1.01%)
Village – High Density Residential (V-HDR)	8.01 -12	0 (0%)	0 (0%)	21.99 (0.14%)
Village – Mixed Use (V-MU)	5 - 10	76.74 (0.49%)	76.74 (0.49%)	76.74 (0.49%)
Commercial (C)	NA	41.16 (0.27%)	129.18 (0.83%)	154.92 (1.0%)
Business Park (BP)	NA	99.80 (0.64%)	206.93 (1.33%)	206.93 (1.33%)
Limited Business (LB)	NA	45.76 (0.30%)	45.76 (0.30%)	45.76 (0.30%)
Institutional (INST)	NA	301.41 (1.94%)	301.41 (1.94%)	301.41 (1.94%)
Public/Semi-Public (PSP)*	NA	206.56 (1.33%)	206.56 (1.33%)	206.56 (1.33%)
Closed Landfill	NA	67.34 (0.43%)	67.34 (0.43%)	67.34 (0.43%)
Park (Park)*	NA	2,602.89 (16.79%)	2,602.89 (16.79%)	2,602.89 (16.79%)
Open Water*	NA	1,355.29 (8.75%)	1,355.29 (8.75%)	1,355.29 (8.75%)
ROW / RR ROW*	NA	534.54 (3.45%)	534.54 (3.45%)	534.54 (3.45%)
TOTAL	**NA**	**15,506.97 (100%)**	**15,506.97 (100%)**	**15,506.97 (100%)**

ADDITIONAL OBJECTIVES OF FUTURE LAND USES

The City's FLU acknowledges and plans for continued household and employment growth through 2040, but also includes preservation and continued support of its rural residential landscape and robust parks and open space system. The City of Lake Elmo has always been identified as an exceptional place to live because of its robust parks system, protected high-quality natural resources, and proximity to major employment, healthcare and retail centers. Even though the community is growing, and in some cases transitioning from a primarily rural residential community, there is a desire and an opportunity to weave the most important elements and characteristics into changing areas of the community to ensure that the identity and character of the community continues for generations to come.

Equally important to the planned land uses, densities and projections is the commitment to maintain open spaces, natural resources and parks and to promote opportunities to provide healthy, vibrant, resilient neighborhoods.

The following sections should be used as an extension to the Future Land Use Plan and should be incorporated or acknowledged in growth areas and in areas planned for protection of existing uses. There is always an opportunity to do better, and the following themes help support the future direction of the City's land uses and decision-making.

Promoting Health with Land Use

As part of the 2040 Comprehensive Plan Update process, the City obtained a grant from Washington County Health Services through the State Health and Improvement Program (SHIP) to incorporate living healthy principles into this comprehensive plan. There are many ways that the principles of healthy neighborhoods, communities and environments can be incorporated into existing and future land uses. The following summary identifies some of the ways in which health was considered, and incorporated, into the Future Land Use Plan.

ship
statewide health improvement partnership

LivingHealthy
IN WASHINGTON COUNTY

Mixed-Use Land Use Designations to Promote Health

The introduction of land uses that will promote a more compact, walkable, development pattern was purposefully integrated throughout the growth areas as identified in previous sections of this chapter. In addition to creating new land use designations, the City discussed opportunities to better connect existing neighborhoods though bikeways, trails and other pedestrian routes to support active residents. This discussion included how public and private trail connections may be used to achieve these objectives, and the City acknowledges the need to better communicate and sign public trails and routes so users are comfortable and informed using the system.

In addition to neighborhood pattern, the new mixed-use designations will permit the incorporation of uses such as restaurants, markets, farmers markets, and other events that can be designed to support an active lifestyle for the City's residents, employees and employers. With the growing popularity of farm-to-table dining and experiences that focus on healthy living, Lake Elmo is well-positioned to capitalize on trends that connect its rich rural and agricultural resources with health-conscious consumers seeking fresh high-quality foods and products. As the community grows and new households are added, it will be important for the City to ensure grocery and fresh foods are sold and provided at locations nearby higher concentrations of residents.

Ensuring "Uses" that Support Health are Permitted and Accessible

Closely related to the introduction of more compact development patterns, is the need to provide accessible options to purchase healthy and fresh foods and products. This can be accomplished through ensuring that uses that support that objective are permitted within the City's land use designations and the zoning code. Connection and ease of access are essential components to this objective, so pedestrian, bikeways and other routes to locations with fresh products is important to consider as the City develops and evolves.

Providing an Accessible and Connected Green Network

The City is committed to preservation of its existing natural resource and open space network. In addition to the existing network, the City plans to expand the network as growth areas are developed. Part of this planning process included discussion and recommendations regarding better park, trail and open space connections for residents in existing neighborhoods and in new growing neighborhoods. Natural resource protection, identification, preservation and development creates opportunities to create a network of greenways and trails for residents to utilize for recreation, connection with nature, connection between various neighborhoods and destinations in and around Lake Elmo, and to build a more resilient (and green) infrastructure. Trail development is an important way to promote health and activity in the community. The City's Future Land Use Plan should be implemented to be consistent with Chapter 6: Parks, Trails & Open Space that identifies key trail, natural resource and open space considerations as development occurs within the City's growth areas.

> ***LU Goal #2.*** Enhance Lake Elmo's expansive network of trails, open spaces, and natural resources as amenities in developing areas of the community.
>
> \- Chapter 1: Vision, Goals & Strategies

Parks, Open Space and Natural Resources Integration

Nearly 18% of the City's land acreage is publicly protected as Park or Open Space, and an additional 11% of private lands area is protected with a conservation easement. Natural resources, parks, and open spaces protection and enhancement is one of the City's character defining elements that makes the community a special place to live, work and recreate. The City's expansive natural resources, including woodland, meadow, lakes and wetlands, and rural scenic amenities are sprinkled throughout the heart of the community are valued assets for all residents. The presence of high quality natural resources is important to the lasting effort of balanced development, enduring biodiversity, and opportunity for recreation and connection for area residents. The effort to preserve and enhance these features as an asset for the community and region is a primary objective and specifically stated in several Goals and Strategies within Chapter 1: Vision, Goals & Strategies.

Decision-making related to incorporation of greenways, natural resources, parks and trails associated within this Future Land Use Plan should be consistent with the information found in Chapter 6: Parks, Trails & Open Space.

Access & Transportation

A key component of implementing the Future Land Use Plan is to plan for appropriate access and consider diverse modes of transportation. It is likely that as the growth areas change and develop a more diverse demographic will move to the community and their transportation demands may include alternate modes such as bikeways, pedestrian ways and the desire for transit.

Incorporated on Map 3-3: Future Land Use Plan are the conceptual main thoroughfares through the growth areas that are planned for within the Chapter 7: Transportation. Identification of the east-west roadway connection in the South MUSA planning boundary on the Future Land Use Plan is deliberate and was used to guide compatible and appropriate land uses. It is the intent of the Future Land Use Plan that development along the east-west corridor would support and plan for adequate right-of-way at time of development that would include a multi-use trail that would promote mode choice and accessibility to adjacent neighborhoods. Likewise, a new roadway connection in the Village MUSA planning boundary is identified and the land use plan was developed to encourage higher-densities near the roadway to improve access. More detail regarding new roadways, and the existing transportation, transit, and bikeways system can be found in Chapter 7: Transportation.

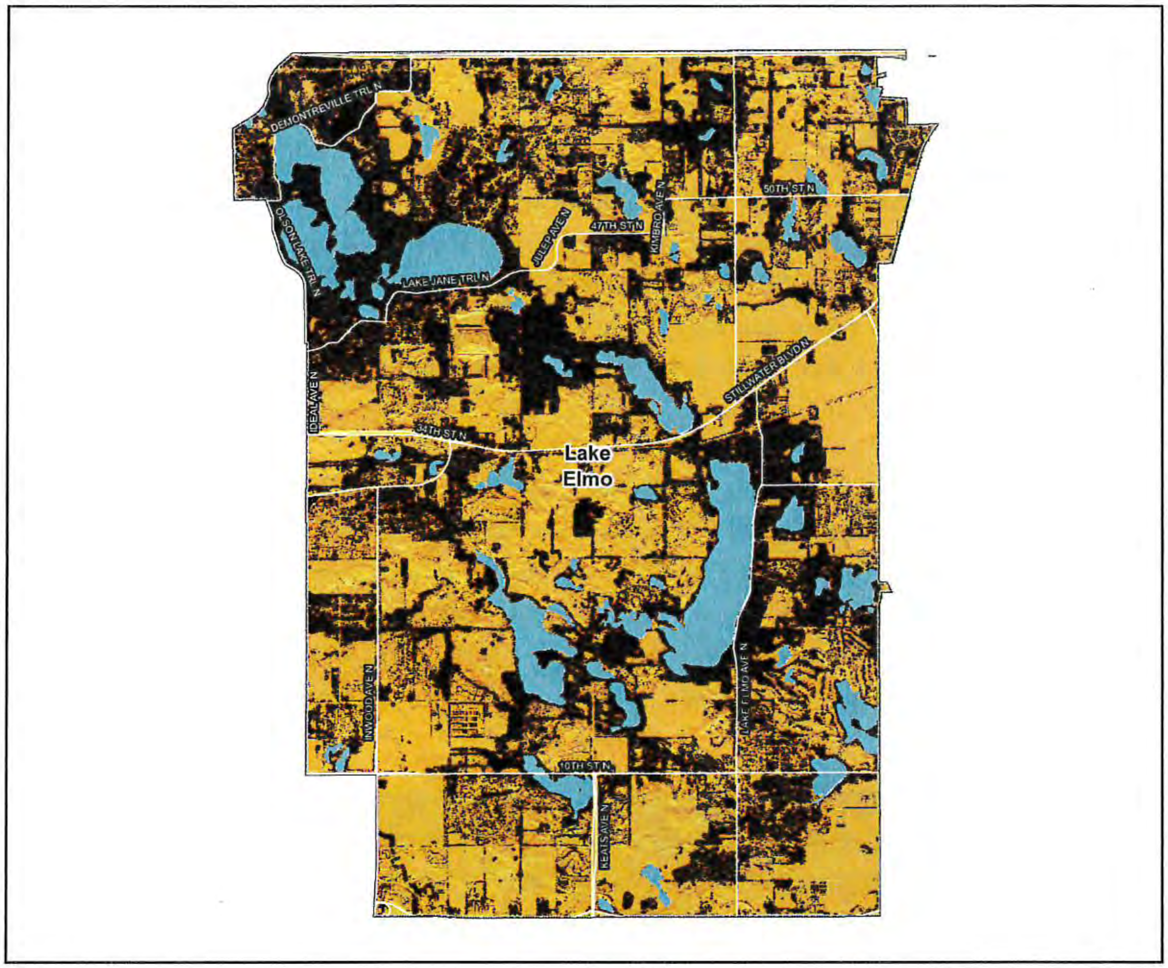
Supporting Resiliency

The purpose of creating a Future Land Use Plan that provides a diverse land use pattern is to allow for the City to adapt and change as needed through this planning period. Better integration of land uses allows for the community to be thoughtful about innovation as the environment changes and new technologies are developed, and creates opportunities to adapt and be responsive. The idea of resiliency is woven throughout this Plan, and is specifically discussed as it relates to the Green Network and Resilient Infrastructure in Chapter 6. It is the intent of the City that the idea of a Green Network be used as part of the decision-making process and allow for improvements in neighborhood and development design as the community evolves and changes through 2040.

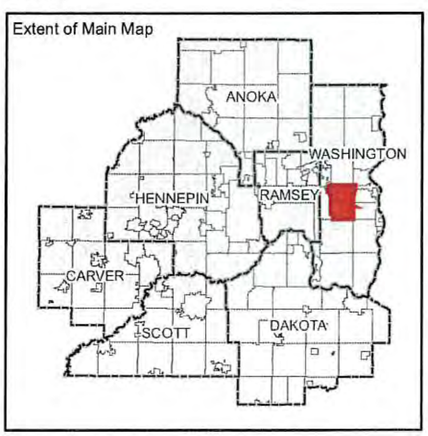
Solar Access

The City has incorporated standards into their zoning ordinances regarding siting of structures and buildings to support access to solar resources. Given the City's dominant residential landscape pattern, options for private property owners including individual homeowners and homeowners associations to capitalize on solar energy are supported by the City's adopted ordinances and official controls.

Map 3-8: Gross Solar Potential



12/20/2016



0 0.5 1 2 3 4
Miles

Gross Solar Potential
(Watt-hours per Year)

High : 1276008

Low : 900001

Solar Potential under 900,000 watt-hours per year

County Boundaries

City and Township Boundaries

Wetlands and Open Water Features

Source: University of Minnesota U-Spatial Statewide Solar Raster.

SPECIAL RESOURCE PROTECTION

A consideration when developing the Future Land Use Plan was to inventory special or unique resources in the community, and to allow these resources (where applicable) to help guide where and when development would occur.

Historical Resources

There are no State or Locally registered historical districts or structures in the Lake Elmo. However, the City strongly supports the preservation of the "Old Village" Main Street, where the village first developed. During the 2030 Planning period, the City developed a set of design guidelines which will help protect existing buildings and ensure new construction integrates well with the existing character and building form of the district.

During this Plan development process the City studied the Old Village area, and concluded that it would benefit from further refinement based on areas contained within the previous Old Village boundary. The result, is that this Plan creates three distinct Districts that describe the use, activities and desired plans based on location within the City's core village area. A full description of the Districts, and how they will shape the core of the village are provided in Chapter 4: Balanced Development & Growth.

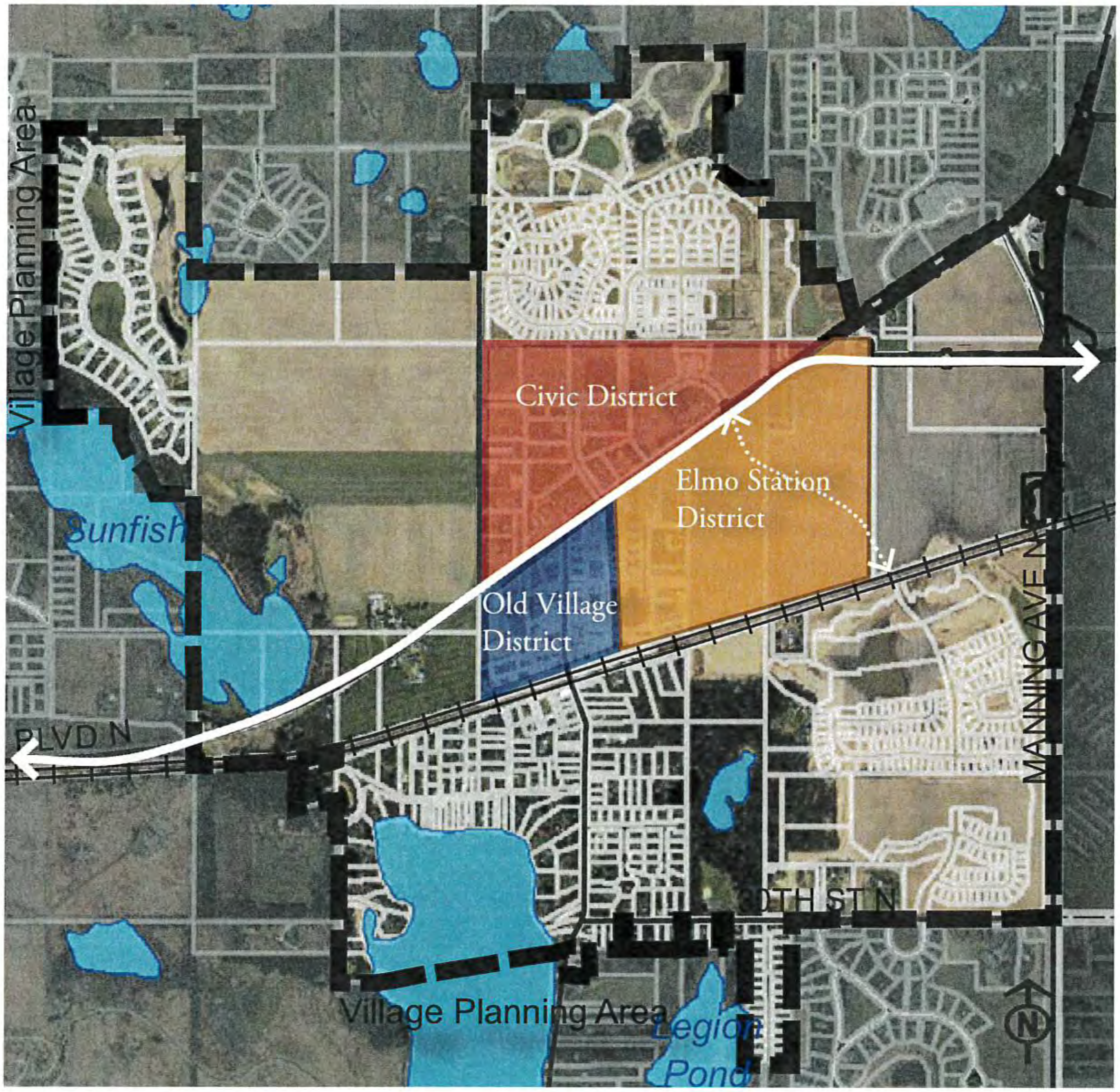
LU Goal #4. Create strong and vibrant Districts in the Village Planning Area that becomes a destination for all residents of the community.

LU Goal #5. Identify and Explore opportunities to improve the streetscape in the Old Village District, Elmo Station District and Civic Center District to create a more walkable environment.

LU Goal #6. Maintain and Strengthen the small-town charm of the Old Village District.

- Chapter 1: Vision, Goals & Strategies

MAP 3-9: District Boundaries in Village Planning Area



Source: Metropolitan Council, City of Lake Elmo, SHC

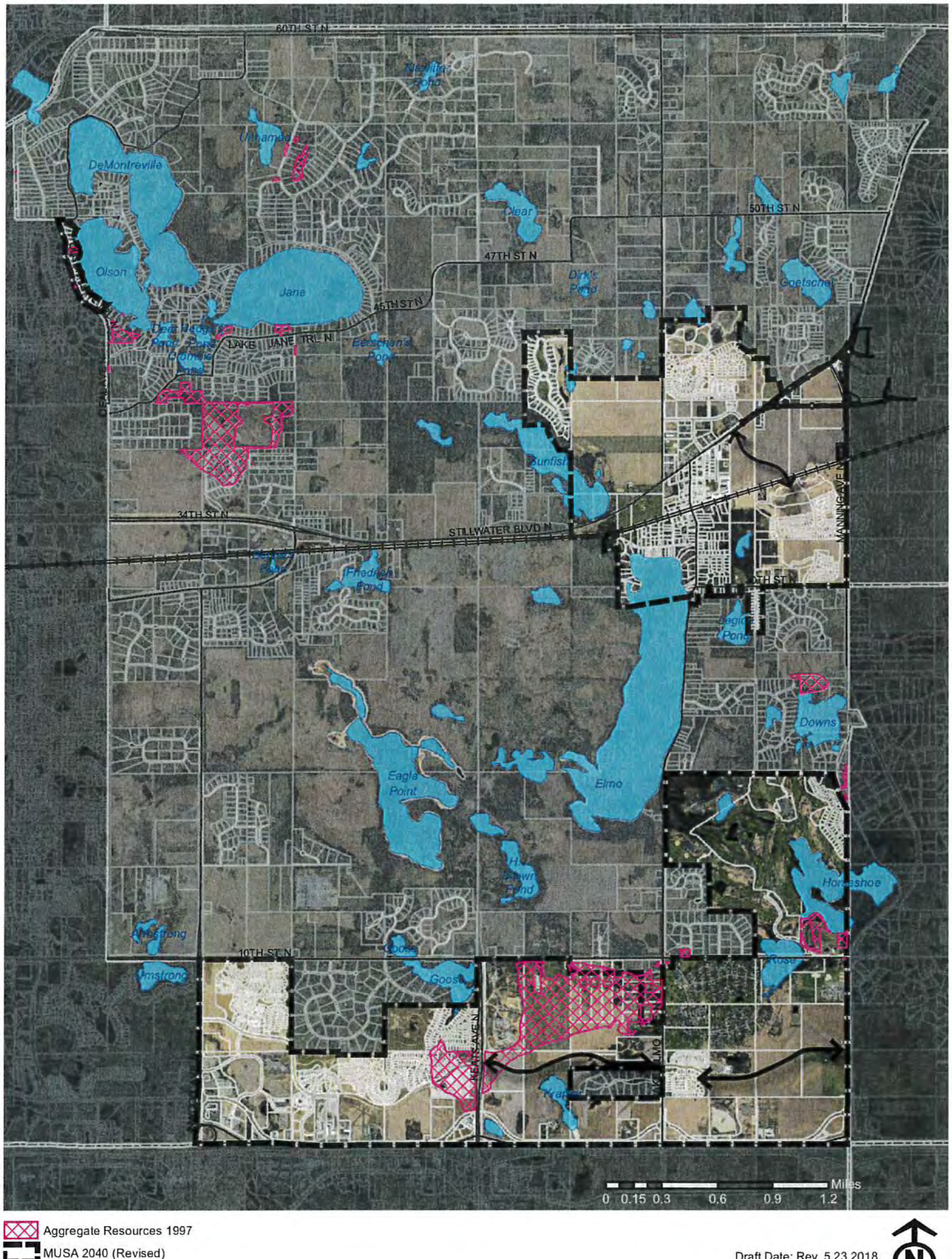
Aggregate Resources

Per the Metropolitan Council's 1997 Aggregate Resources information, there are approximately 324 acres of land identified in the City has having aggregate resource value. Today, there are two active aggregate sites, one located in the northwestern quadrant of the community, which is identified on the 1997 Aggregate Resource Inventory. The second active site is located in the South MUSA boundary, near the Keats intersection with 10th Street North. Adjacent to this site, and designated within the City's post-2035 phasing area, is additional land identified within the 1997 Aggregate Resource map. The existing active sites have been in operation for several decades, and it is the City's understanding that these sites are nearing their useful life and may be exhausted in this planning period. Beyond the active sites, the 1997 Aggregate Resource map identified areas within exiting neighborhoods that are not likely to experience any demand or opportunity for extraction. As aggregate resources are depleted, the land will likely transition into suburban-style development, consistent with the surrounding district. As mentioned, some of the land identified with potential for aggregate resource extraction that has not been mined, is designated within the City's post-2035 phasing area, which does not plan for or anticipate urbanized development over the next 15-years due to existing development patterns and infrastructure planning.

Agricultural Preserve

The City's agrarian and agricultural past continues to be valued by the City, and landowners and homeowners that express interest in preserving agricultural land through the Agricultural Preserve program will be supported by the City. Currently, there are approximately 414-acres of land protected by an Agricultural Preserve covenant per the Metropolitan Council's records, and those properties have been identified and guided appropriately on the Existing and Future Land Use Plan contained within this chapter.

Map 3-10. Aggregate Resource Locations



Chapter 5: Housing

Supply, Demand & Allocations

INTRODUCTION

The City's housing stock is evolving and is slowly becoming more diverse as new neighborhoods throughout the community are beginning to be developed. Prior to the 2030 Plan, the City was dominated by single-family detached housing in a predominantly rural residential setting. The historical development pattern is fairly homogeneous, with some pockets of slightly smaller and older homes near the Old Village District, and around the Tri-Lakes area that remain a vibrant, vital part of the City's housing stock. The City's 2030 Comprehensive Plan was the first to introduce suburban densities into the community, and with that guiding came the opportunity to incorporate more diversity into the housing stock and create a more balanced housing supply that would provide options to a broader demographic. Shortly after the 2030 Plan was put into effect, the housing bust and great recession hit, leaving the residential housing market largely paralyzed, and places like Lake Elmo saw little to no new residential development even though land had been guided to allow new neighborhoods and housing. While the first half the decade very little happened due to the housing bust, by 2015 renewed interest in housing began to emerge. The first signs of recovery in Lake Elmo were consistent with regional and nation trends, which first saw recovery in the single-family detached housing market which is demonstrated in neighborhoods such as Wildflower in the Village Planning Area, and Savona in the South Planning Area.

As the single-family residential housing market heated up and prices began to escalate, interest in attached housing and multi-family products has slowly emerged as a more cost-effective alternative. The delay in demand for attached and multi-family products is particularly noticeable in communities like Lake Elmo; however, current regional trends suggest that the housing market is likely to remain strong, and that Lake Elmo will continue to see increasing demand for new, and more diverse housing stock over this planning period.

Understanding that there will be demand for a more diverse housing stock, the Future Land Use Plan included in Chapter 3 guides residential land use with a range of densities to allow for development of spectrum of households from rural residential neighborhoods to small apartment complexes. The purpose of this chapter is to evaluate Lake Elmo's existing housing stock and to plan for future housing needs based on not only the Future Land Use Plan, but the household and population projections as stated within the City's 2015 System Statement prepared by the Metropolitan Council. Addressing and planning for the City's housing stock is a critical part of this Comprehensive Plan, because residential uses account for the largest existing and future

2040 Housing Highlights

- Greater housing diversity (townhomes and apartments added to mix of housing types, beyond single-family homes)
- Intensification of housing in the South Planning Area and Village Area
- Protect the rural residential areas and neighborhood patterns.
- Staging plan supports diverse housing stock throughout each phasing area.

land use category in Lake Elmo. Moreover, a diverse housing stock with access to open space and essential goods and services is paramount to creating a healthy, sustainable, and resilient community. It protects the community's tax base against market fluctuations; it helps the community's economic competitiveness by assisting Lake Elmo businesses with employee attraction and retention; it provides options for existing residents to remain in the community should their life circumstances (e.g., aging-in-place); and it offers future residents access to the same amenities and levels of service that current residents have come to expect and appreciate.

The first part of this chapter presents important housing principles that underscore the dynamics behind the role and importance of housing as a key element in this Plan. The second part of the Chapter focuses on the existing housing stock and summarizes important information regarding the overall number of housing units, the type of units, their affordability, and the profile of who lives in those units.

The existing housing stock provides a critical baseline of information from which the City can plan and determine what types of housing products may be demanded over the next 10-20 years, which then informed where to appropriately guide land areas suitable to attract that type of development. Finally, the third part of this chapter addresses the projected need for housing during this planning period based on the existing housing and neighborhood conditions and the 2015 System Statement requirements. This section evaluates issues surrounding affordability and the Metropolitan Council's requirements for quantifying need based on income and provides corresponding description of where and how the City might encourage a broader range of affordability in its new neighborhoods. The final section links projected housing need to practical implementation tools to help the City achieve its identified housing goals.



HOUSING PRINCIPLES

The following sections provide context and information about the role housing plays in the community, and how the principles can be supported through thoughtful planning of the City's future housing stock. Throughout this process, residents, stakeholders and the Advisory Panel discussed the visible changes in the housing stock taking place in the community, particularly within the growth areas. Though new development and growth is planned to continue over the next planning period, the existing housing stock and neighborhoods was also an important part of the discussion. What is clear, is that the City is likely to continue to be dominated by residential uses and land use patterns in both the existing areas of the community and in the areas guided for growth and change. Since housing plays such a critical role in the character of the community, it is important for the City to have a universal understanding of the principles that make good houses, neighborhoods and community. The following are some core principles from which this Housing chapter is developed.

Housing Diversity

As described in the Balanced Development and Growth Chapter, and within the introduction of this Chapter, the City has been slowly increasing and improving diversity of its housing stock in new neighborhoods but there are still critical gaps in the City's housing supply. To more effectively describe why diversity is important, understanding what it means to have a diverse housing stock is a critical first step to demonstrating why a diverse housing stock can have long-term positive effects on the City and its residents. A community that has a diverse supply of housing is one that includes different tenures (rental and ownership), types (single family, townhome, and

apartment), price points, sizes and styles. This residential mix can accommodate the needs of a wide variety of households at different life stages, incomes and family types. Furthermore, it provides more options as resident housing needs vary over time due to changes in age, income, housing preference, family structure, or physical abilities. In turn, this enables people to move into a community and remain in it as they experience these life changes while staying close to their established social support networks. For example, a long-term Lake Elmo resident who no longer wishes to care for a large yard will likely choose to move to another housing type within their community with less maintenance needs, if that option is available, before looking at other communities. A diverse supply also provides options for young adults, who grew up in a community, to move out of their parent's home into an apartment or townhome nearby.

In addition to providing improved housing options for residents, a diverse supply of single-family homes, townhomes, and apartments provides local governments with a broad tax base that can withstand changes in economic and housing trends without dramatic impacts on government budgets and services.

Age and housing types aside, a diverse supply of housing price points specifically helps to address the needs of current and projected local workers. Oftentimes employees want to live close to where they work. Employers need a diverse housing supply to help attract and hire the best qualified talent at all wage levels with a variety of home preferences. A full range of home options is needed to match the needs of a diverse workforce.

Housing Stability

For many people, a stable home is a critical component to their quality of life. Quality of life can mean something different to many people, but with respect to housing it is often associated with a feeling that their home feels safe in terms of its surrounding neighborhood and the physical structure, and that they expect to be able to reside there for the near future. This degree of certainty in a home is often the foundation needed to pursue life goals and to fulfill their potential. A central aspect to a stable home is affordability, and the industry has generally quantified this as defined as paying no more than 30% of gross income toward home expenses. If forced to pay more, a household may forgo health care, food, education, transportation and other expenses in order to pay their mortgage or rent and utilities. In that situation, an essential car repair may mean making the difficult choice between reliable transportation and risking mortgage defaults or evictions. Frequent moves, in an attempt to afford a suitable home, place a lot of stress on households. For families with children, this often results in a change in schools, daily work commutes, and access to supportive friends and family. For seniors, it may impact access to healthcare, transportation, and long established social networks. A community with quality affordable housing helps to ensure the stability of both neighborhoods and communities that greatly benefit its residents and businesses.

Workforce Housing

The Washington County Community Development Agency (CDA) conducted research that revealed a mismatch between the wages of many who work in Washington County (County) and the cost of housing in the County, this mismatch is particularly pronounced in the City of Lake Elmo. The County has the third highest median household income in the Metro Area and one of the highest costs of living in the state. However, the average weekly wage for the workers employed in the County is 37 percent lower than the Metro Area average. There are two contributing factors: 1) many jobs in the County are low skill and do not pay enough to afford the housing that currently exists in the County; and 2) there is a lack of modestly priced options in the County affordable at that wage level. To be a vibrant and growing community, it is important to have a good mix of jobs across a wide wage range as well as enough housing that is accessible to all income levels so that those that work in the County can also call it home.

For the business sector to grow and expand, a reliable labor force is needed to fuel it. Available and financially accessible housing helps to attract a talented workforce to fill these job opportunities so they can live near their place of work. Workers often look for jobs that are located near attractive housing options. This also helps to retain current workers who wish to be at a company for the long term thereby avoiding unnecessary and costly employee turn-overs.

EXISTING HOUSING SUPPLY

The previous sections are intended to provide context from which to consider the City's existing housing stock, and to eventually consider how the City map plan for future needs in the housing stock. This section provides information about the current housing stock in Lake Elmo that is most relevant to consider when planning for the future of the City's housing. This information is a synthesis of more detailed housing and socio-economic data that is included in Appendix, which was used to inform the remaining content of this chapter.

Key Housing Characteristics

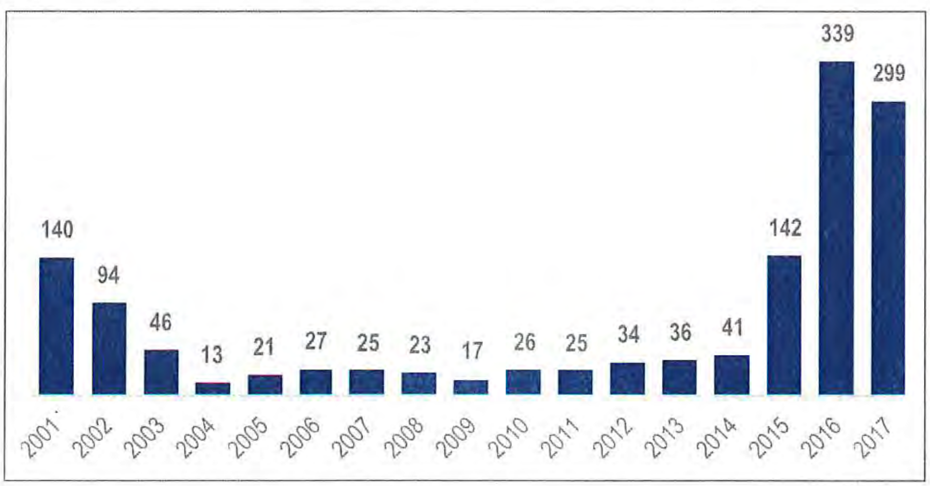
Total Housing Units & Recent Construction Trends

3,606 Lake Elmo housing units as of December 31, 2017

- Sources: Metropolitan Council: City of Lake Elmo

According to data from the Metropolitan Council and the City of Lake Elmo, there are 3,606 housing units in Lake Elmo as of 2017. As seen in Figure 4-1. Housing Construction Permits 2001-2017, a 10-year period of very limited new construction proceeds Lake Elmo's current strong housing market and rapid growth adding approximately 300 new housing units per year. It is important to keep in mind, though, that the housing sector, like all real estate sectors, is cyclical. Therefore, not every year during the planning period will likely see similar quantities of new housing development. As a result, it will be important to track housing development on an on-going basis to understand how broader market trends are influencing the growth and change of Lake Elmo.

Figure 5-1. Housing Construction Permits 2001-2017 (units)



Sources: Metropolitan Council; City of Lake Elmo

Year Built

Although recent construction in Lake Elmo is adding a lot of new housing units, over 40 percent of the City's housing stock (1,500 units) is more than 40 years old. Therefore, it will be important to track the condition of these older homes because they are at-risk of deferred maintenance, which can rapidly result in critical structural problems. At the same time, well-maintained older housing can be an important source of entry-housing.

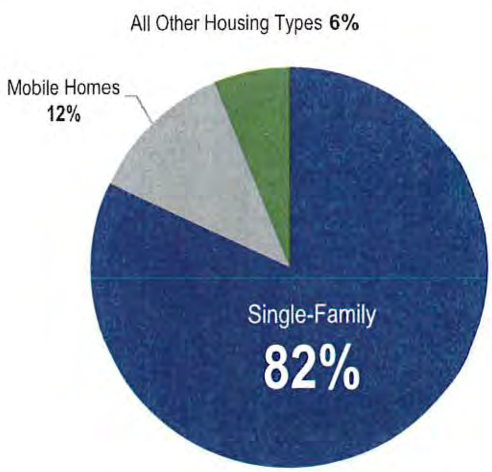
40% Lake Elmo housing stock more than 40 years old

- Sources: US Census; Metropolitan Council; City of Lake Elmo

Housing Type

Lake Elmo's existing housing stock is dominated by detached, single-family homes as seen in Figure 5-2. Housing Stock by Structure Type. According to data from the Metropolitan Council, 82 percent of the City's housing stock (2,955 units) consists of single-family homes. Moreover, the remaining housing stock mostly consists of manufactured housing or mobile homes, which account for 12 percent of the housing stock of 428 units. This means only six percent of the housing stock (223 units) is something other than a single-family home or mobile home. More housing choices will help older adults to remain in the community as they age-in-place and younger adults to move into the community.

Figure 5-2. Housing Stock by Structure Type (2017)



Sources: Metropolitan Council; City of Lake Elmo

Housing Goal #4. Protect and preserve the existing housing stock of established neighborhoods.

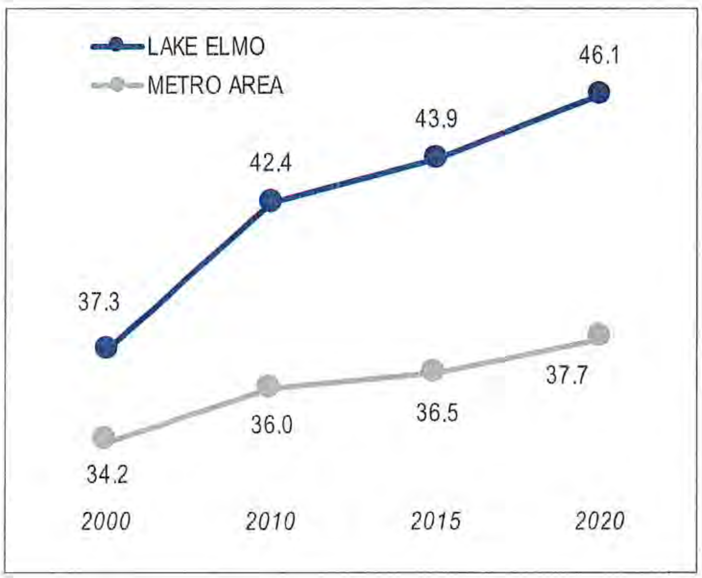
- Chapter 1: Vision, Goals & Strategies

Although single family homes can be a very flexible type of housing, it does mean that the community has a lack of housing choices. This can have an impact on both existing residents who may desire a different housing type and those who may want to move into the community. This is especially true for older residents who no longer want or are able to maintain a single-family home. Currently, the only option for Lake Elmo residents in need of housing with support services is Arbor Glen Senior Living, which opened in 2017. However, for older adults who do not need support services, but would prefer low maintenance housing, the options are limited to small pockets of new developments such as the villa-style products in Inwood.

Key Demographics

The issue of being able to adequately house an aging population will only become more important in the coming years. According to data from the US Census, Lake Elmo is already a community with a high proportion of older adults. Illustrated in Figure 5-3. Median Age of the Population, the median age of Lake Elmo residents in 2015 was 44 years, which was almost 8 years older than the Metro Area median age. The Minnesota State Demographer anticipates Lake Elmo's median age will increase, and by 2020, they expect the City's median age to be just over 46. Therefore, the housing needs of an older population will become increasingly important in the years to come.

Figure 5-3. Median Age of the Population (2015)



Sources: US Census; Minnesota State Demographer; Perkins+Will

At the same time, Lake Elmo has surprisingly few residents age 25 to 34. Currently, a little over five percent of the City's population is in this age group. Metro-wide the percentage is three times this amount at just over 15 percent. The lack of young adults is likely the result of few entry-level housing options.

5% of Lake Elmo residents are 25-34 years old

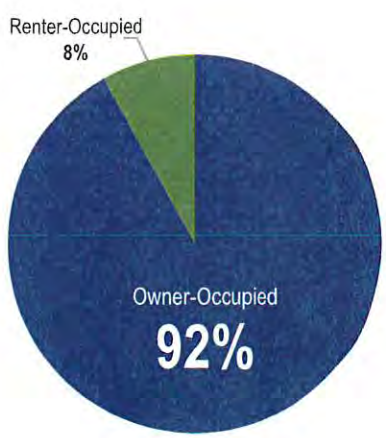
15% of Metro Area residents are 25-34 years old

- Source: US Census

Homeownership Level

The predominance of single-family homes helps explain why almost all of the housing stock is owner-occupied (92% or 3,402 units) versus renter-occupied (8% or 204 units) as seen in Figure 5-4. Lake Elmo Homeownership. Although homeownership is an important path to building wealth and promoting greater civic involvement, depending on where households are in their lifecycle, homeownership also can be a financial burden. For example, many older adults have health concerns that make maintenance and upkeep of their housing a physical and financial challenge. Younger persons who grow up in a community and want to form their own household often don't have the savings to enter homeownership. Without rental options, these population groups are forced to leave the community to find housing that will accommodate their circumstances. The only existing rental options are single-family homes or the recently completed Arbor Glen Senior Living residence.

Figure 5-4. Lake Elmo Homeownership (2017)

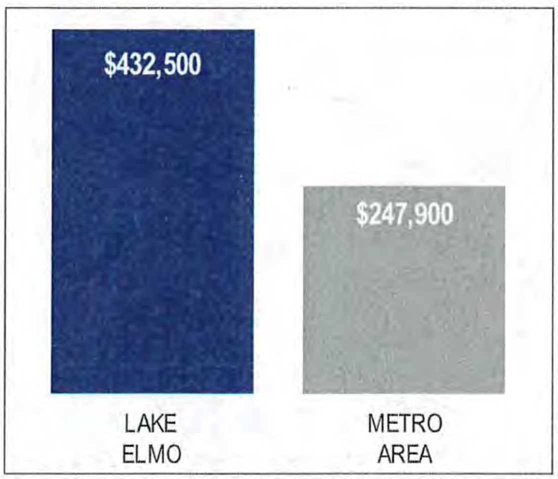


Sources: Metropolitan Council; City of Lake Elmo

Home Values & Household Income

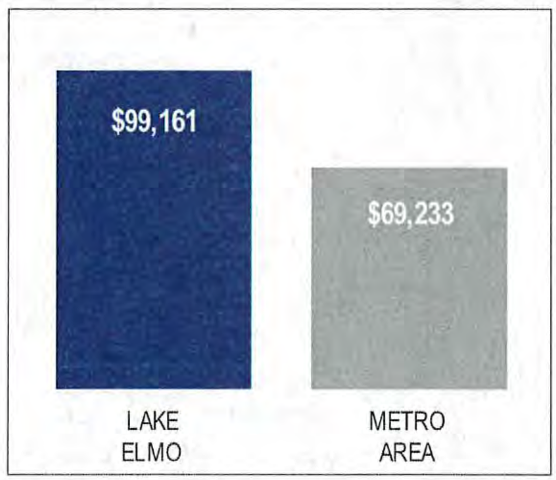
Lake Elmo has high housing values compared to the larger Metro Area. According to the Minneapolis Area Association of Realtors, the 2017 median sales price of homes in Lake Elmo was $432,500, which was $185,000 more than the Metro Area median sales price of $247,900 illustrated in Figure 5-5. Median Home Sales Price. High home prices are attributed to larger homes sizes, newer housing stock, and larger lot sizes as well as the community's advantageous location within the region given its proximity to numerous open space amenities, retail shopping and services, and major employment centers. Despite the high average home prices, there are areas within the City with less costly housing. In particular, older and smaller homes are concentrated near the Old Village, Tablyn Park, and in the Cimmaron Mobile Home Park.

Figure 5-5. Median Home Sales Price (2017)



Source: Minneapolis Area Association of Realtors

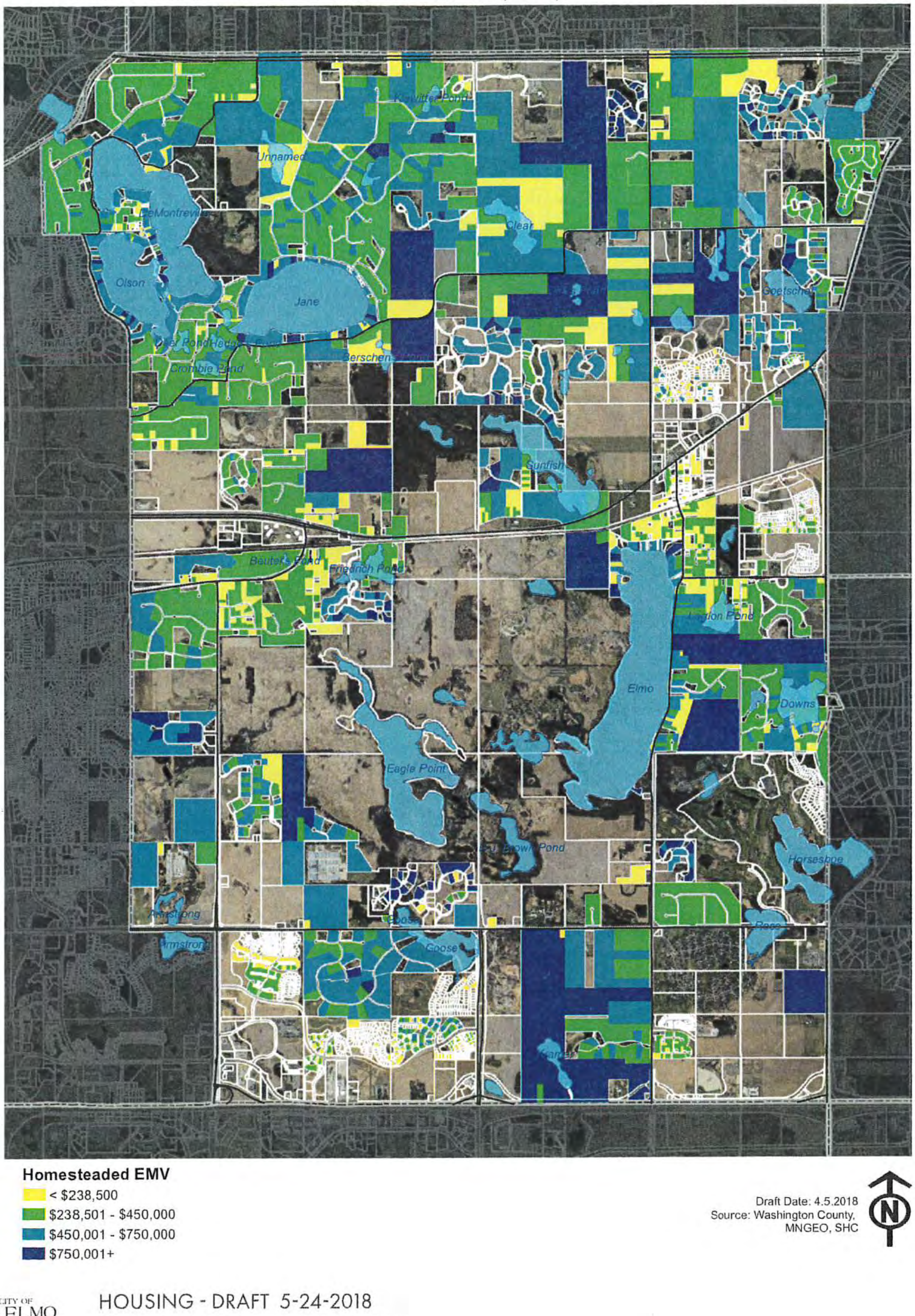
Figure 5-6. Median Household Income (2015)



Source: US Census

The cost of housing also has a strong influence on who lives in Lake Elmo. The result is a community that is much older and wealthier than the Metro Area. According to the US Census, the 2015 median household income for Lake Elmo was just under $100,000, which was 35 percent higher than the metro area median household income of $69,000 as seen in Figure 5-6. Median Household Income. High household incomes have more to do with few younger households than a concentration of wealth. If the community had more younger households, the median would likely be lower.

MAP 5-1. Assessor Estimated Home Values (2018)



HOUSING DEMAND & AFFORDABILITY

The existing conditions of the City's housing stock provide valuable insight and information to assist in planning for what types of housing and price-points may be demanded in the future as the City continues to grow. As described in the previous sections of this chapter, the existing housing stock is relatively homogeneous and expensive. By planning for improved housing diversity, the City will experience a more stable, well-rounded housing supply to meet the demands of a diverse demographic. To assist in that planning effort, this section of the housing plan analyzes the affordability of Lake Elmo's existing housing stock and compares it to the City's ability to meet the current and forecasted housing needs. One of the most important factors in analyzing the housing stock is its affordability and marketability. As demonstrated in previous sections of this Chapter, the majority of Lake Elmo's housing stock is not considered affordable. Some of the conditions that limit affordability are the newer age of the housing stock, the larger size of the homes and lots, and also Lake Elmo's geographic location in the region. These same factors also contribute to the City's marketability and housing value. With newer and larger homes, the average market value of the homes is more than that of other communities that may have more typical suburban size lots, more modest homes, and an older housing stock.

Definition of Affordability

There are several different definitions of affordable housing. The definition of affordable housing most frequently cited and measured in this chapter is that housing is affordable when households do not pay more than 30 percent of their income on housing costs. (Defined by the U.S. Department of Housing and Urban Development or "HUD"). When households have incomes at or below 80 percent of the area median income (AMI) costs associated with market rate housing (whether ownership or rental) becomes a challenge. This household group tends to pay more than 30 percent of their income on housing and has less disposable income to pay for other goods and services such as clothing, food, child care, transportation, and medical expenses. In addition, those residents with lower incomes have significantly fewer housing choices to meet their family needs.

As required by 2015 System Statements issued by the Metropolitan Council, cities within the 7-County Metropolitan Area are required to plan for an allocated number affordable housing units based on three levels of affordability. As prescribed by HUD for the Twin Cities region, the three levels are: Extremely Low Income (30% of Area Median Income "AMI" or less); Very Low Income (31-50% of AMI); and Low Income (51-80% of AMI).

Ownership Housing Affordability

Table 5-1 identifies the housing costs/prices that meet each of the affordability levels for home ownership in Lake Elmo. The Metropolitan Council determines affordable home prices based on monthly housing costs, assuming a 30-year fixed-rate mortgage at prevailing interest rates, insurance, and utilities.

Table 5-1. 2017 Affordable Purchase Price for Owner-Occupied Housing

hHousehold Income Level	Affordable Home Price
80% AMI ($68,000)	$236,000
60% AMI ($54,240)	$185,000
50% AMI ($45,200)	$151,500
30% AMI ($27,100)	$85,000

Source: Metropolitan Council

Table 5-2 identifies the monthly rental housing costs that meet each of the affordability levels for rental housing in Lake Elmo. Based on HUD defined parameters, the Metropolitan Council determines affordable rents based on the number of bedrooms assuming that smaller units can and should accommodate smaller households.

Table 5-2. 2017 Affordable Rental Rates

# of Bedrooms	30% of AMI	50% of AMI	60% of AMI	80% of AMI
Studio/Efficiency	$474	$791	$949	$1,265
1 Bedroom	$508	$848	$1,017	$1,356
2 Bedroom	$610	$1,017	$1,220	$1,627
3 Bedroom	$705	$1,175	$1,410	$1,880
4 Bedroom	$786	$1,311	$1,573	$2,097

Source: Metropolitan Council

Existing Affordable Units

Table 5-3 compiles an inventory of the estimated market value of ownership housing and of rental rates to determine what percentage of the City's housing stock would be considered Affordable based on the levels established by HUD for the region. As shown, 24 percent of the City's housing stock (865 units) is at or below 80 percent of AMI, with 13 percent of the housing stock (473 units) at or below 50 percent of AMI. A significant proportion of the City's affordable housing stock is located in the Cimmaron Mobile Home Park, and in the historic neighborhoods surrounding the Old Village District.

As suggested by the City's median home sales price, Lake Elmo's overall housing stock is not affordable, especially when compared to the Metro Area's percentage of housing units that are considered affordable. Regionally, 68 percent of the housing stock is affordable at or below 80 percent of AMI and 28 percent is affordable at or below 50 percent of AMI.

Table 5-3. Lake Elmo Affordable Housing Stock

	Lake Elmo Units	Pct. of All hHousing uUnits	Metro Area Pct. of All Housing Units
Units affordable to households with income at or below 30% of AMI	373	10.3%	6.5%
Units affordable to households with income 31% to 50% of AMI	100	2.8%	21.8%
Units affordable to households with income 51% to 80% of AMI	392	10.9%	39.9%
Total Units at or below 80% AMI	**865**	**24.0%**	**68.3%**

Source: Metropolitan Council staff estimates for 2015 based on 2105 and 2016 MetroGIS Parcel Datasets (ownership units), 2009-2013 Comprehensive Housing Affordability Strategy data from HUD (rental units and household income), and the Council's 2015 Manufactured Housing Parks Survey (manufactured homes).

Publicly Subsidized Units

As of 2017, Lake Elmo does not have any publicly subsidized housing units.

Cost Burdened Households

Directly correlated to affordability is the metric of cost burden, which is the proportion of household income spent toward housing and utilities. When lower income households spend more than 30 percent of their income toward housing and utilities this burden is considered excessive because it begins to limit the money available for other essentials such as food, clothing, transportation, and healthcare. Table X-4 shows the number and percentage of low-income Lake Elmo households that are cost burdened and compares this against the Metro Area rate of cost burdened low-income households.
According to data from the Metropolitan Council, 418 Lake Elmo households have incomes at or below AMI and also spend more than 30 percent of their income on housing costs. This is just under 12 percent of the City's households. This percentage is less than half the Metro Area rate of 23 percent. The low incidence of cost burdened households is correlated with high proportion of households in their peak earning years (i.e., age 45-64) with higher than average incomes and the existing housing supply.
As Lake Elmo's population ages into retirement, and younger households are needed to support local business expansion, housing that is cost burden to lower income households will increase.

Table 5-4. Cost Burdened Households by Income Level

	Lake Elmo Units	Percentage of All Households	Metro Area Percentage of All Households
Income at or below 30% of AMI	200	5.5%	10.0%
Income 31% to 50% of AMI	151	4.2%	7.4%
Income 51% to 80% of AMI	67	1.9%	5.8%
Total households at or below 80% AMI	**418**	**11.6%**	**23.2%**

Note: Housing cost burden refers to households whose housing costs are at least 30% of their income. Source: U.S. Department of Housing and Urban Development, 2009-2013 Comprehensive Housing Affordability Strategy (CHAS) data, with counts adjusted to better match Metropolitan Council 2015 household estimates.

Affordable Housing Allocation for Lake Elmo

Included within the 2015 System Statement provided by the Metropolitan Council is an allocation of affordable housing need for the City of Lake Elmo. The System Statement requires the City to plan for an additional 508 Affordable Units over the next 20 years (Table 5-5). Because of the limited supply of existing affordable housing, the Metropolitan Council is establishing an allocation of new affordable units to meet both regional goals for housing affordability and to ensure greater housing choice within Lake Elmo as it grows and its housing needs become more diverse. As such, land use designations contained within Chapter 3. Land Use assign appropriate densities to developing or redevelopment areas to meet the Metropolitan Council's affordable allocation.

Table 5-5. Affordable Housing Need Allocation through 2030

% of Area Median Income (AMI)	Units
At or below 30% AMI	27
31 to 50% AMI	179
51 to 80% AMI	302
Total Units	**508**

Source: Metropolitan Council 2015 Systems Statement - Lake Elmo

FUTURE HOUSING OPPORTUNITIES

Projected Housing Need

The Metropolitan Council's 2015 System Statement forecasts that Lake Elmo will add approximately 3,500 new households through 2040. This amount of household growth will generate need for a more diverse housing stock. As a community that is both aging and growing, it will be important that a much wider selection of housing be made available in order to retain existing residents and attract new ones. Therefore, more housing options besides detached single-family units on large lots and mobile homes will need to be accommodated.

3,500

Number of forecasted new households in Lake Elmo through 2040

- Source: Metropolitan Council

This housing plan does not prescribe specific housing products or styles, but it does identify where within the land use plan different housing types, primarily through guided densities, can be accommodated. For example, the 2015 System Statement allocates 508 new affordable housing units in Lake Elmo through 2030. It does not stipulate that these be rental or owner; it does not stipulate that these units be attached or detached; nor does it stipulate that they be publicly subsidized or dependent on market dynamics. However, housing affordability is strongly correlated with the price of land. Therefore, areas that allow higher densities are more likely to accommodate a range of housing types and price points.

508

Number of allocated affordable housing units through 2030

- Source: Metropolitan Council

Future Residential Uses in Planned Growth Areas

Higher Density Residential Areas

The Land Use Plan outlined in Chapter 3 identifies two planned growth areas both within the Municipal Urban Services Area (MUSA): 1) the South Planning Area; and 2) the Village Planning Area. Both planned growth areas call for new residential land uses at a sufficient density to accommodate a variety of housing types at densities that could support the number of allocated affordable units at the three income levels. Table 5-6 below describes the future land use categories, the allowable density ranges, and the minimum number of supportable future units. According to the guided densities and staging plan, these three high density areas could accommodate, at minimum, a total of approximately 958 dwelling units between 2020 and 2030, which exceeds the required allocated affordable units.

Table 5-6. Planned Residential Uses Supportive of Affordable Housing

Future Land Use	Residential Density (dwelling units/acre)	Total Acres	Supportable Households/ Dwellings
High Density Residential (HDR)	8.01-15	79.99	640
Mixed Use Commercial (MU-C)	10-15	31.86	318
Total 2020-2030 Higher Density Residential		**111.85**	**958**
Net Density 2020-2040 (All Planned Residential Areas)			***8.6 dwelling units/acre***

Source: SHC, Perkins+Will, City of Lake Elmo

Moreover, the two residential land use categories would be proximate to mixed-use and commercial districts in which essential goods and services, transit, and employment opportunities would be planned to be available.

Housing Goal #1. **Create land use designations that support various housing types throughout the community.**

- Chapter 1: Vision, Goals & Strategies

Other Sewered Residential Areas

In addition to new residential development envisioned in higher density areas between 2020 and 2030, the housing plan also calls for significant residential development in the planned growth areas at lower densities and in future staging period. According to the land use plan, the growth areas could accommodate approximately 2,386 housing units through 2040. These residential categories range from low density areas to mixed use districts that could support relatively high density development, such as housing above ground floor commercial space, or horizontally integrated uses that are connected with walking trails between job centers and apartments.

Rural Residential Areas

Lake Elmo has a rich history of supporting innovative conservation developments and other unsewered residential neighborhoods. These residential areas preserve critical open space and contribute to Lake Elmo's high quality of life. Although this Plan does not plan for significant residential growth in the rural portions of Lake Elmo, some growth in this area of the community is anticipated to occur over this planning period. Like housing in the sewered areas of the community, the City's Rural Residential housing stock is an important part of the housing supply that must be planned for and considered as the community grows. An important consideration of any future residential developments in these areas should respect past efforts to protect and preserve important open spaces, critical habitats, and water resources.

> *Housing Goal #3.* **Endorse and sustain existing neighborhood patterns throughout the rural residential areas of the community.**
>
> \- Chapter 1: Vision, Goals & Strategies

Maintaining Existing Housing & Neighborhoods

While the City is projected to more than double its households in this planning period, there remains a significant portion of the housing supply that is aging and may begin to experience deferred maintenance, and structural obsolescence if not maintained. As such, it is critical that the City plan for and consider how existing neighborhoods and structures, particularly as they age, will be maintained. Many of these neighborhoods are constructed with high-end, large homes and lots but there are also areas of the City with smaller houses and lots that are an important piece of the City's history, as well as a contributor to the small proportion of naturally occurring affordable houses in the community. These neighborhoods, at all price-points, are an important part of the City's character, and it is important for the community to continue to prioritize these areas for preservation and maintenance as an important part of the City's housing stock.

HOUSING RESOURCES, STRATEGIES & TOOLS

Table 5-7 outlines a variety of resources and tools to implement Lake Elmo's identified housing needs and stated housing goals. There is a wealth of resources available to assist communities in meeting their goals. The table below should be considered a starting point. As the City's housing needs evolve or become more defined, it should expand with options.

Table 5-7. Housing Resources and Tools

Housing Goal	Tool/Resource/Strategy	Description
Protect and Preserve Housing Stock of Existing Neighborhoods	CDBG	Work with Washington County CDA to use CDBG funds to help low- and moderate-income homeowners with rehabilitation assistance.
	Referrals	Review and update reference procedures and training for applicable staff, including a plan to maintain our ability to refer our residents to any applicable housing programs outside the scope of our local services.
	Foreclosure prevention	In established neighborhoods, a rash of foreclosures, especially in close proximity to one another, can have a deleterious effect on the surrounding neighborhood. Be aware of foreclosures and be able to direct homeowners at-risk of foreclosure to resources that can help prevent foreclosures (can http://www.foreclosure-response.org/policy_guide/index.html).
Explore ways to integrate lifecycle housing choices throughout the community	Washington County Community Development Agency (CDA)	Given the limited staff capacity of Lake Elmo, regularly coordinate with the Washington County CDA to best align their resources with the city's housing needs and goals. The CDA has capacity, funding resources, and expertise to assist smaller communities with their housing needs.
	Livable Communities Demonstration Account (LCDA)	Consider supporting/sponsoring an application to LCDA programs for multi-family rental proposals in areas guided for high density residential and targeted to households of all income levels.
	Tax Abatement	Consider tax abatement for large rental project proposals.
	Zoning and Subdivision ordinances	Review zoning and subdivision ordinances to identify any regulations that inhibit the housing priorities in this document.
	Expedited application process	Streamline the pre-application process in order to minimize unnecessary delay for projects that address our stated housing needs, prior to a formal application submittal.
	Site Assembly	Consider strategies for assembling sites in high-density or mixed-use districts that would increase appeal to developers.
	Housing Bonds	Work with Washington County CDA to raise housing bonds for the development of low-income housing at various targeted income levels.
	Tax Increment Financing (TIF)	To help meet the need for low-income housing, consider establishing a TIF district in an area guided for high density development.
	Brownfield Clean-Up	In potential redevelopment areas in the Old Village or along the I-94 corridor, explore EPA and MN DEED grant programs that provide funding and assistance with planning, assessment, and site clean-up.

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Chapter 7: Transportation

Mode Choice, Safety & Connections

INTRODUCTION

The purpose of the Transportation Chapter is to guide development, maintenance, and improvement of the community's transportation network. This Chapter incorporates and addresses the City's future transportation needs based on the planned future land uses, development areas, housing, parks and trail systems.

The City's transportation network is comprised of several systems including roadways, transit services, trails, railroads and aviation that all work together to move people and goods throughout, and within, the City. This Chapter identifies the existing and proposed transportation system, examines potential deficiencies, and sets investment priorities. The following Chapter plans for an integrated transportation system that addresses each of the following topics in separate sections:

- Roadway System
- Transit
- Trails
- Rail
- Aviation

The last section of this Chapter provides a summary and implementation section which addresses each of the components of the system, if any additional action within this planning period is expected. The implementation plan sets the groundwork for investment and improvements to the transportation network consistent with the goals, analyses, and conclusions of this Plan.

As discussed in preceding Chapters of this Comprehensive Plan, the Transportation Chapter is intended to be dynamic and responsive to the City's planned land uses and development patterns. As the City's conditions change and improvements occur, this Chapter should be reviewed for consistency with the Plan to ensure that the transportation systems support the City's ultimate vision for the community through this planning period.

Transportation System Objectives

Through this planning process update, the City's Advisory Panel, members of the public, staff and policy makers discussed the relationship between planned land uses, development areas and the transportation network. The feedback received from this process included comments about specific intersections, questions about future roadway improvements, and discussion about larger policy statements regarding transit and trail planning. While there was a range of detail received, there were a few common objectives for the system that remained consistent with those stated in the 2030 Plan, which are identified as follows:

Creating a Connected System

Universally, the City and its constituents identified a safe, efficient, and connected system as critical to the success of the transportation system in the community. Residents and business owners identified the need for personal, accessible transportation systems with multi-modal choice as an important consideration as the City grows and development occurs. Business owners and stakeholders echoed that sentiment, focusing on accessibility to and from their locations to promote a healthy stable business environment. Slightly different than the 2030 Plan, feedback communicated through this planning process focused on the need to improve and create a more connected trail network that would include accommodations for bikeways as an alternate transportation mode choice. Less focus and feedback were received regarding protection of the rural character, and instead there was a distinction made between the types of systems that might be needed in the rural residential areas versus the system improvements that would be needed in the developing areas. Much like the feedback reflected in the Land Use and Balanced Development and Growth Chapters of this Plan, the community's desire is to create a cohesive transportation system that minimizes disruption to the environmental quality of all areas of the community; is respectful of the rural residential areas of the community; and plans for an efficient and effective system in the developing areas of the community.

ROADWAY SYSTEM

The roadway system is the City's primary component of the transportation system and is the component of the transportation system used most frequently by residents and businesses in the City. The roads are used for commutes, deliveries, and other basic travel. This section describes the existing roadway system and provides a guide from which future roadways should be planned as development occurs in the City.

Existing Roadway System

The existing roadway system can be described with respect to several characteristics including jurisdictional classification, functional classification, physical location and construction. The following sections describe each of these characteristics with respect to the existing roadway system in the community.

Roadway Jurisdiction

The jurisdiction of a roadway is an important consideration in the planning process because it indicates who the responsible agency or party is for maintenance, management, permitting, and possible future improvements. Turnbacks are typically forced from higher level jurisdictions to lower level jurisdictions. Therefore, it is an important part of the City's understanding of the existing roadway system, as well as any recommended improvements which are discussed in subsequent sections of this Chapter. The tables that follow describe the existing jurisdiction of roadways serving the community, as well as provide an indication of how the City's existing system compares to the region.

Table 7-1: Roadway Jurisdiction and Names

Roadway Jurisdiction	**Roadway Type**	**Roadway Name**
Federal	Interstate US Highway	None None
Minnesota	Trunk Highway (TH)	TH 36
Washington County	County State-Aid Highway (CSAH) County Road (CR)	Stillwater Blvd (CSAH 6) 10th St (CSAH 10) Ideal Ave/Olson Lake Tr (CSAH 13) Inwood Avenue (CSAH 13) 34th St/Stillwater Blvd/40th St (CSAH 14) Manning Ave (CSAH 15) Lake Elmo Ave (CSAH 17) Keats Ave (CSAH 19) 50th St (CSAH 35) Lake Elmo Ave (CR 17B)
City of Lake Elmo	Municipal State-Aid (MSA) Municipal/Local	Jamaca Ave (MSA 103) Lake Jane Tr/45th St/Julep Ave/47th St/Kimbro Ave/43rd St (MSA 104) Keats Ave (MSA 105) Upper 33rd St/Laverne Ave (MSA 106) 20th St (MSA 107) 30th St (MSA 108) 15th St (MSA 110) 50th St (MSA 111) Eagle Point Blvd (MSA 112) Helmo Ave (MSA 113) 39th St (MSA 114) Manning Tr (MSA 115) Demontreville Tr (MSA 119) Hudson Boulevard (MSA 120) 5th Street North (MSA 121) All remaining roads

Table 7-2: Roadway Jurisdiction Type Compared to Region

Roadway Jurisdiction & Type	Lake Elmo Mileage (%)	Washington County Mileage (%)	Minnesota Mileage (%)
Federal			
Interstate	0.0 (0.0%)	26.6 (1.4%)	913.9 (0.7%)
US Highway	0.0 (0.0%)	30.2 (1.6%)	3,224.7 (2.4%)
Minnesota			
Trunk Highway **(36?)**	0.0 (0.0%)	82.1 (4.4%)	7,731.0 (5.7%)
Washington County			
County State-Aid	23.51 (21.5%)	215.1 (11.6%)	30,506.9 (22.5%)
County Road	1.0 (0.9%)	68.1 (3.7%)	14,489.5 (10.7%)
Municipal			
Municipal State-Aid	18.12 (16.6%)	181.6 (9.7%)	3,063.5 (2.3%)
Municipal/Local	66.57 (61.0%)	1,083.1 (58.1%)	16,006.7 (11.8%)
Other			
Township, Park, etc.	0.0 (0.0%)	176.1 (9.5%)	59,583.3(43.9%)
Totals	109.2 (100%)	1,862.8 (100%)	135,519.4 (100%)

ROADWAY FUNCTIONAL CLASSIFICATION

The Metropolitan Council has established a functional classification system for classifying roadways serving the Twin Cities Metropolitan Area. This system establishes a hierarchy of roads to collect and distribute traffic from local neighborhood properties to the metropolitan highway system. The functional classification system for roadways is broken down into four categories: Principal Arterials, Minor Arterials, Collectors, and Local Roadways.

Principal Arterials

Principal arterials, generally interstates and trunk highways, provide high-speed mobility between the Twin Cities and important locations outside the Metropolitan Area. They also connect the central business districts of Minneapolis and Saint Paul with other regional business centers. Principal arterials are generally constructed as limited access freeways in the urban area but may also be constructed as multiple-lane divided highways. Principal arterials are primarily under federal or state jurisdiction. The City's only principal arterial is TH 36 which runs east-west along the northern border. Two other principal arterials, I-94 and I-694, lie just beyond the City's borders, but are still considered primary routes.

Minor Arterials

Minor Arterials also emphasize mobility over property access and connect cities with adjacent communities and the metropolitan highway system. Major business centers and other major traffic generators are often located on Minor Arterial roadways. Minor Arterials are further classified as 'A' Minor and, 'B' Minor arterials. A-Minor Arterials are roadways that are of regional importance because they relieve, expand, or complement the principal arterial system. Minor Arterials other than A-Minor Arterials are classified as B-Minor Arterials. B-Minor Arterials provide City-wide or inter-city connections and generally serve shorter trips than A-Minor Arterials. Minor Arterials of either type are generally under state or county jurisdiction. 34th Street/Stillwater Boulevard (CSAH 14) and 10th Street (CSAH 10) are examples of A Minor Arterials, while Lake Elmo Avenue (CSAH 17), between 34th Street/Stillwater Boulevard (CSAH 14) and 10th Street (CSAH 10), is an example of a B-Minor Arterial.

Collectors

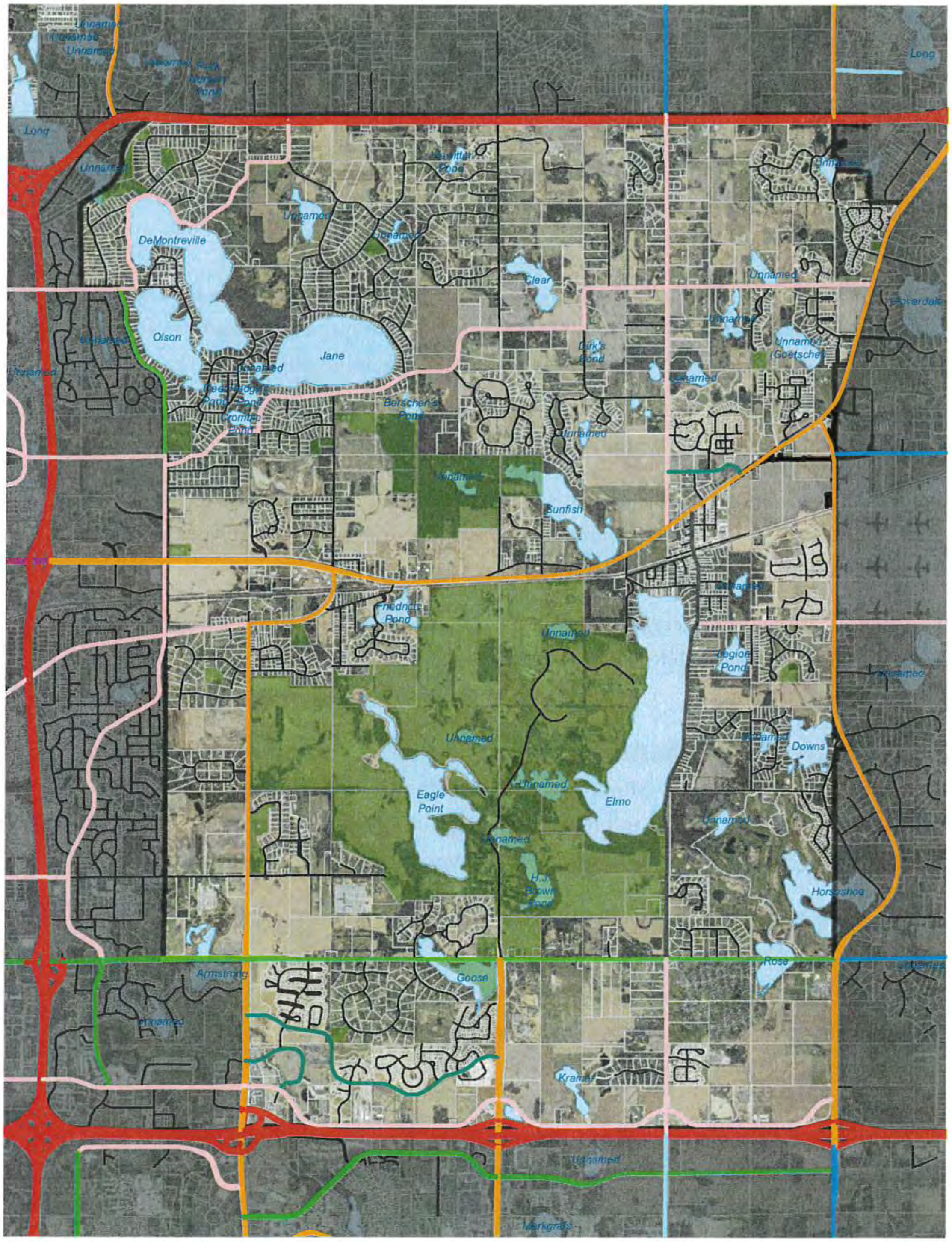
Collectors supplement the arterial roadway system by providing access between neighborhoods and to the arterial system. They are designed to carry less traffic than arterials and to provide direct access to some properties. Collectors can be further divided into Major and Minor Collectors. Major Collectors typically provide access and mobility across neighborhoods and would connect to the arterial roadway system. Minor Collectors are typically limited to one or two neighborhoods and may connect only to other Collectors. Major Collectors are typically under county or municipal jurisdiction. Minor Collectors are primarily under local jurisdiction. 50th Street between Lake Elmo Avenue (CSAH 17) /Stillwater Boulevard (CSAH14); Hudson Boulevard and Keats Avenue, TH 36 south to 47th Avenue are examples of a Major Collector within the City. 39th Avenue North (Lake Elmo Avenue (CSAH 17) east to Stillwater Boulevard (CSAH 14)), Eagle Point Boulevard (Inwood Avenue (CSAH 13) east and south to Hudson Boulevard), and 5th Street North are examples of Minor Collectors.

Local Roadways

Local streets consist of township roads and city streets and are under municipal jurisdiction. Their primary purpose is to provide direct access to local properties within neighborhoods. Local streets are designed for low speeds to discourage through traffic.

Figure 7-1 shows the existing functional classification of the roadways within the City.

Figure 7-1. Existing Functional Classification of Roadways



Existing Functional Classification of Roadways

Classification

- Principal Arterial
- Other Arterial
- A-Minor Augmentor
- A-Minor Connector
- A-Minor Expander
- A-Minor Reliever
- Major Collector
- Minor Collector

0 0.3 0.6 1.2 1.8 Miles

Source: MnGEO, Metropolitan Council, Washington County, City of Lake Elmo, SHC, Focus Engineering

Traffic Operations

Figure 7-2 displays the volumes of existing principal and A-Minor Arterial roadways within the City based on the 2015/2016 Mn/DOT Average Annual Daily Traffic (AADT) counts, and also shows projected 2040 Volumes from Washington County (more information regarding forecasts is discussed in subsequent sections of this Chapter). Table 7-3 lists planning-level daily threshold volumes for different roadway design types as referenced in the Washington County Transportation Plan.

The average daily traffic volumes were compared to the design threshold capacities shown in the above table to determine the approximate level of congestion for each roadway segment analyzed. Each roadway segment was ranked according to the following categories:

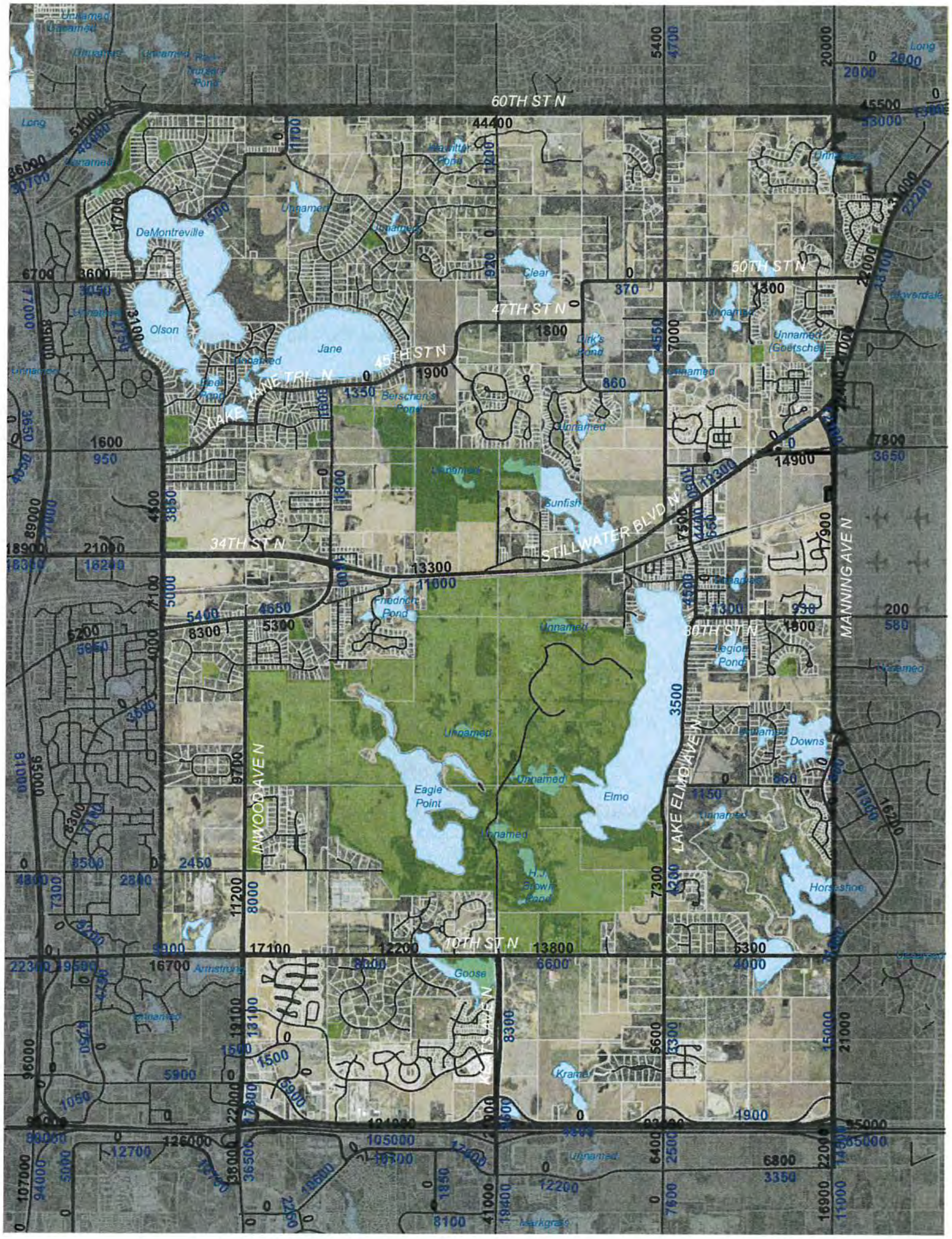
- **Uncongested:** the existing average daily volume is less than 85-percent of the threshold volume, with a low probability of operational problems due to traffic flow.
- **Approaching congestion:** the existing average daily volume is between 85-percent and 100-percent of threshold volumes, with a moderate probability of operational problems due to restricted traffic flow.
- **Congested**: the existing average daily volume exceeds 100-percent of the threshold volume, with a high probability of operational problems due to restricted traffic flow.

For purposes of this Chapter and analysis, the City will use the data available from Washington County because all Principal and A-Minor Arterials are either County or State Roads and the County and data available is current and reflects existing conditions in the City. Washington County Comprehensive Plan Draft Chapter 5 states the following regarding the methodology used:

> *"Existing capacity deficiencies were identified by comparing the AADT volumes to the thresholds identified in Table 7-3. The methodology used does not account for traffic conditions that do not fit the average daily traffic criteria (e.g. weekend travel, holiday travel, etc) because they tend to produce atypical congestion and different congestion levels."*

> *"The methodology does not take into account factors such as geometric conditions at the intersection nodes, potential peaking characteristics, or directional flow disparities."*

Figure 7-2. Existing 2015 AADT and Projected 2040 AADT



Legend

XXX 2015 AADT

XXX 2040 Projected AADT

0 0.3 0.6 1.2 1.8 Miles

Source: MnGEO, Metropolitan Council, Washington County, City of Lake Elmo, SHC, Focus Engineering

As noted within the Washington County Chapter, while there are deficiencies in the methodology that could impact the order of magnitude of the deficiency, this methodology is widely accepted and applicable for transportation planning purposes.

Based on Washington County's analysis and data there are roadway segments that are operating under, near, or over capacity today. As shown on Figure 9 from the Washington County 2040 Comprehensive Plan Chapter 5 several roadway sections currently have AADTs above the planning level thresholds and are experiencing congestion and delays, especially during the peak periods. These segments include:

- **I-94;** approaching congested from Keats Avenue (CSAH 19) to the west (Although not within the City, I-94 is an important regional route for the City and included in this plan).
- **TH 36;** over capacity from Lake Elmo Avenue (CSAH 17) to the east.
- **Manning Avenue (CSAH 15);** over capacity north and south of the Stillwater Boulevard (CSAH 14) intersection.

Table 7-3: Planning Level Roadway Capacities by Roadway Type

Roadway Type[1]	Planning Level Daily Capacity[2] (AADT)	Approaching Capacity (85% AADT)
Two-Lane		
Undivided Urban	10,000	8,500
Undivided Rural	12,000	10,200
Three-lane (two-lane with turn lanes)	22,500	19,125
Four-Lane		
Undivided Urban	20,000	17,000
Divided Urban	32,000	27,200
Divided Rural	38,000	32,300
Freeway		
Four-Lane	80,000	68,000
Six-Lane	120,000	102,000

This chart is intended for use as an approximation for planning purposes. 1.The terms urban and rural describe typical section design (e.g. curb and gutter for urban and ditch drainage for rural), not geographical areas. 2. Turn lanes may be needed for high speeds at 7,000 AADT.

Source: Washington County 2040 Comprehensive Plan – Chapter 5 Transportation

Number of Lanes

The number of lanes of a roadway is directly correlated to the capacity of a roadway. While local roadways are generally two-lanes, the County and State roads are constructed to handle higher volumes of traffic. The following summary of Principal and A-Minor arterial roadways that serve the City are provided in Table 7-4.

Table 7-4: 2017 Number of Lanes on Principal and A-Minor Arterial Roadways

Roadway	Number of Lanes
TH36	4 Lanes
CSAH 17	2 Lanes
CSAH 14 (I-494 to CSAH 6)	4 Lanes
CSAH 14 (CSAH 6 to CSAH 17)	2 Lanes
CSAH 14 (CSAH 17 to CSAH 17 South)	3 Lanes
CSAH 14 (CSAH 17 to CSAH 15)	2 Lanes
CSAH 10	2 Lanes
I-94	6 Lanes

Source: Washington County 2040 Comprehensive Plan – Chapter 5 Transportation

Safety

As noted in previous sections of this Chapter, safety of the transportation system and most importantly the roadways, is a priority of the City particularly as it becomes more developed. While this planning process did not perform a full analysis of crashes within the City, the City can consider and incorporate the findings of Washington County who recently completed a comprehensive system wide analysis for crashes occurring from 2013 to 2015. While the study considered data for the whole County, the findings of the report are still important and valuable to the City of Lake Elmo particularly since many of its residents and business owners frequently travel throughout the region.

The findings and conclusions of Washington County's crash analysis are summarized below. It should be noted that the details of the report, including specific data related to Lake Elmo is available and can be obtained as individual projects or roadways are planned for through this planning period.

- A total of 107 fatal and incapacitating injury crashes occurred on all roadways within the county (31 fatal and 76 incapacitating injury crashes).
- A total of 28 fatal and incapacitating injury crashes occurred on the Washington County roadway system (6 fatal and 22 incapacitating injury crashes).
- The following types of fatal and incapacitating injury crashes occurred most frequently on the county roadway system:
  - » Lane departure crashes including head-on crashes and run off road crashes (particularly on the right side of the roadway)
  - » Intersection-related crashes including right angle crashes
  - » Motorcycle crashes
  - » Crashes involving pedestrians and bicyclists

Since much of the City's developing area is accessed by County and State roads, the findings of Washington County's crash analysis is relevant and should be considered as new local roadways and intersections are designed.

Additionally, the County's Annual Intersection Control Ranking System (ICRS) Report is an annual report that prioritizes the installation of traffic control improvements on roadways under Washington County's jurisdiction.

Traffic Forecasts

An important component of future planning is determining expected traffic volumes. By establishing the projected demand, transportation network deficiencies within the City can be further recognized and potential improvements identified. The following sections provide a summary of the previous 2030 Plan methodology, and how the 2040 Traffic Forecasts were derived.

2030 Transportation Chapter Forecasts and Methodology

The City's 2030 Comprehensive Plan marked a significant change and departure from the City's typical rural residential development pattern as new areas were identified for urbanization and intensification of development. The planned growth meant that a detailed transportation analysis was essential so that the City could plan for a safe, and efficient roadway system to serve new businesses, retail areas and neighborhoods.

That planning effort resulted in the City's consultants developing a citywide travel demand model that was based on the projected future growth and land development patterns identified in the Future Land Use Plan and staging/phasing plans. The travel demand forecasts developed were based on the modified Twin Cities regional travel demand model, which was released by the Metropolitan Council. The City developed its travel demand model as a subset of the Washington County Transportation Model in coordination with the CSAH 17 Sub-area Study to forecast traffic in 2030 per the requirements of the previous planning period.

The results of that effort were compiled and included within the City's 2030 Comprehensive Plan Transportation Chapter, which were subsequently incorporated into the County and Metropolitan Council's data after the Plan adoption.

2040 Traffic Forecasts and Methodology

Since the 2030 Plan was adopted, the City has experienced development and growth, but the projected increase of population, households and employment was impacted by the great recession of the late 2000s through the early 2010s. By the time the Metropolitan Council issued the City's 2015 System Statement the projected growth identified in the City's 2030

Plan had been reduced by approximately 25% through 2040. While the projections have been reduced, the City is still expected to experience significant growth in this planning period that may be comparable to the City's 2030 Plan. The reduced projections slightly impacted the Future Land Use plan, particularly within the urbanizing areas.

Methodology

As part of Washington County's 2040 Comprehensive Plan Update, a 2040 Traffic Model was developed and used to project 2040 traffic volumes on principal and A-Minor Arterials in the County. The detailed methodology of their model can be found in Chapter 5 Transportation of Washington County's 2040 Comprehensive Plan and associated appendices; however, what is most relevant to the City is that the model incorporated known community land use plans and development objectives to project 2040 population, households and employment data for sub-areas of the county called Traffic Analysis Zones (TAZs).

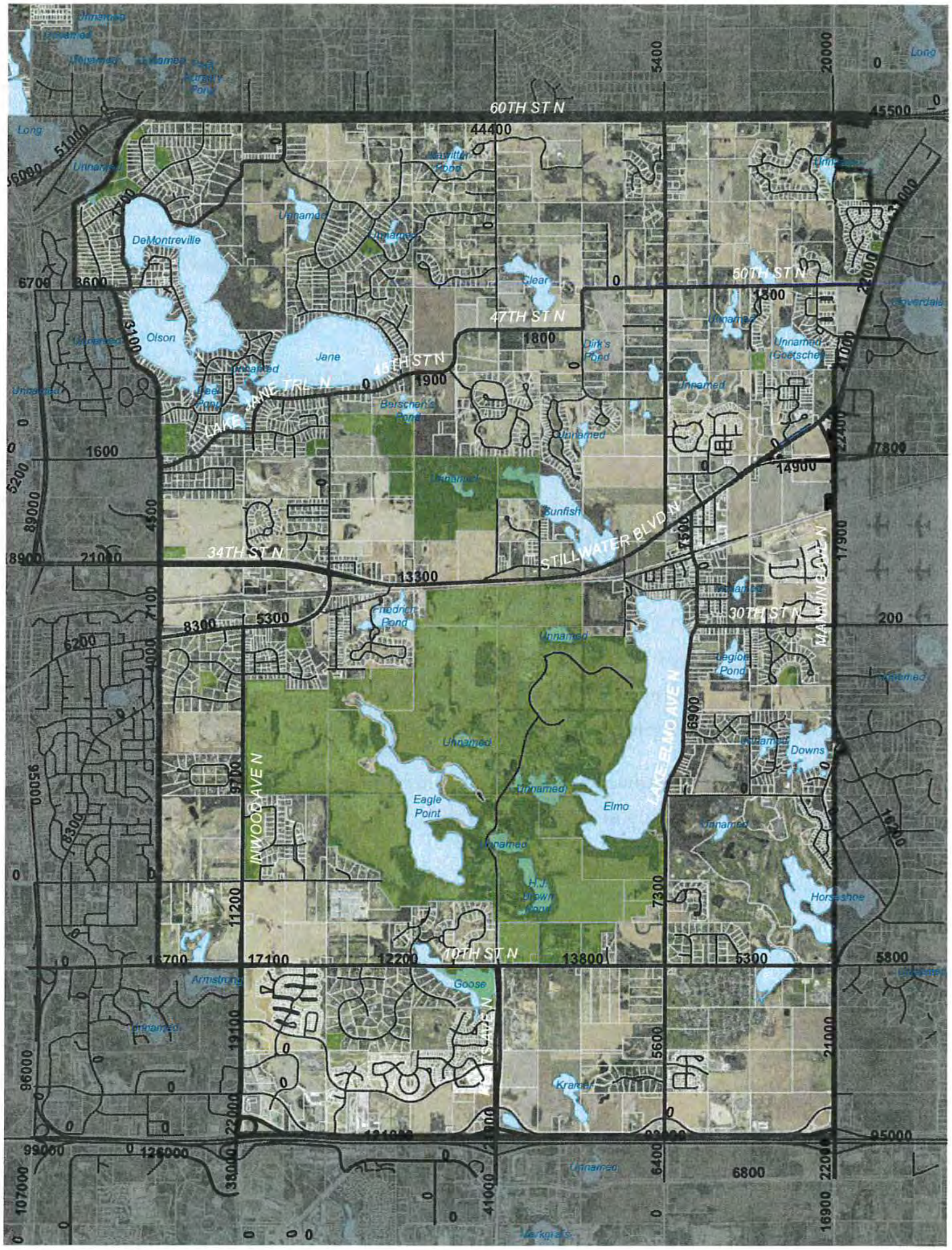
Given Washington County's methodology for projecting 2040 volumes included use of the City's adopted 2030 Future Land Use plan (which is more intense than the 2040 Future Land Use Plan) the City was confident that the Washington County model could be used to forecast traffic volumes in this 2040 Plan update. To validate this conclusion, the City prepared an updated TAZ analysis based on the Future Land Use Plan contained within Chapter 3 of this 2040 Comprehensive Plan and compared the estimates to those contained within the Counry's TAZ projections. The full table with estimated TAZ projections can be found in the Appendix to this Chapter.

Summary and Conclusions

Figure 7-2 shows the 2040 projected traffic volumes on principal and A-Minor Arterials of Lake Elmo's roadways based on the Washington County traffic model. Based on the traffic model, Washington County prepared a 2040 Volume/Capacity Analysis that identified principal and A-Minor Arterials that will be approaching capacity or over capacity with the existing roadway system. Washington County performed only a planning-level analysis to identify locations where capacity problems are expected to occur by 2040, and the City should consider this as it plans for future development in areas that may experience deficiencies in the roadway system. This information provides insight into areas that may need additional traffic study and analysis as developments are proposed. The City should require future developers to provide traffic studies and analysis as part of the development review process to ensure proper mitigation and improvements to the system are incorporated as areas of the community develop with a greater intensity of uses.

The Washington County 2040 Traffic Model indicates the following potential deficiencies in

Figure 7-3. 2040 AADT Forecasts



2040 Traffic Forecasts

0 0.3 0.6 1.2 1.8 Miles

Source: MnGEO, Metropolitan Council, Washington County, City of Lake Elmo, SHC, Focus Engineering

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Lake Elmo given current conditions:

- Inwood Avenue is approaching capacity; segment north of 10th Street (CSAH 10) and segment south of CSAH 6
- 10th Street (CSAH 10) is over capacity; segment east of Inwood (CSAH 13) to Lake Elmo Avenue (CSAH 17)
- Manning Avenue (CSAH 15) is over capacity from 10th Street (CSAH 10) to Stillwater Boulevard (CSAH 14); and is approaching capacity from CSAH 14 to Highway 36

It should be noted that the Washington County model does not attempt to evaluate if specific improvements would result in a reduction of deficiencies, and instead it only evaluates the Base Model assumptions. For purposes of this Comprehensive Plan Chapter, Lake Elmo will use this information as a guide to help inform how local roadways, and associated improvements, might impact the roadway system as development occurs. Because a city-wide specific model was prepared for the 2030 Plan, some specific roadway improvements were established and will carry forward into this planning period. A summary of those improvements are as follows:

- Continuation of 5th Street North (the east-west Minor Collector roadway/parkway) through the South Planning Area. This is intended to alleviate congestion on 10th Street/CSAH 10 as development progresses within this area of the community.
- Development of a local roadway/parkway to connect mixed-use and new neighborhoods on north side of CSAH 14 to the south side of CSAH 14 (39th Street/Village Parkway).

Regional Initiatives

As Lake Elmo and the surrounding area have developed, certain roadways and locations were identified in the City's previous plan as having strategic importance, to either the City or region. While these areas were studied in and around the time of the 2030 Plan, given the delayed time-line of development in the community, some of these studies and planning efforts remain relevant to this plan. Two such items are identified in this plan as having significant impact on the City's roadway network, including:

- Lake Elmo Village Area Alternative Urban Areawide Review (AUAR)
- Minnesota Interregional Corridor System

Since the 2030 Plan, an addition study and effort within Washington County has been initiated to improve and expand Manning Avenue (CSAH 15) which runs along the eastern boarder of Lake Elmo. Since this regional project also has the potential to significantly impact the City's roadway network a summary of this project is also included within the plan.

Each of these initiatives is described separately below.

Lake Elmo Village Area AUAR

In anticipation of development within the Village Planning Area, the City prepared an Alternative Urban Areawide Review (AUAR) that evaluated anticipated development scenarios and identify potential deficiencies and impacts and identify appropriate mitigation that would alleviate those issues. While rhe AUAR was prepared prior to development, the document continues to be a relevant guide in assessing necessary improvemenrs as development occurs.

The scenarios analyzed wirhin the AUAR continue to be fairly consistent with development trends, and therefore many of the transportation improvements and mitigative recommendations condition to be either implemented or planned for within the system. A summary of the mitigation identified within the AUAR is provided as follows:

- Signalizing intersections.
- Adding left and right turn lanes for capacity and safety.
- Upgrading Stillwater Boulevard (TH 5) from its current two lanes to a four-lane facility.

In addition to this mitigation, information on other options to improve traffic operations was provided, including:

- Access Management; controlling the number of and spacing of private driveways and public roadways that connect to a roadway corridor.
- Non-Traditional Intersection Control; using alternatives to traffic signals and stop signs, such as roundabouts, to control turning movements at intersections.
- Transit Opportunities; providing regularly scheduled bus or rail service as well as car pool opportunities to provide an option to single-driver vehicles.
- Trail Systems; providing a system that allows for non-motorized travel between land uses for recreation or commuting.

One notable planned change/improvement within the Village Planning Area that was identified as important within the AUAR is the realignment and design of Stillwater Boulevard (CSAH 14). The design of this realignment is underway, and the City continues to work with Washington County on appropriate upgrades of CSAH 14 through this area.

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Minnesota Interregional Corridor System (IRC)

In January of 2000, Mn/DOT adopted the IRC Study as part of the State Transportarion Plan. This study identified key corridors in Minnesota with an emphasis on providing efficient connections between regional trade centers. The goal of the IRC system is to tie the state together and enhance the economic vitality by safe, timely, and efficient movement of goods and people.

Lake Elmo is bracketed on the north and south by two roadways identified in the IRC Study as Interregional Corridors: TH 36 and I- 94. Under this identification, Mn/DOT has certain goals and performance targets for each corridor. Mn/DOT is implementing measures to maintain and improve the IRC System through completion of corridor plans, which include management plans on each roadway in cooperation with local units of government. More information regarding the Minnesota IRC System can be found on MnDOT's website.

Trunk Highway (TH) 36

TH 36 has been identified as a Medium Priority Interregional Corridor under the IRC Study. The TH 36 Corridor Management Plan was published in May 2001 detailing the study of TH 36, from I-694 to the Wisconsin border. This includes the segment along the border of Lake Elmo.

The key reasoning for this designation includes:

- Its connection to the Stillwater area.
- Its service as one of the major routes connecting with western Wisconsin.
- Its service to the adjacent communities of Stillwater, Oak Park Heights, Grant, Lake Elmo, Mahtomedi, Willernie, Pine Springs, and Oakdale.
- Its high volume of commuter traffic and recreational/tourist traffic.
- Its expected traffic increases due to continued growth in Stillwater and Oak Park Heights, which serve as the commercial activity center for the St. Croix Valley, and continued growth in western Wisconsin.

Lake Elmo did not agree with this designation or the reasoning presented by Mn/DOT. An October 2001 resolution, Resolution 2001-94, declined City acceptance and participation in the TH 36 Corridor Management Plan for, among other reasons, not giving the City the opportunity to respond to the designation and the belief that closing access on TH 36 will prove harmful to the City's residents and businesses.

Despite City objections, planning for TH 36 as a Medium Priority IRC continued. The strategies and goals for TH 36 with this designation included a 55-mph average peak hour operating speed, elimination of traffic signals, and access via interchange or right in/right out only without median breaks. The original TH 36 IRC plan envisioned City access to TH 36 via new Manning Avenue (CSAH 15) interchange or right in/right out access from Keats Avenue and some select private access driveways. Demontreville Trail and Lake Elmo Avenue (CSAH 17) would become overpasses without connection to TH 36. Highlands Trail and most other private access points would be eliminated or reduced to right in/right out access only.

As the City has continued to work with the County and Mn/DOT on the future of TH 36, both agencies have been open to changes to the original ICR plan. The City has obtained federal grant assistance and is currently completing the development of a concept plan for a south frontage road system from Demontreville Trail to Lake Elmo Avenue to maintain better access to TH36 for Lake Elmo properties. For instance, the current intersection of TH 36 with Lake Elmo Avenue (CSAH 17) is now being examined as a potential interchange. The City is working in earnest with other agencies to determine the final configuration. The City will need to continue to work with Mn/DOT, the County, and adjacent communities to determine the final configuration of access to TH 36 at this and other locations. In addition, the City will also need to decide how to serve properties adjacent to TH 36 as access is reduced or eliminated. Options for access to and from TH 36 as well as to adjacent property includes creating a frontage road, creating a backage road, using the north frontage road, or a combination of two or more of these methods.

There are two primary benefits to the City from the potential improvements to TH 36. The first is reduced commuter traffic on City roadways. As TH 36 is improved with higher average operating speeds, commuters will have less desire to seek other routes. Wisconsin commuters would travel through the City on TH 36 without impact to City residential areas. Without the improvements, travel times on TH 36 will likely be reduced in the future. As observed on other routes in the Metropolitan area, as a major route gets congested, motorists will seek out County and local roads that show at least a perceived improvement in travel time. A comparison of projected 2030 traffic volumes in the previous sections shows this to be the case here.

The other potential benefit to the City from the potential improvements to TH 36 is increased safety. Current at-grade intersections with TH 36 represent some of the most dangerous areas of the City in terms of crashes. By consolidating access into interchanges and limited right in/right out access, residential and business traffic to and from the City will be able to more safely enter and exit this corridor.

Interstate 94

The I-94 corridor, including the segments adjacent to the southern border of the City, has been designated High Priority IRC. Under this designation, I-94 has a goal 60-mph average peak hour operating speeds with minimal conflicts and interruptions to traffic flow. A corridor management plan has not yet been developed to examine the existing operations and determine future plans to meet those goals. It is expected that such a plan will be developed in the near future. It is also anticipated that Lake Elmo will have the opportunity to participate on some type of advisory panel in conjunction with development of that plan to express the City's views and opinions on the corridor. The City will work with the Mn/DOT, the County, and adjacent communities on a corridor plan that is effective for all involved.

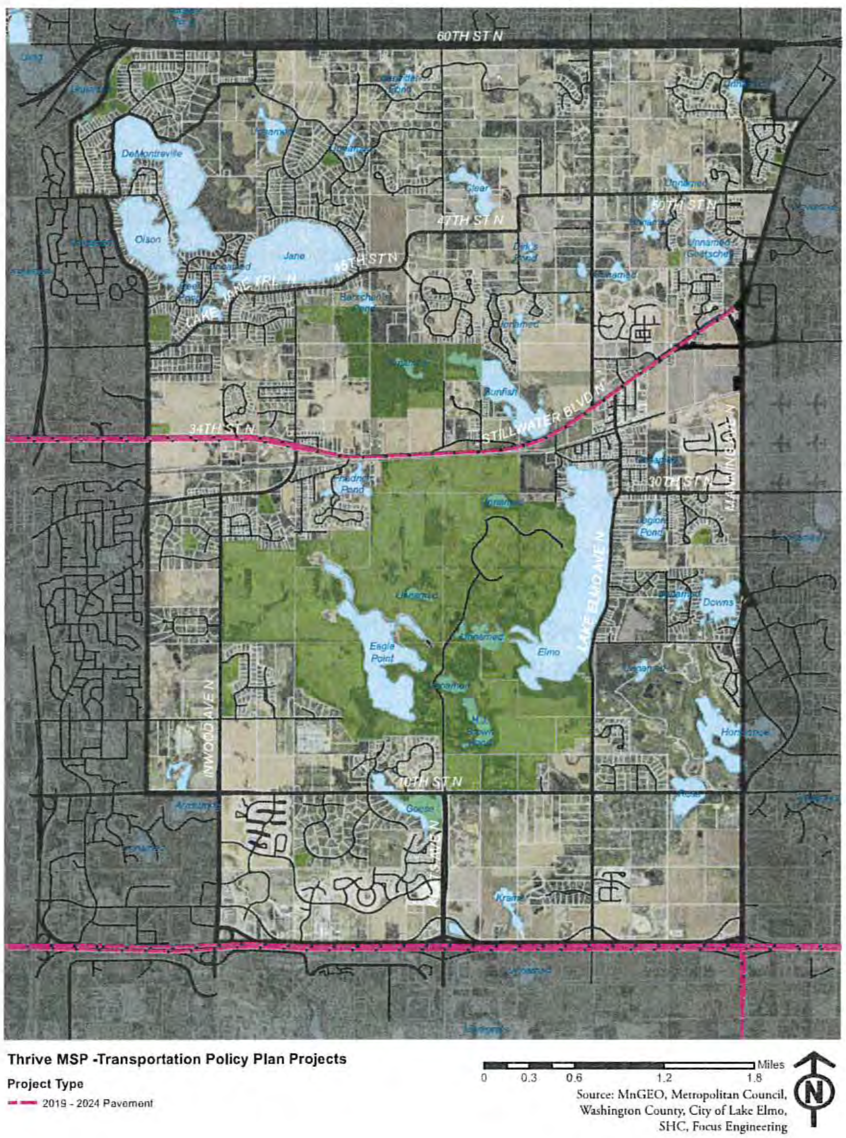
Although an IRC plan has not been developed for I-94, a recent traffic impact study involving the corridor was completed under the direction of the City of Woodbury. The October 2008 Woodbury Northeast Area Traffic Impact Study examined impacts from the development of an approximately 580-acre site between Keats Avenue (CSAH 19) and Manning Avenue

(TH 95), south of I-94. This development is planned for mixed-use including retail, office, some residential, parkland, and a new park-and-ride facility. Although the report focuses on transportation improvements necessary to accommodate a development not located in Lake Elmo, the potential mitigation options affect the I-94 corridor and potentially Lake Elmo's transportation network.

2040 Transportation Policy Plan Projects

As part of the regional planning initiatives, the Metropolitan Council's 2040 Transportation Policy Plan identifies projects to regional roadways planned for improvements during this planning period. The Metropolitan Council has identified improvements to CSAH 14 and I-94 as shown on Figure 7-4.

Figure 7-4. Thrive MSP - Transportation Policy Plan Projects



System Analysis

With the traffic forecasts completed, the City of Lake Elmo's transportation system elements were re-examined to identify potential issues, recommend potential improvements, and provide guidance for development of the system through 2030. These elements are examined separately below.

Functional Classification Changes

The functional classification system creates a hierarchy of roads that carries traffic between destinations in a safe and efficient manner, as described earlier. Principal Arterials and Minor Arterials are generally well spaced around the City. Taking into account the 2040 projected volumes, regional initiatives, and proposed roadway improvements, Lake Elmo Avenue (CSAH 17) could change its current designation of a B-Minor Arterial. With the proposed improvements, the 2040 projected volume decreases as regional traffic shifts to Manning Avenue (CSAH 15). This suggests the roadway serves more local than regional traffic and could be designated as a Major Collector.

The City's Collector system is also less than desired and lacking appropriate connections between the arterials. In general, these connections already exist in the form of the State Aid system. Minnesota State-Aid (MSA) routes are designed to accommodate higher levels of traffic and truck traffic, similar to the function of collector roadways. In addition, residents already use these roads as routes to access the arterial roadways and other land uses.

Identifying these routes in the functional classification system reinforces their need as MSA routes and better identifies the routes to existing and future residents and businesses. The functional classification system is also related to access management, which can help the City maintain the balance between mobility and access as development occurs. The functional classificarion can also be used to help determine the appropriate location of intersection improvements and traffic control, such as traffic signals. The following changes and additions are proposed for the City's functional classification map.

Proposed function classification changes:

- Lake Elmo Avenue (CSAH 17), Stillwater Boulevard (CSAH) south to 10th Street (CSAH 10), will change from a B-Minor Arterial to a Major Collector.
- Lake Jane Trail, 42nd Street north and east to Jamaca Avenue, will change from its current Major Collector designation to a local road.

Proposed functional classifications additions:

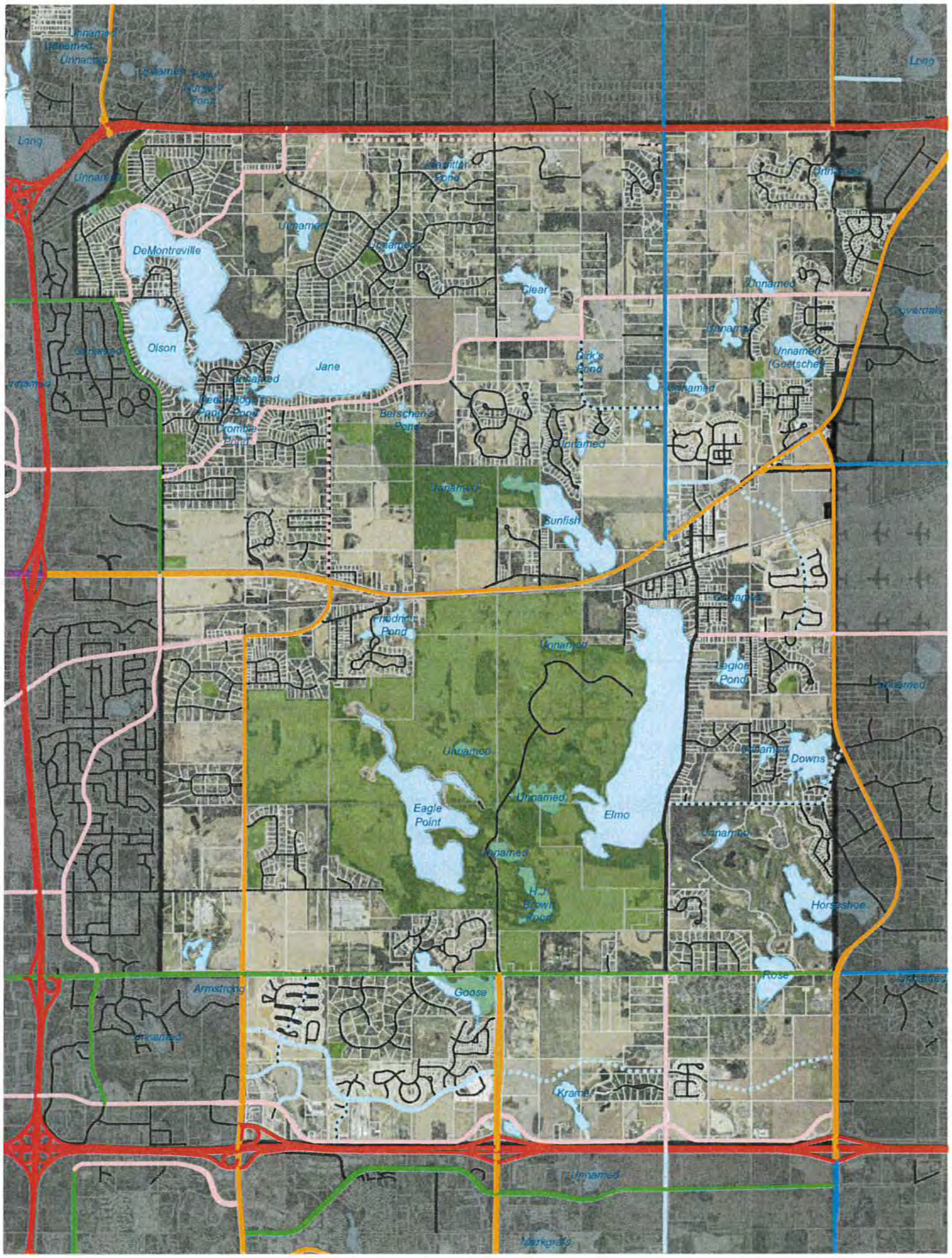
- 42nd Street, Lake Jane Trail east to Jamaca Avenue, will be designated as a Major Collector.
- Jamaca Avenue, Stillwater Boulevard (CSAH 14) north to Lake Jane Trail, will be designated as a Major Collector.
- A future south frontage road along TH 36 (Demontreville Trail North to Lake Elmo Avenue (CSAH 17)) will be designated as a Major Collector.
- Jamaca Avenue North (from Lake Jane Trail North to Stillwater Boulevard (CSAH14)) will be designated as a Major Collector.
- Hudson Boulevard, Inwood Avenue (CSAH 13) east to Manning Avenue (CSAH 15), will be designated as a Major Collector.
- Kimbro Avenue, 43rd Street north to 47th Street, will be designated as a Minor Collector.
- 43rd Street, Kimbro Avenue east to Lake Elmo Avenue (CSAH 17), will be designated as a Minor Collector.
- Laverne Avenue, Upper 33rd Street north to 39th Street, will be designated as a Minor Collector.
- Upper 33rd Street, Lake Elmo Avenue (CSAH 17) east to Laverne Avenue, will be designated as a Minor Collector.
- Village Parkway, connecting the Stillwater Boulevard (CSAH 14)/39th Street intersection to the 30th Street/Lishon Avenue intersection, will be designated as a Minor Collector.
- 31st Street, Stillwater Boulevard (CSAH 6) east to Stillwater Boulevard (TH 5), will be designated as a Minor Collector.
- 20th Street, Lake Elmo Avenue (CSAH 17) east to Manning Trail, will be designated as a Minor Collector.
- Manning Trail, 20th Street north to the City border, will be designated as a Minor Collector.
- 15th Street, the City border east to Inwood Avenue (CSAH 13), will be designared as a Minor Collectot.

- Kimbro Avenue North (starting at the intersection of 47th Street North), as it turns to 43rd Street North to Lake Elmo Avenue North (CSAH 17), will be designated as a Minor Collector.
- Stillwater Way will be designated as a Minor Collector.
- Village Parkway will be designated as a Minor Collector.
- 20th Street North, from Lake Elmo Avenue (CSAH 17) to Manning Trail North, will be designated as a Minor Collector.
- Island Trail North will be designated as a Minor Collector.
- Jade Trail North will be designated as a Minor Collector.
- A future road, connecting 5th Street North to Hudson Boulevard North to the east of Jade Trail North and South of Keats Avenue North, will be designated as a Minor Collector.

26 This proposed functional classification plan is shown in Figure 7-5.

The majority of these changes could occur now as most of the roadways currently exist. As stated, these changes would align the City's MSA routes with its Functional Classification Map in addition to other benefits. The new roadways will need to be designated and developed as development occurs. This also means the City will plan access and mobility along each roadway according to its classification's characteristics. As development occurs and travel patterns change, the functional classification map will need to be reviewed to evolve and to continue to serve its function.

Figure 7-5. Planned Functional Classification



Planned Functional Classification of Roadways

Principal Arterial	A Minor Connector	A Minor Expander
A Minor Augmentor	B Minor	Major Collector
A Minor Reliever	Major Collector	Minor Collector
A Minor Expander	Minor Collector	Plan Major
		Plan Minor

0 0.3 0.6 1.2 1.8 Miles

N

Source: MnGEO, Metropolitan Council, Washington County, City of Lake Elmo, SHC, Focus Engineering

Right-of-way Preservation

Many of the changes discussed above are due to existing and planned land uses that will likely warrant future functional classification changes. Currently, the principal and A-Minor Arterials within the city are all Washington County roadways. As part of future planning effort, the City is required to identify the County's required right-of-way that must be planned for to support the planned functional classification of roadways. The information in this table should be planned for as new development occurs within the City.

Table 7-5. Right-of-Way Preservation

Functional Classification	Right-of-Way Width**	Future Facility Type
Minor Arterial	220 feet	6-lane divided
	180 feet	4-lane divided
	150 feet	3-lane undivided
	120 feet	2-lane urban
Collector	150 feet	3-lane undivided
	120 feet	2-lane undivided
	100 feet	2-lane undivided, urban

** Widths are total width of corridor and assume the road is centered in the corridor.*
*** Due to particular development conditions, physical features of the site or highway corridor, special traffic control needs, or other conditions, Washington County may require more right-of-way width than shown in these guidelines.*

Source: Washington County 2040 Comprehensive Plan – Chapter 5 Transportation

System Safety

Safety of the roadways and intersections for users of the system is a primary goal of the City. Improvement in safety can occur from multiple strategies. As part of the Minnesota Toward Zero Deaths campaign, four major focus areas were identified for communities to reduce traffic injuries and fatalities: Education, Enforcement, Engineering, and Emergency Medical Services. While each area is important in improving safety, their combined use can result in a greater reduction in crashes and severity than one area alone. Using information from that campaign, these areas are examined in consideration of the City's network.

Education

Education is about motivating changes in driving habits and behaviors. It goes beyond an understanding of the "rules of the road" to consideration of how driving or a particular safety issue can impact other drivers, pedestrians/bicyclists, and the surrounding land uses. Education is typically coordinated with a targeted enforcement campaign, such as drunk driving. Educational efforts can include posters, news releases, public service announcements, or many other types of public information.

The City schools represent an opportunity to influence driver behavior before and after obtaining a license. Education can focus on driving as well as safety on other transportation modes, such as walking or riding a bus. Education directed at students can also influence the parents into better behavior and decisions. The Lake Elmo Elementary School 2008 Safe Routes to School Plan documents some educational ideas for younger students to improve their safety in the transportation network.

Opportunities for education also exist outside the classroom and can be targeted at all ages. An example could be a traffic safety page on the City's website. The City will look for educational opportunities to improve driving behavior.

Enforcement

Traffic rules and laws set the guidelines for safe operations of the roads. Enforcement of those laws ensures that motorists use the roads as they are intended and do not adversely impact themselves or others. The Toward Zero Deaths website lists existing enforcement campaigns and resources that could be used by the City in cooperation with different enforcement agencies. In addition, the City could address some specific safety issues by targeted enforcement. Currently, policing in the City is provided by the Washington County Sheriff's Department. Therefore, increased enforcement on a specific issue within the City would need the cooperation of the

County. Depending upon the issue, the County may benefit from targeted enforcement at similar sites throughout the County. The City, in cooperation with the County and the Sheriff's Department, will examine issues and opportunities that may result in targeted or increased enforcement to improve roadway safety.

Engineering

Any physical modification of the roadways can be designated as engineering. Various methods can be used from complete reconstruction for improved grades to tree-trimming for improved sight distance. Before an engineering change is made, a full evaluation and analysis of existing characteristics and issues is needed. Through an evaluation, the engineering needs can be customized to directly impact the safety issue and improve traffic operations. Two engineering options for roadways within the City have been shown to increase safety: access management and roundabouts.

Access Management

Access management is the balance between corridor mobility and property access. Increased access to a road leads to more vehicle turning movements as motorists enter and exit properties. This increase in turning movements results in a decrease in mobility on the corridor. Similarly, increasing the mobility corresponds with a decrease in access.

The relationship between access and mobility is further defined with the functional classification of roadways. An Interstate Freeway provides the greatest mobility as access is limited to grade-separated interchanges. On the opposite side, a local roadway cul-de-sac provides the greatest access with multiple driveways and limited spacing between those driveways. However, with only one connection to other roadways, the cul-de-sac offers almost no mobility. The Mn/DOT graph below shows this relationship between access and mobility.

In terms of safety, as the access to a road increase, whether public or private, the crash rate increases. This relationship has been confirmed by Technical Study No. 4, <u>Toward An Access Classification System and Spacing Guidelines</u>, by the Minnesota Department of Transportation (Mn/DOT) and by the Federal Highway Administration's (FHWA) Access Research Report No. FHWA-RD-91-0444.

Based upon this relationship, the safest transportation network would have no access. Such a network is completely unrealistic, as all roadway users need access for every destination. Thus, access management guidelines were developed to provide that balance between safe, efficient travel and sufficient property access on different types of roadways.

When a transportation network provides effective access management, the benefits include:

- Reduced congestion and improved safety with fewer crashes.
- Improved travel times.
- Improved movement between destinations.
- Improved economic development.

The following Mn/DOT website provides additional information regarding access management: *www.oim.dot.state.mn.us/access/index.html*

Each agency is responsible for the access management of their roadways. In some cases, the State and County will consult with the City as the roadway travels through important land uses or existing access that may be difficult to move or remove. As proper access management provides benefits to all agencies, there are advantages to having consistency across the agencies. Therefore, the City will use the Washington County access spacing guidelines. Table 7.5 shows these guidelines that are based upon the functional classification. The table identifies recommended distances for full access locations. This chart is part of the Washington County Transportation Plan and more information regarding these guidelines can be found in that document.

Some existing public and private connections may not currently satisfy these guidelines. In addition, access that does not adhere to these guidelines may need to be granted for special circumstances or specific reasons. Flexibility is required in these and other cases, depending upon the exact situation and conditions. It is important to note that these spacing guidelines are goals and not absolute laws or regulations. The City will work with the State, the County, developers, and its community to improve roadway safety and mobility through these guidelines.

Table 7-6: Access Management Guidelines

Type of Access	Functional Classification of Roadway				
	Principal Arterial	Minor Arterial		Collector	Local
		> 7,500 AADT	< 7,500 AADT		
A. Private Residential Driveways	No Direct Access	No Direct Access	(3)	(3)	(3)
B. Commercial Driveways or Non-Continuous Commercial Street	No Direct Access	No Direct Access	1/8 Mile	1/8 Mile	(3)
C. Non-Continuous Residential Streets	No Direct Access	1/8 Mile with No Median Opening	1/8 Mile	1/8 Mile	(3)
D. Continuous Local Streets and Collector Streets	1/2 Mile	1/4 Mile	1/4 Mile	1/8 Mile	1/8 Mile
E. Minor Arterials	1/2 Mile	1/2 Mile	1/2 Mile	1/2 Mile	1/2 Mile

(1) See Figure 7-1 and Figure 7-5 for existing and planned functional classification of roadways.

(2) Traffic volumes refer to 20 year forecasts.

(3) Determination based on other criteria (sight distance, speed, traffic volume, etc.).

(4) Distances shown are minimums.

(5) "Non-Continuous" streets refer to cul-de-sacs or short length streets (less than 1/2 mile) which do not cross the roadway in question.

(6) The type of traffic control, turn lanes and bypass lanes required will be determined based upon the projected traffic volumes on the type of access requested

(7) Distances may be increased over these minimums based on other criteria (sight distance, speed, traffic volume, etc.).

In addition to working with these spacing guidelines, the City will use best access management practices in its urban, developing, and rural areas. These practices include:

- Minimizing new access locations and reducing/consolidating existing access points.
- Protecting and improving intersection functional and sight distance areas.
- Properly designing of driveway and intersection (grade, lane width, etc.).
- Developing turn lanes.
- Avoiding offset intersections and driveways.

Roundabouts

Roundabouts are a type of circular intersection with key features thar differentiate it from other types of circular intersections, like traffic circles or rotaries. The key characteristics identifiable in the field are:

- Yield at entry.
- No pedestrian access to the center island.
- No parking.
- Counterclockwise rraffic circulation around the center island.

With a fundamentally different design than tradition intersections with stop signs or signals, roundabout offer many benefits. The primary benefit is fewer crashes and less severe crashes compared to traditional intersections. The roundabout forces lower speeds through the intersection and all vehicles are traveling the same direction around the center island. This combination eliminates several types of crashes, like right angle, and allows more reaction time for drivers to avoid crashes. As a result, crash rates at roundabout intersections have been shown to be significantly lower than those at traditional stop-controlled or signal-controlled intersections.

In addition to safety benefits, roundabouts generally result in less vehicular delay at the intersections, less vehicle pollution, and increased landscaping opportunities. A notable use in other sites has been roundabout corridors where roundabouts are used for several intersections in a row. In combination, vehicle speeds in the corridor have been reduced and landscaping opportunities are increased.

Roundabouts are not intended for every intersection. Some characteristics, such as steep grades and/or limited right-of-way, may not allow the proper design of a roundabout. Site characteristics should be carefully studied and analyzed to ensure a roundabout is the proper control for a particular situation. The City will consider roundabouts as an option for intersection control, particularly for the Village Area.

Although only these two engineering items have been detailed in this section, other engineering solutions are available to improve safety. For instance, providing adequate paved, shoulders on roadways allows motorists to recover from incidents that cause them to leave the drive lane and allows a safe location for disabled vehicles. Access management, roundabouts, and other engineering options will be considered by the City in developing a safe transportation network.

Emergency Medical Services

Emergency medical services fit into the goals of improving safety by their response to an incident. Fast and effective emergency responses are critical in reducing the severity of a crash. Focus on this response is particularly important in rural areas like within the City, which does not have close medical facilities.

In the City, emergency responses are provided by the Washington County Sheriff's Department and the Lake Elmo Fire Department. As the first responders to a crash, these emergency services workers have firsthand knowledge of safety issues and impacts. Beyond their importance as Emergency Medical Service providers, their knowledge can he used in determining safety issues and solutions as well as in public outreach and education.

In most cases, a combination of two or more of these four major focus areas provide for a more complete safety solution to a specific or general safety issue. More specific examples and ideas for use in the City can be found at the Toward Zero Deaths website: *www.minnesotatzd.org.*

As the City works to improve safety, these major focus areas will be considered alone and in combination. Of particular importance to the City, in terms of safery, are the area schools. As mentioned earlier, planning efforts have already begun for improving safety around the Lake Elmo Elementary School through irs 2008 Safe Routes to School Plan. While not a City led initiative, the City supports continuing this special effort directed specifically at students.

TRANSIT FACILITIES

Transit represents a major component of transportation planning. Several factors influence the potential use of transit. However, the primary predictors are density of origination and destination. With consideration of these primary factors, the Metropolitan Council identifies four key conditions to identify transit market areas:

- Population density
- Employment concentration and job density
- Trip volumes and patterns
- Transit dependent segments of the population

Using these criteria, distinct market areas have been developed recognizing different types and levels of transit service for each market.

Lake Elmo is currently within the Metropolitan Transit Taxing District and is designated within Transit Market Area IV and Transit Market Area V as shown on Figure 7-6. Transit within Market Areas IV and V are expected to be served by peak period express service and a public dial-a-ride service.

Existing Transit Facilities

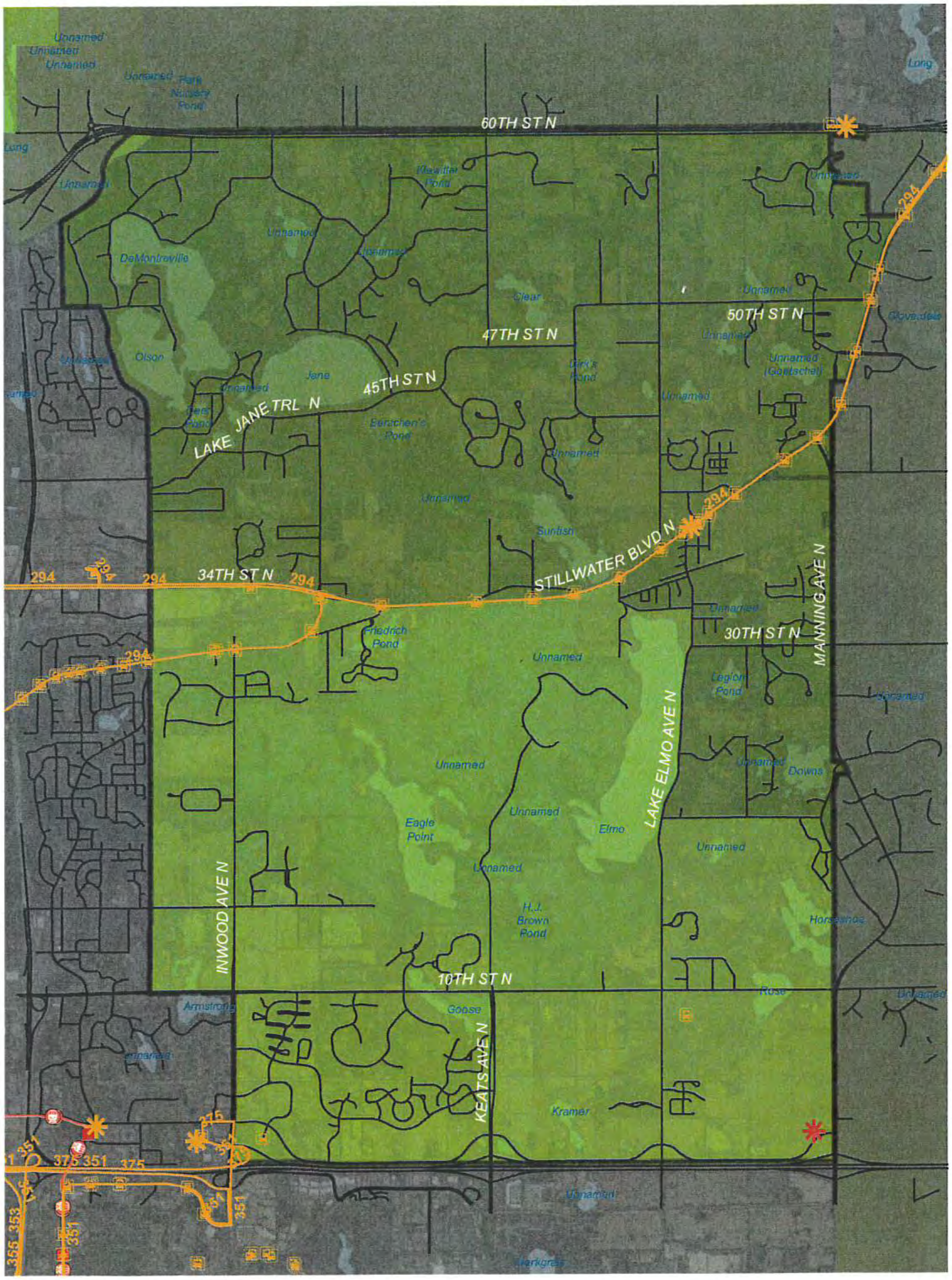
Lake Elmo has existing transit facilities consistent with its Market Area IV and V designation, which includes limited fixed route express and dial-a-ride service, rideshare program, and park-and-ride lots. Each component of the existing system is discussed below.

Transit Service

Metro Transit, a division of the Metropolitan Council, provides transit service along one fixed route through the City. Route 294 provides service between downtown Saint Paul and Stillwater via on 34th Street/Stillwater Boulevard (CSAH 14). Route 375 an express route bus route providing access to downtown Minneapolis has a stop just outside the City's far southwestern corner, but is within walking distance of Lake Elmo's Inwood neighborhood. The route includes stops in Lake Elmo.

While not located in the City of Lake Elmo, the Metro Gold Line, a new Bus Rapid Transit (BRT) line, is planned within the I-94 corridor. The park-and-ride for the BRT route is located less than a mile from the City's southwestern border and will provide additional transit options to Lake Elmo's residents.

Figure 7-6. Transit Market Areas and Facilities



36

- Existing Facility - Park-and-Ride
- Park-and-Ride- Future
- Transit Stops
- Transit Routes
- Planned Transitway Stations
- Planned Transitway Alignments

Transit Market Area

- Market Area IV
- Market Area V

Source: MnGEO, Metropolitan Council, Washington County, City of Lake Elmo, SHC, Focus Engineering

Demand-response transit service is currently offered by Metro Mobility through the provider HSI Transporter Services. HSI Transporter Services provides door-through-door transit services for adults 59 years or older and persons with disabilities who are residents of Washington County. Door-through-door service means that drivers will help riders through the first set of doors at both their pick-up points and their destinations.

The HSI Transporter Service is available Monday through Friday between 7:30 a.m. and 5 p.m. and will take residents anywhere in Washington County. Outside of Washington County, trips are available to specific destinations and medical facilities in St. Paul. In addition, the transporter will take riders to a Metro Transit bus line that allows fot increased connections to destinations throughout the Metro Area.

Rideshare

Rideshare is a Metro Transit program that matches motorists with others rraveling in the same direction and time. There are two types of rideshare opportunities available to Lake Elmo residents: carpool matching and trip matching. Carpool matching finds commuters in the same area who travel to and from the same work area. Trip matching helps individuals share rides to concerts, sporting events, business confetences, or other one-time trips. In either case, people register with Metro Transit, who then notifies them when a carpool or trip match opportunity exists. It is up to the individuals to contact each other and follow through on the pool.

Park-and-Ride Lots

To facilitate use of transit, either using the bus or carpool, parking lots are available across the Twin Cities. Motorists are able to park for free at these lots and then continue to their destination using the bus or carpooling.

There are six lots in the adjacent cities that could be used by Lake Elmo commuters, including:

- St. Croix Valley Recreation Center in Stillwater.
- Guardian Angels Church in Oakdale.
- Walton Park in Oakdale.
- Woodbury Mall Theater in Woodbury.
- Woodbury Lutheran Church in Woodbury.
- Christ Episcopal Church Park and Ride next to Woodbury Lutheran Church Park-and-Ride.

Separately, there is one park and pool lot available in Grant, near the intersection of TH 36 and Manning Avenue (CSAH 15). Bus service is not provided at this lot, but commuters may still park for free and carpool from this location.

In addition to the existing park-and-ride lots located in adjacent communities, there are two additional park-and-rides planned to become available within this planning period. The planned facilities are:

- New park-and-ride facility in Lake Elmo located just west of the Manning Avenue and Hudson Road intersection.
- New park-and-ride facility located less than 1-mile from the southwestern city border in the City of Lake Elmo to provide access to the Metro Gold Line BRT.

Figure 7-6 shows the existing transit facilities, including current bus routes and the existing park-and-ride lot locations in the City, as well as the planned park-and-rides in the City and to serve the Metro Gold Line BRT.

Transit Planning

Transit alternatives to automobile travel are both encouraged and advocated by the City. According to Metro Transit information, commuter growth is expected in most areas of Lake Elmo. The Village Area in particular represents an opportunity to expand transit within the City. Two other areas of potential transit expansion include the TH 36 corridor on the north border of the City and the I-94 corridor on the south border of the City. Each area is discussed separately below.

Village Area

Transit service to the Village Area is an important component for the City and in keeping with regional transportation goals. The Village Area is now and will continue to be the largest concentration of commerce and urban scale housing in the City. The relationship of the Village Area to future transit is enhanced by its location adjacent to 34th Street/Stillwater Boulevard (TH 5) and the existing east-west Union Pacific rail corridor.

I-94 Transit Corridor

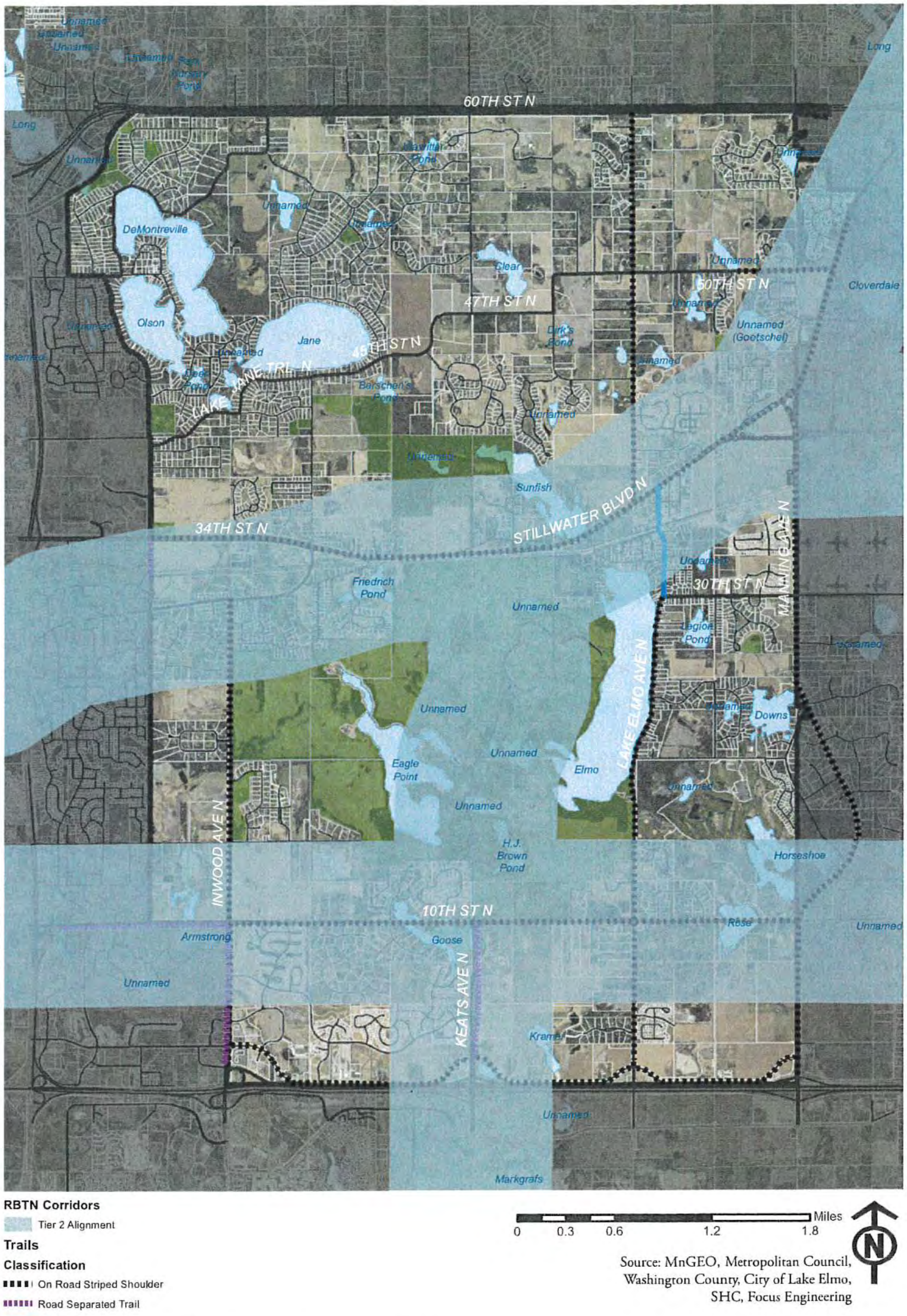
The 2040 Transportation Policy Plan contained within Thrive MSP identified a potential alignment of the planned Metro Gold Line BRT through the South Planning Area in the City. However, since the adoption of the 2040 Thrive MSP plan, the Metro Gold Line alignment and planned stops has been established, and the alignment will not occur adjacent to, or within, the City of Lake Elmo.

There is an express route bus planned on I-94 that will include a stop at the planned park-and-ride lot at I-94 and Manning Avenue (CSAH 15).

Expanding the existing transit corridor on the southern border of Lake Elmo would serve residents with an improved option to driving and could reduce congestion on I-94. Reduced congestion on I-94 would result in fewer commuters using alternative routes through the City on the frontage road. It would also reduce potential congestion from continued development in Woodbury.

The City encourages and advocates for the continued improvement of existing transit routes and the development of new transit alternatives, particularly for the Village Area. As regional agencies are often better able to advocate for improved transit in the area, the Metropolitan Council and the County are encouraged to continue examining these potential transit way corridors and associated issues. However, support and assisrance from the local governments is needed. The City will work with these and other agencies in pursuit of their common and City-specific transit goals. Participating in a future transit advisory committee, if formed for the area for one of the corridors, is one method that will increase the City's voice on transit coverage and improvements. Another method for active City participation could include leading or assisting in more detailed studies of proposed transit improvements, such as expansion of the City's current park-and-ride or providing transit facilities like a shelter.

Figure 7-7. Regional Bicycle Transportation Network and Local Trail Designation



Source: MnGEO, Metropolitan Council, Washington County, City of Lake Elmo, SHC, Focus Engineering

BIKEWAY & TRAIL SYSTEM

The City's bikeway and trail system plays a role in the Parks, Trails, and Open Space system planning as well as contributes to the City's transportation system. Trails and bikeways have the unique opportunity to do 'double duty', that is to say they can provide not only recreational opportunities, but can also serve as a transportation mode choice provided the system is well connected and planned for.

This section addresses the City's bikeway and trail system from a transportation perspective, and while it repeats or restates some of the information contained in Chapter 6, the purpose of this section is to identify how the system will be planned for and contribute to the City's comprehensive transportation system as the community continues to grow and evolve.

As indicated in Chapter 6, the City's Comprehensive Trail Master Plan was created and adopted in 2005. While many of the components of the Trail Master Plan (hereafter referred to as the Trail System Plan) should be updated to reflect current and projected development trends, some of the principles contained within the plan continue to be relevant. For example, the 2005 Trail System Plan was developed with the objective of providing a connected network of trails that would created increased accessibility to key destinations within the community. That objective continues to be valid but has now expanded to consider how the system could provide connections to local destinations, and also how the system could provide connections to the larger region.

The City and the transportation system benefit from a trail network through its currently designated recreation and commuter routes. Recreation trails are generally considered an amenity, positively affect the City's image, and in some cases provide connections to the regional and city trail network. Commuter routes link desrinations and provide an additional mode option to vehicular travel. Recognizing the limitations of seasonality in our climate, these routes provide connections for pedestrians and non-motorized vehicles between parks and open spaces, neighborhoods and developments, adjacent cities, and regional trails. A properly designed trail system will help to reduce reliance on automobiles and the volume of auto traffic on the City roadways provided a complete, and comprehensive, system is developed.

Existing Trail Network

Currently, on- and off-road trails, dedicated bicycle lanes, and private trails are provided within the City.

The City will need to focus on connecting recreational trails and linking specific destinations to create an adequate commuter trail system. Providing designated trail links between the schools, the Village area, and other key residential and business areas will improve safety for pedestrians and bicyclists. Planning for some destinations has already occurred through the Lake Elmo Elementary School 2008 Safe Routes to School Plan. However, today in 2018, the issue of safe pedestrian and bicycle access continues to be a discussion topic since crossing of CSAH 14 continues to be challenging at best. Through this planning process, several residents continued to communicate a desire for improved trail connections and access that would be safer, and easier to navigate. Essentially, the community is interested in developing a complete trail network that is safe and has easy to follow wayfinding within the system.

Regional Bicycle Transportation Network, Bikeways and Trails

42 As part of this Comprehensive Plan update, the Metropolitan Council introduced the concept of planning for the Regional Bicycle Transportation Network (RBTN). The plan suggests that communities look at their existing trail and bikeway network and identify interregional opportunities to connect the system and to create transportation mode choice not only for recreational opportunities, but for overall transportation choice. Figure 7-7 identifies the Metropolitan Council's RBTN planning corridors in the City, and the City's existing trails – or designated routes – are identified on the figure to demonstrate how existing routes support the plan for RBTN. As shown on the trail figures contained in Chapter 6, the City is interested in the opportunity to convert some of the currently designated 'on-road shoulder striped' bikeways to be either dedicated bike lanes or road-separated trails to improve safety and to benefit trail/bike user wayfinding. These improvements are largely identified on County roadways, which align with the RBTN alignments, so the City will need to work with Washington County when improvements are scheduled or planned to help bring these plans to fruition.

As the system continues to grow, and key gaps and links are made, their use will likely increase as residents' and others' comfort level with the system improves. Focusing on public pedestrian/bicycle trail planning and development compliments both the private trail development in several Open Space Development neighborhoods and the 'central place' philosophy, policy, and planning of the City regarding the Old Village.

Generally, the City has been and will continue to be focused on creating a multi-purpose, connected and comprehensive trail network in the community that provides recreational opportunities as well as transportation mode choice. The City's Park Commission has established the following vision for the system in the 2005 Trail System Plan, and it continues to be appropriate today:

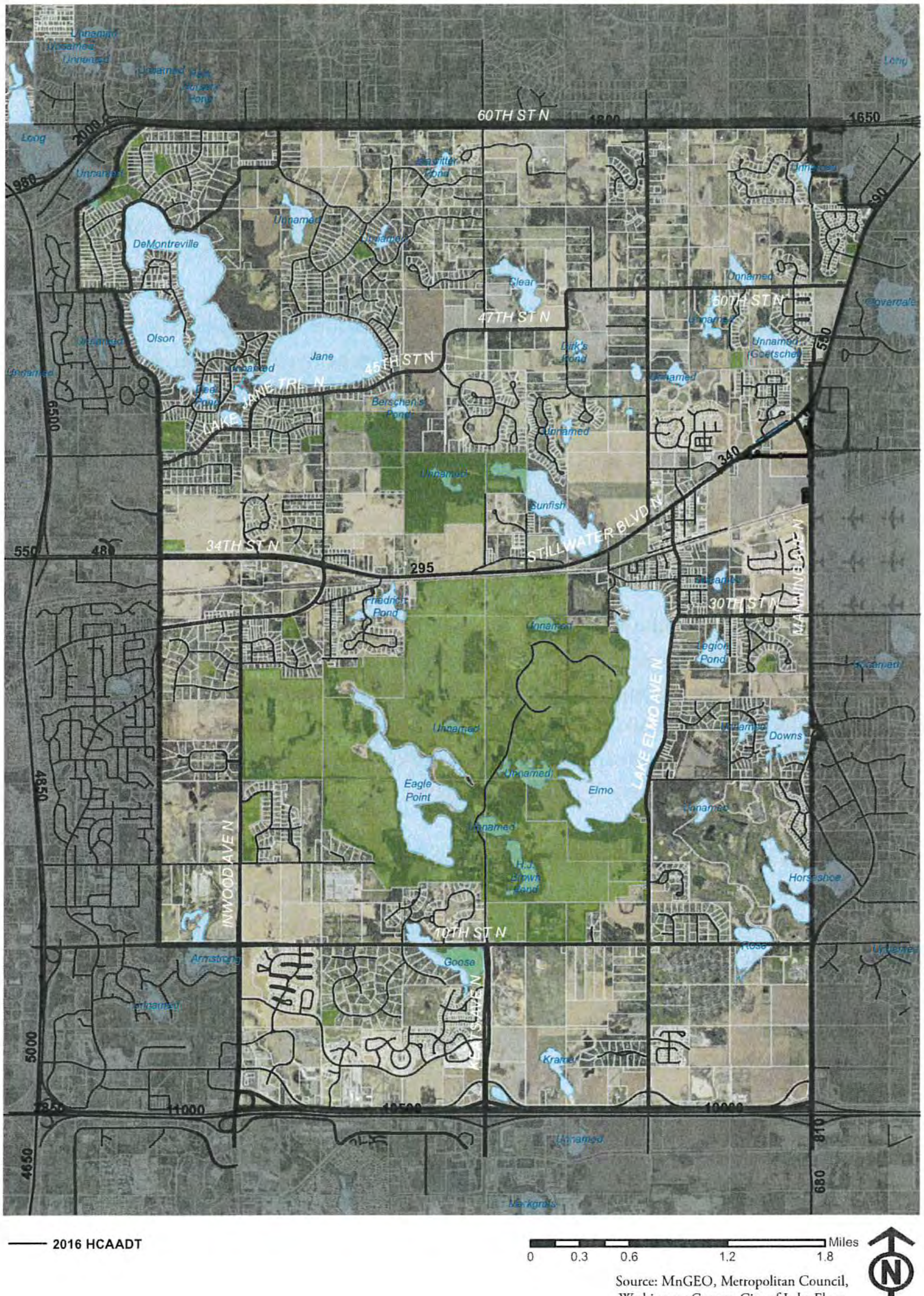
> *"The City will develop a safe, convenient and integrated system of trails linking neighborhoods, schools, the "Old Village," and parks that will focus on the natural resources and character of Lake Elmo and help safely meet the recreation, health/fitness, and transportation needs of its residents."*

FREIGHT

Trucking

The movement of goods and services throughout Washington County is conducted through various modes of transportation including commercial trucking. Many of the County's roads are designated truck routes, that are designed and constructed to accommodate and support the transport of freight by truck. Figure 7-8 identifies 2016 Heavy Commercial AADT on roads adjacent to, or within the City of Lake Elmo.

Figure 7-8. Heavy Commercial / Freight



RAIL

Existing Characteristics

There is one active railway in Lake Elmo, owned by Union Pacific Railroad Company. This east-west rail line travels through the middle of the City, generally adjacent to 34th Street/Stillwater Boulevard (CSAH 14). According to current Mn/DOT records, the track shows an average of four trains per day with a top speed of 40 mph. This is in conflict with information from Union Pacific, which states an average use of five trains per day at 30 mph. Additional information from Union Pacific indicates two of these trains operate at night.

There are four public at-grade crossings in the City, located at the crossings of 31st Street, Klondike Avenue, Lake Elmo Avenue (CSAH 17), and Manning Avenue (CSAH 15). The Lake Elmo Avenue (CSAH 17) and Manning Avenue (CSAH 15) crossings have flashing lights and warning bells for oncoming trains. The other two public at- grade crossings are under stop sign control. In addition to these public at- grade crossings, there are several private at-grade crossings. In general, these private crossings are controlled with stop signs.

Safety

Crossing of the railway shonld only occur at those marked locations. Crossing at unauthorized locations is illegal and dangerous. A fully loaded train moving at 40 mph can take close to a mile or more to come to a complete stop. When the train engineer sees something on the track, such as a vehicle or pedestrian, it is often too late to stop the train. Because of this and as required by law, all other modes of traffic must yield to trains at the crossing locations, including emergency services, bicycles, and pedestrians.

Depending upon the speed and length of the train, stopping for a train can add noticeable delay to a trip. The size of a train also leads to a perception of a slower traveling speed. Combining this perception with the potential delay, motorists or others may attempt to 'beat' the train creating a significant safety risk.

To date, the risk has not translated into a problem. Mn/DOT crash records did not show any vehicle-train crashes in the years 1998 through 2007.

However, the Federal Railroad Administration (FRA) did provide records for one crash at the Lake Elmo Avenue (CSAH 17) crossing. From FRA records, a single vehicle crashed into a train at this location in 2007. The crash caused property damage only with neither the vehicle driver nor train personnel injured.

Rail Planning

A public at-grade crossing is planned in the Village area, to the east of the Village center. The crossing location, while not yet in place, has been determined by the Easton Village residential housing development which has been preliminary platted, and with this Plat the alignment of Village Parkway has been established from 30th Street to the UPRR. At the time of the crossing construction it is expected that the existing private crossing will be closed.

The number of trains may increase on the Union Pacific line whether through a general increase in freight deliveries or a possible commuter rail, as described in the Transit Section. This rail line is part of a primary route between the Twin Cities and Chicago as well as through Milwaukee. The connection of these major cities creates the potential for increased rail traffic at any time.

Projected traffic volumes show motorized traffic increasing around the rail corridor. Non-motorized traffic is also expected to increase in the area and at rail crossings. As these volumes increase into the future, potential delays at the crossings will increase and the potential safety issues subsequently increase. Consideration of safety and the crossing locations is particularly important for the higher density expected in the Village Area as well as its planned new public at-grade crossing. To combat the increase in potential risk, the City will work to improve conditions through:

- Providing education focused on safe driving, biking, and walking behaviors at crossing locations.
- Closing private crossings when feasible and when development or redevelopment occurs.
- Upgrading existing crossings to include lights and warning hells, or improve to full lights and guard arms.
- Including safety components in any new at-grade crossing.

Ultimately, all users of the transportation network may benefit from grade-separated crossings at one or more of the public locations. Grade- separated crossings physically separate the trains from other modes of travel. The City will need to work with the other agencies and the railroad as opportunities arise and traffic volumes increase into the future. When opportunities arise, the City will work with other agencies or organizations to provide rail crossing information and safety tips.

Quiet Zones are another option to consider for the railroad crossings. The term "Quiet Zone" pertains to a single highway/railroad at-grade crossing or a consecutive stretch of highway/ railroad at-grade crossings (rail corridor) in which a train engineer, under normal conditions, is ordered not to blow the train horn while approaching the crossing. From the community's point of view, the result can be improved living conditions as loud train horns are silenced. From the railroad's perspective, a warning and safety device, the loud train horn, has been silenced. The City will consider the potential safety implications, monetary cost, community benefits, and other factors before implementing a Quiet Zone. The City will also work with other agencies and the railroad in determining the need/desire for a Quiet Zone and/or implementing the Quiet Zone.

AVIATION

While Lake Elmo does not directly host an airport, the Lake Elmo Airport is located in Baytown Township adjacent to the City's eastern border. The runways of the airport are oriented such that aviation safety and clear zones extend into the City. With airport approach patterns stretching over Lake Elmo, residents and businesses of the community are impacted by airport operations and the policies and planning of the Metropolitan Airports Commission (MAC).

Located on approximately 640 acres of land, this airport first opened in 1951 and is one of seven airports in the region owned and operated by the MAC. During its time in operation, the Lake Elmo Airport has existed as a General Aviation "good neighbor" to the City. To ensure the continuance of this "good neighbor" environment, elected and appointed City officials regularly monitor the activities of the MAC in their efforts to manage and plan for this airport. The most recent long-term comprehensive plan for the Lake Elmo Airport was prepared by the MAC in 2016. A summary of The Lake Elmo Airport 2035 Long-Term Comprehensive Plan (LTCP) information is provided as follows. Some text is taken directly from the LTCP for reference in this Plan chapter.

Existing Conditions & Issues

The current definition or classification of the Lake Elmo Airport depends upon the agency. Four agencies (MAC, FAA, MnDOT, and Metropolitan Council) each classify this airport in their terms, which are provided below. While differing in language, the common theme for classification is general aviation activity focused on personal or recreational use with minor business use.

- The MAC considers the Lake Elmo Airport as a "complimenrary reliever," serving as a recreation use airport.
- The Federal Aviation Administration (FAA) National Plan of Integrated Airport Systems (NPIAS) identifies airports that are significant to national air transportation with both a Service Level and Asset Role for each airport. The Service Level describes tbe type of service the airport currently provides to tbe community, and the Asset Role is assigned using operational categories developed in the ASSET 1 report.

  In rhe 2015-2019 NPIAS, the FAA classifies Lake Elmo Airport as follows:

» **Service Level: Reliever.** The FAA has encouraged the development of high-capacity general aviation airports in major metropolitan areas. These specialized airports, called relievers, provide pilots with attractive alternatives to using congested hub airports. They also provide general aviation access to the surrounding area. To be eligible for reliever designation, these airports must be open to the public, have 100 or more based aircraft, or have 25,000 annual itinerant operations. Lake Elmo Airport qualifies as a reliever on the basis of having over 100 based aircraft.

» **Asset Role: Local.** Local airports supplement communities by providing access primarily to intrastate and some interstate markets. These airports accommodate small businesses, flight training, emergency service, charter passenger service, cargo operations, and personal flying activities. They typically accommodate smaller general aviation aircraft, mostly single-engine and some multi-engine propeller aircraft.

The Minnesota Department of Transportation (MnDOT) classifies the Lake Elmo Airport as an Intermediate System Airport, suggesting a paved lighted runway of up to 5,000 feet and capable of accommodating all single engine and most twin engine aircraft as well as some light jet aircraft. According to the latest Minnesota State Aviation System Plan (SASP) published in 2013 by, Lake Elmo Airport is identified by MnDOT as one of the state's intermediate airports potentially needing a runway extension based on the operational requirements of the airport's critical aircraft.

The Metropolitan Council considers the Lake Elmo Airport a Minor Airport, meaning a primary runway length between 2,500 and 5,000 feet with either precision or non-precision approach and accommodating personal use and recreation aircraft, business general aviation and air taxi traffic, flight training, and military operations.

Based on the most recent study in 2014, Lake Elmo Airport has just over 200 based aircraft and accommodates approximately 26,000 total annual aircraft operations. It has two paved runways. The primary runway (Runway 14-32) is 2,849 feet long by 75 feet wide and is lighted with Medium Intensity Runway Edge Lights, end identifier lights, and precision approach path indicators. The crosswind runway (Runway 04-22) is 2,496 feet long by 75 feet wide and is not lighted.

It should be noted with regard to aviation outside of Lake Elmo Airport that seaplanes are currently permitted to operate on Lake Elmo within the City and must follow guidelines set forth in Minnesota Rules 8800.2800.

Identified Issues

Previous reports indicated several deficiencies of the airport, including lack of a weather station. Since then, an automated weather system has been added. Other issues noted included:

- The runways are the shortest of the area's reliever airports
- The registered aircraft is almost up to the capacity of the hanger areas.
- The airport is currently using wells and septic systems rather than sanitary sewer and water facilities.

Runway Protection Zones and State Safety Zones extend into the City. These areas restrict land use off runway ends to help ensure the safety of people and property on the ground. The dimensions of Runway Protection Zones are based upon the aircraft approach category and runway approach visibility minimums. The runways at the Lake Elmo Airport require a Runway Protection Zone in a trapezoid area extending beyond the end of a runway and intended to be clear of structures and places of public assembly in order to enbance safety for those operating at the airport and for people on the ground.

The FAA's updated RPZ guidance, issued in 2012, clarifies and tigbtens up the policy on what constitutes an incompatible land use in an RPZ, now defined to include public roadways and railroads. The FAA also clarified the process to evaluate proposed land uses that would be introduced into an RPZ based upon a triggering action. A triggering action could be an airfield project, an off-airport development proposal, or an operational change at the airport.

Based on FAA guidelines, Mn/DOT has further designated land use safety zones and other Airport Zoning Standards, as established in the Minnesota Rules Chapter 8800.2400. Minimum Standard Zones are; Safety Zone A, Safety Zone B, and Safety Zone C. These zones are intended to restrict land uses that may be hazardous to the operational safety of aircraft using the airport and to protect the safety and property of people on the ground in the area near the airport. Details for restrictions within these zones can be found online at https://www.revisor.mn.gov/rules/?id=8800.2400.

Another restriction to development around airports is noise or Day-Night Average Sound Level (DNL). The FAA requires the DNL noise metric to determine and analyze noise exposure and aid in the determination of aircraft noise and land use compatibility issues. The MAC suggests that the 60 DNL contour be used for planning purposes inside the Metropolitan Urban Service Area (MUSA). Since much of Lake Elmo is not within the MUSA, the planning also includes the 55 DNL. More information regarding the location of the Runway Protection Zones, Safety

Zones, and DNL contour impact areas, including graphics, can be found in the MAC's LTCP for the Lake Elmo Airport.

Finally, Federal Regulation Title 14 Part 77 establishes standards and notification requirements for objects affecting navigable airspace. Each sponsor who proposes certain types of construction or alteration, which includes buildings/structures and roadways, shall notify the FAA. This notification allows the FAA to identify potential aeronautical hazards in advance to prevent or minimize adverse impacts to the safe and efficient use of navigable airspace. Once notified, the FAA will conduct an aeronautical study to determine the impact to air navigation. One of three responses is then typically issued:

- No Objection - subject construction did not exceed obstruction standards and marking/lighting is not required.
- Conditional Determination - proposed construction/alteration would be acceptable contingent upon implementing mitigating measures (Marking & Lighting, etc.).
- Objectionable - proposed construction/alteration is determined to be a hazard and is thus objectionable.

Source: Federal Aviation Regulations Part 77: Objects Affecting Navigable Airspace

The FAA's Form 7460-1, Notice of Proposed Construction or Alteration, can be found through this link to the FAA's website: http://forms.faa.gov/forms/faa7460-1.pdf

Recent Airport Improvements

The following facility improvements have been completed at Lake Elmo Airport since the completion of the previous LTCP in 2006:

- Installation of an Automated Weather Observation System (AWOS) by MnDOT in 2008
- Rehabilitation of Runway 14-32 taxiway connectors in 2008
- Reconstruction of the apron/run-up area in front of the MAC Maintenance Building, replacement of the pavement on the main entrance road, and airfield crack repairs in 2009
- Reconstruction of the center 40-feet of Runway 14-32 in 2012
- Rehabilitation of portions of Runway 04-22 and its parallel taxiway in 2013

- Reconstruction and widening of portions of Runway 04-22 parallel taxiway and north building area alleyway pavement rehabilitation in 2015

All of the airfield areas at Lake Elmo Airport are asphalt, but they vary in pavement age, thickness, and structural section. Runway 14-32 and the associated taxiways were originally constructed in 1951. Runway 04-22 and its parallel taxiway were built in 1967. The north side taxiway was partially constructed in 1981 and was extended to its current length in 1992. Over time, pavement overlays, rehabilitation, reconstruction and/or crack repair methods have changed the characteristics of the pavement from section to section.

The Airpott Pavement Management Program for the MAC Relievers has included periodic pavement condition inspections, most recently in 2013. The inspections were completed in accordance with FAA guidelines and utilized the Pavement Condition Index (PCI) Method.

Existing landside facilities, including the existing number of aircraft storage hangars, appear to be adequate to support anticipated levels for both based aircraft and total operations. No new hangar development areas are proposed, although areas to accommodate the construction of additional hangars should be preserved in the LTCP.

Airport Planning

One of the most significant challenges facing airports today is the presence of incompatible land use, either adjacent to the airport or in runway flight paths. Working closely with municipal officials, airport users, developers, and any nearby residents, airports can reduce these types of conflicts through the use of zoning regulations that disallow certain types of nearby development.

Lake Elmo Airport is located in Baytown Township with the City of Lake Elmo adjacent and directly west and West Lakeland Township adjacent and directly south of the airport property. All of these areas are located in Washington County. Washington County has adopted an overlay district for Lake Elmo Airport to control the type and extent of land development adjacent to and near the airport. The City of Lake Elmo does not have its own airport overlay district.
As the Lake Elmo Airport is not located within the City limits, it is primarily the Runway Protection Zones, Safety Zones, and noise restriction guidelines that affect land use planning within the City. Currently, land use around the airport is used or planned for Agricultural, Open Space, or Single Family Detached. In general, the surrounding

land uses are compatible with the airport. New residential development in recent years is getting closer to the airport property. Approximately 320 single-family residential homes at a density of approximately 2 to 2.5 units per acre are built or under construction in the residential developments known as the Easton Village and Village Park Preserve, which include a new north-south minor connector road between 30th Street North and 40th Street North and several stormwater detention ponds. MAC staff reviewed the plans for these developments and provided comments to the City of Lake Elmo emphasizing the potential for aircraft overflights and noise, along with items related to the design of the stormwater ponds and landscaping.

Airport Forecasts & Proposed Development

Forecasts were completed for airport operations and based aircraft in the LTCP. The base year is 2012 and forecasts were prepared for 2015, 2020, 2025, 2030, and 2035. The forecasts for the airport are unconstrained, except for runway length and assume that the necessary facilities will be in place to accommodate demand. Operations at Lake Elmo Airport are projected to decrease slightly from 26,709 in 2012 to 26,138 in 2035 in the Base Case, an average annual decrease of approximately 0.1 percent.

A relocated and longer primary runway is proposed at the Lake Elmo Airport for several reasons:

- The existing 2,850-foot primary runway pavement is in need of full reconstruction.
- The runway must be lengthened in order to meet FAA criteria for runway length for the type of aircraft using the runway today.
- Obstructions on either end of the existing runway make it infeasible to extend the runway in its current location.
- The runway must be relocated in order to best achieve FAA-compliant runway protection zones (RPZs).
- The FAA has indicated that they will require MAC to purchase the private property within the existing RPZ on the west side of Manning Avenue as a condition of receiving grant funding to reconstruct the existing runway in its current configuration.
- The proposed project will achieve the objectives of enhancing safety and improving operational capabilities for the design aircraft family.

Four development alternatives were initially evaluated in the Alternatives Analysis developed for the Draft 2035 LTCP. The Final LTCP Preferred Development Alternative plan includes extending the primary runway to 3,600 feet. The plan proposes the following improvements over the next 20-year planning period:

- Relocate primary Runway 14-32 by shifting the centerline 615 feet to the northeast and extend it to a length of 3,500 feet, including all necessary grading and clearing
- Realign 30th Street N around the new Runway 32 end RPZ and reconnect to the existing intersection with Neal Avenue
- Construct a new cross-field taxiway to serve the new Runway 14 end, including taxiway lighting and/or reflectors
- Convert existing Runway 14-32 into a partial parallel taxiway and construct additional taxiway infrastructure as needed to support the relocated runway, including taxiway lighting and/or reflectors
- Reconstruct existing crosswind Runway 04-22 and extend it to 2,750 feet as recommended in the facility requirements section, including runway lighting, Precision Approach Path Indicator (PAPI) systems, and a new taxiway connector
- Pursue the establishment of a new non-precision instrument approach to the Runway 14 end, and upgrade the existing Runway 04 approach to an RNAV (GPS) type
- Using the projections for the airport, noting the existing deficiencies, and in consideration of several concepts, costs, benefits, and negative issues, the long-term plan recommended a preferred alternative for future development of the Lake Elmo Airport. Table 11 below provides the summary of the recommendations and the timeline for these changes.

One of the goals for the 2035 LTCP is to comply with the FAA's airport design standards, so achieving RPZ compliance in the recommended future condition is a high priority. With the preferred development concept, all RPZs will be contained on property the MAC already owns and be clear of any non-compliant land uses. The MAC would no longer need to acquire private property, and the County roadway project would not be subject to an FAA runway protection zone evaluation and approval process.

In general, the preferred alternative for the Lake Elmo Airport does not change its impact on the City of Lake Elmo. The location of the Runway Protection Zones, Safety Zones, and DNL contour impact areas within the City remain the same. Land use compatibility is therefore expected to remain consistent. For the crosswind runway, areas within the protection and noise contour impact areas are primarily developed. Very limited development, if any, is expected in this area in the future.

For the primary runway, the future development impacts will affect a part of the Village Area. Development scenarios for the Village Area maintain a greenbelt/buffer along Manning Avenue (CSAH 15) specifically to provide a buffer to the airport. The development scenarios do include residential uses within the safety zones and noise contour impact areas. These future residential developments located within the safety zones and noise contour impact areas are subject to development restrictions established by state statute and the City. The City will continue to work with a Joint Airport Zoning Board to minimize land use compatibility issues and implement an airport zoning ordinance.

Amphibian and Float-Equipped Plane Operations

Seaplanes are allowed to operate on several lakes within the metro area. When lakes are frozen, aircraft equipped with either wheels or skis may operate on the lakes if such operations can be conducted in a safe and reasonable manner relative to lake traffic and use. These types of aircraft are under multiple Minnesota State Statutes to guide their operation and promote safety. These Statutes include:

- Minnesota Rules 8800.2600, Compliance with Marine Traffic Rules: All seaplanes must comply with marine traffic rules to the extent that such rules do not interfere with the safe operation of aircraft.
- Minnesota Rules 8800.2700, Approaches and Takeoffs: All approaches to and takeoffs from rhe water area shall be made in such a manner as to clear all structures on the lane by at least 100 feet, and wherever the area of body of water will permit, such landing and takeoffs shall be made at a distance of not less than 300 feet, both laterally and vertically, from any boat or person on the surface of the water, or as near to 300 feet as the area of water will permit.
- Minnesota Rules 8800.2800; Seaplanes operations are permitted only on the following public waters within Washington County - Big Carnelian Lake, Big Marine Lake, Clear Lake, Forest Lake, Lake Elmo, Mississippi River, Oneka Lake, and St. Croix River. Seaplane operations are prohibited on all other public waters within Washington County.

In addition, the Minnesota Department of Natural Resources and the Federal Government have restrictions and guidelines on seaplanes that may affect their operations within the City of Lake Elmo. The Mn/DOT Office of Aeronautics and Aviation should be consulted for more details on the rules and guidelines regarding these types of aircraft.

Information regarding this type of plane activity on the allowed lakes is not available. As such, projections of usage on the lakes for these types of aircraft are not available either. In any case, the City is committed to safe and lawful plane activity on its lakes.

TRANSPORTATION IMPLEMENTATION PROGRAM

The following program will be implemented in order to ensure that the City's Transportation goals and policies are met.

- The City will continue to advocate for a transportation network that coincides with the overall goals of the City; safety, multi-modal, and preserving the rural character.
- The City will continue to work with surrounding Cities, Washington County, the Minnesota Department of Transportation, and other government agencies in development of a transportation network consistent with the goals and policies of this plan.
- The City will work with developers for improvements to the transportation network that will serve its goals and strategies. A specific example is the creation of a Minor Collector road between 10th Street (CSAH 10) and Hudson Boulevard (I-94 frontage road). This new roadway would reduce traffic volumes on 10th Street (CSAH 10) and Hudson Boulevard (I-94 frontage road), eliminating the need for four-lane facilities.
- The City will participate in coalitions and multi-jurisdictional efforts for improvements to the transportation network that coincide with the overall goals of the City. This could include corridor studies/groups, transit oversight panels, and/or construction projects.
- The City will continue to improve the transportation nerwork to reflect all modes of travel.
- The City is supportive of the four major focus areas in pursuit of safety improvements: Education, Enforcement, Engineering, and Emergency Medical Services. Combination of these focus areas result in better solutions to targeted or general safety issues. Of particular concern are the areas around schools and keeping students safe. Applying these major focus areas towards the school areas is encouraged and expected.
- The City will continue to pursue a TH 36 access and connectivity plan to provide a safe and adequate service to residents of Lake Elmo while minimizing traffic by-passing through the city. The City will work with the County and the State on the ultimate plan for TH 36, including its connections to the City.

- The City supports improvements that will eliminate the need for a four-lane facility on Stillwater Boulevard (CSAH 14). Examples of improvements could include one or more of the following: upgrade TH 36 to "freeway" status, upgrade of Manning Avenue (CSAH 15) to a four-lane facility, reconfiguration of the Stillwater Boulevard (CSAH 14)/Manning Avenue (CSAH 15) intersection with the 40th Street (CSAH 14)/Manning Avenue (CSAH 15) intersection to create a single four-legged intersection, access management, alternative intersection control, expanded transit opportunities, and expanded trail system. These options could allow for more extensive landscaping and streetscaping on Stillwater Boulevard (CSAH 14), consistent with its expected redevelopment.
- The City will continue to support improvements that will maintain the rural character of Lake Elmo Avenue, in particular along the eastern shoreline of Lake Elmo.
- The City will update and refine their Capital Improvement Plan to be consisrent with the goals and strategies described in this plan.

Capital Improvement Plan

The Capital Improvements Plan (CIP) is the financial planning mechanism used by communities to plan for long-term major expenditures. Lake Elmo adopts a 5-year CIP annually. Each year is it reviewed and revised as priorities change. The upcoming year of the CIP is used to aid in the annual budgeting process. Each year the City adopts an annual budget. Expenditures are made in accordance with this budget for the following year.

The Comprehensive Plan sets forth overall direction for the City; the 5-year CIP and annual budget implements the goals and policies contained within it. Each year, every item in the CIP should be evaluated in relation to the goals, policies, and general direction of the Comprehensive Plan. This allows spending decisions to be made within the overall contexr and future plan for the City. It is important that the financial tools implement the intent of the Comprehensive Plan.

TRANSPORTATION APPENDIX : 2040 TAZ

Transportation Analysis Zones		Population			Households			Retail Employment			Non-retail Employment			Total Employment		
Regional Model	Wash. Co. Model	2020	2030(a)	NEW 2040	2020	2030(a)	NEW 2040	2020	2030(a)	NEW 2040	2020	2030(a)	NEW 2040	2020	2030(a)	NEW 2040
2349	157	423	423	423	173	180	192	0	0	0	0	0	12	0	0	12
2350	158	641	563	563	256	256	256	0	0	0	3	0	61	3	0	61
2350	159	820	750	664	253	277	302	0	0	0	17	0	550	17	0	550
2351	160	596	475	440	198	200	203	0	0	0	0	0	0	0	0	0
2352	161	580	398	308	193	193	193	0	0	0	19	0	0	19	0	0
2352	162	25	525	847	12	167	321	0	0	0	0	0	0	0	0	0
2353	163	152	135	118	51	52	54	0	0	0	1	49	93	1	49	93
2354	164	843	1,000	1,135	154	400	423	71	200	223	349	317	300	420	517	523
2354	165	58	60	66	16	30	30	0	0	0	10	0	0	10	0	0
2355	166	406	620	825	109	142	150	0	0	0	0	0	0	0	0	0
2355	167	46	50	64	12	30	29	0	0	0	0	0	0	0	0	0
2355	169	356	306	256	85	100	116	0	0	0	0	51	96	0	51	96
2387	237	51	447	843	24	200	312	62	65	69	84	84	84	146	149	153
2387	238	172	264	356	67	99	132	0	0	0	19	0	0	19	0	0
2387	239	564	500	440	199	199	199	0	0	0	4	0	0	4	0	0
2387	240	4	200	620	3	74	230	0	89	92	13	0	0	13	89	92
2387	241	0	425	582	0	214	214	0	0	0	0	0	0	0	0	0
2388	242	2	0	0	1	0	0	0	0	0	5	2	0	5	2	0
2388	243	181	253	325	89	100	115	135	115	100	94	80	0	229	195	100
2389	244	53	62	71	18	20	22	0	0	0	164	164	164	164	164	164
2389	245	414	375	342	157	157	157	0	0	0	0	0	0	0	0	0
2401	257	8	17	23	4	10	10	0	0	0	3	1	0	3	1	0
2401	258	232	162	173	70	74	78	0	0	0	0	0	0	0	0	0
2402	259	276	167	167	76	76	76	0	0	0	31	15	0	31	15	0
2402	260	121	28	28	47	13	13	0	0	0	2	1	0	2	1	0
2403	261	178	363	824	100	352	349	0	0	0	0	10	0	0	10	0
2410	274	0	304	2,795	0	227	1,118	0	133	311	5	116	116	5	249	427
2410	275	120	617	2,341	37	287	861	0	0	0	5	30	32	5	30	32
2410	276	510	2,500	2,040	445	625	750	0	2	4	68	1,772	128	68	1,774	133
2410	277	0	1,314	1,314	0	486	487	3	79	151	23	3,193	329	26	3,272	480
2411	278	568	568	568	0	209	209	0	134	88	5	18	0	5	152	88
2411	279	0	1,300	1,385	26	500	579	151	100	50	504	504	504	655	604	554
2411	280	156	1,700	1,700	37	670	670	0	0	0	153	0	0	153	0	0
2411	281	0	1,200	1,310	0	55	485	24	421	253	172	580	0	196	1,001	253
TOTALS		8,555	18,071	23,957	2,912	6,674	9,336	446	1,338	1,342	1,753	6,987	2,469	2,199	8,325	3,811

(a) 2030 calculations per current TAZ boundaries are estimated based on staging plan.

(b) 2030 caluclations have been adjusted based on the revised populations projections and future land use plan contained in Chapter 3

DRAFT Chapter 8: Surface Water Management

Protect, Preserve & Conserve




INTRODUCTION AND PURPOSE

The purpose of this chapter of the Lake Elmo 2040 Comprehensive Plan and the Lake Elmo Local Surface Water Management Plan (LSWMP) is to guide the City of Lake Elmo in conserving, protecting, and maintaining the quality of its surface waters, ground water, and natural resources. The City is generally positioned to follow water management strategies and regulations set forth by the governing watershed districts. According to the Metropolitan Surface Water Management Act of 1982, local units of government in the seven-county metro area prepare and implement comprehensive surface water management plans through membership in a watershed management organization (WMO) or a watershed district (WD). The primary goals of the Metropolitan Surface Water Management Act are to:

- Protect, preserve, and use natural surface and groundwater storage and retention systems;
- Minimize public capital expenditures needed to correct flooding and water quality problems;
- Identify and plan for means to effectively protect and improve surface and groundwater quality;
- Establish more uniform local policies and official controls for surface and groundwater management;
- Prevent erosion of soil into surface water systems;
- Promote groundwater recharge;
- Protect and enhance fish and wildlife habitat and water recreational facilities; and
- Secure the other benefits associated with the proper management of surface and groundwater.

(Source MN Board of Water and Soil Resources, www.bwsr.mn.us)

This Plan chapter therefore recognizes that the responsibility of water resource management is in the hands of numerous agencies and organizations each tasked with monitoring and planning for water resource management and environmental protection. It intends to meet the provisions of Minnesota Statutes §473.157 and §103B.235, Minnesota Rules 8410, and standards and requirements of the three watershed districts intersecting Lake Elmo municipal boundaries: Valley Branch, South Washington, and Brown's Creek Watershed Districts.

Lake Elmo's LSWMP avoids duplicating efforts of others by adopting or referencing the standards and policies of the Brown's Creek Watershed District (BCWD), Valley Branch Watershed District (VBWD), South Washington Watershed District (SWWD), Washington County, the Metropolitan Council, State of Minnesota Agencies such as the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Natural Resources (MnDNR), the Minnesota Department of Health (MDH), and the Board of Soil and Water Resources (BWSR), plus Federal Agencies, most notably the Environmental Protection Agency (EPA) where applicable.

2040 Surface Water – What's to Come

» The City primarily partners with the local watershed management organizations to regulate and manage surface water resources in Lake Elmo.

» Surface water management best practices will continue to be critical for maintaining and improving water quality for City residents.

CITY OF LAKE ELMO LOCAL SURFACE WATER MANAGEMENT PLAN

Plan Summary

The City of Lake Elmo's Local Surface Water Management Plan (LSWMP) together through its MS4 Permit implementation helps guide the protection and management of surface waters, ground water, and related natural resources in the City of Lake Elmo. The existing LSWMP was adopted in 2009 for a ten-year period and developed as a part of the City's 2030 Comprehensive Plan to meet the requirements of the applicable State Statutes, the Metropolitan Council, and local Watershed Districts. The LSWMP will be updated as part of the implementation of the Lake Elmo 2040 Comprehensive Plan Update and to comply with current regulations and requirements of these organizations. While the City's fully adopted LSWMP will be updated as an implementation step to this planning effort, where available, the relevant sections of this Chapter have been updated to reflect revised data and information available from the applicable agencies.

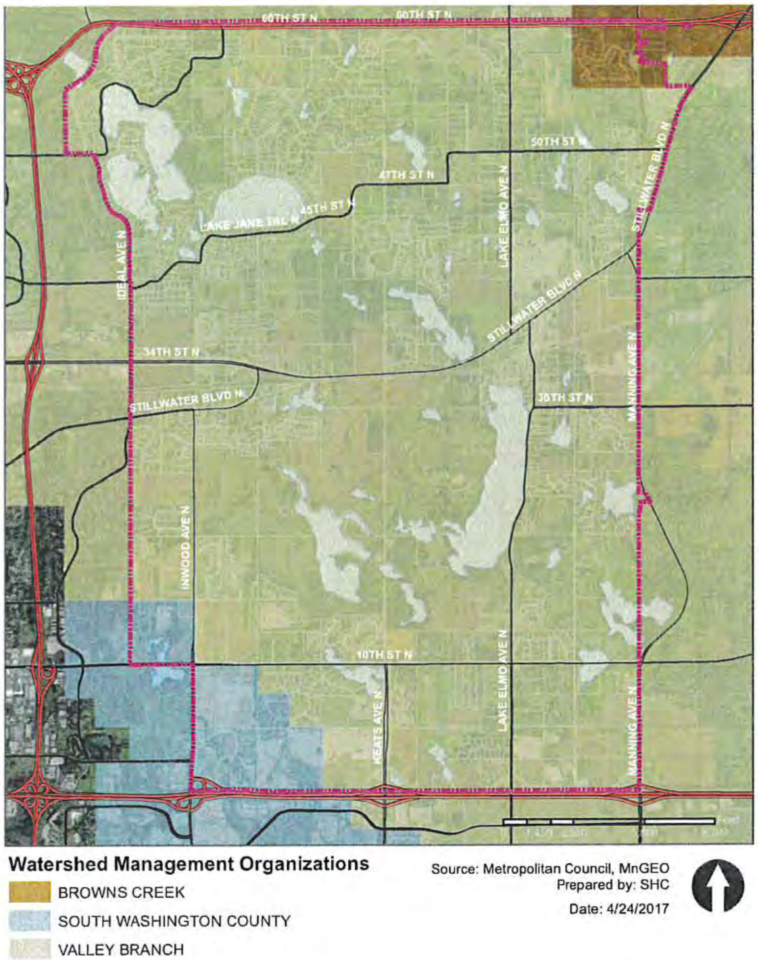
Lake Elmo's adopted LSWMP is divided into eight sections:

1. Purpose and Scope
2. Physical Setting
3. Regulatory Setting
4. Related Studies, Plans and Reports
5. Goals and Policies
6. Assessment of Problems and Corrective Actions
7. Implementation
8. Administration

The City has land area that falls within three Watershed Districts - the Valley Branch Watershed District, South Washington Watershed District, and Brown's Creek Watershed District. (See Map 8-1: Lake Elmo Watershed Districts.) The City concurs with the watershed management plans and standards adopted by these Districts. The current plans of these organizations were used to develop several sections of this Chapter, and updated information will be incorporated into the City's revised LSWMP to include goals, policies, and implementation actions that addtess issues identified by the City and others.

Approximately 10 percent of the City is covered by lakes and wetlands, and the City also possesses several creeks. Goals and policies indicate the Watershed Districts will continue to take the primary regulatory role in surface water management of these water features within Lake Elmo. Lake Elmo works collaboratively with the watershed districts for permitting development and redevelopment projects. The Watersheds will review project applications to ensure district storm water management requirements are being met with regards to rate control and volume control rules. Lake Elmo reviews the development and redevelopment projects to ensure quality infrastructure and that the storm water BMPs constructed to meet permit requirements, are

Map 8-1. Watershed Boundary Map



constructed in accordance with the City Engineering Design Standards. Both the City and Watershed oversee development and redevelopment projects as they relate to erosion control site management. In addition, the City will continue to implement its adopted MS4 Permit and SWPPP to manage and maintain the surface waters and infrastructure in the City and educate its residents about the importance of protecting surface and ground water resources.

The goals, policies, and implementation of the LSWMP note that the City will enforce its zoning and subdivision ordinances to assist in maintaining or improving the quality of surface and ground waters within Lake Elmo. More detail of the goals and policies are included later in this Chapter. The City will update its applicable codes to ensure they meet the requirements of the Metropolitan Council, are consistent with the Watershed Management Plans and standards, and conform with the Washington County Groundwater Plan. The City will continue to cooperate with local Watershed Districts, the Washington Conservation District, Washington County, its residents, and others to protect and enhance surface water, ground water, and related natural resources for current and future generations.

Local Water Management Responsibilities and Related Agreements

Each of the three watershed districts that intersect the city boundaries of Lake Elmo regulates potential development impacts to water resources within their respective district by managing permitting and providing comments on development proposals and other permit applications. The City of Lake Elmo also adopts the water management plans, rules, and standards of all three watershed districts by reference within its LSWMP and reaffirms it within this Plan chapter.

The majority of the City is contained within the Valley Branch Watershed District (VBWD), and the VBWD serves as the local governmental unit (LGU) for the Wetland Conservation Act (WCA) for the City of Lake Elmo. The City is the LGU for the WCA within the Brown's Creek Watershed District (BCWD) and the South Washington Watershed District (SWWD) areas, and portions of the City within the BCWD and SWWD are mostly developed. The City utilizes the services of the Washington Conservation District (WCD) in carrying out its responsibilities under WCA in BCWD and SWWD. The WCD provides services to administer WCA, including wetland determinations, review of wetland delineations and impact applications, recommendations to the City, preparation of notices of application or decisions, and other administrative tasks.

The City of Lake Elmo also has an approved Municipal Stormwater (MS4) Permit from MPCA and storm water pollution preparation plan (SWPPP), for which it implements SWPPP requirements. Copies of these documents are included in the Appendix of the LSWMP. The City is otherwise responsible for construction and maintenance of all municipal storm water management infrastructure associated with City roads and rights-of-way.

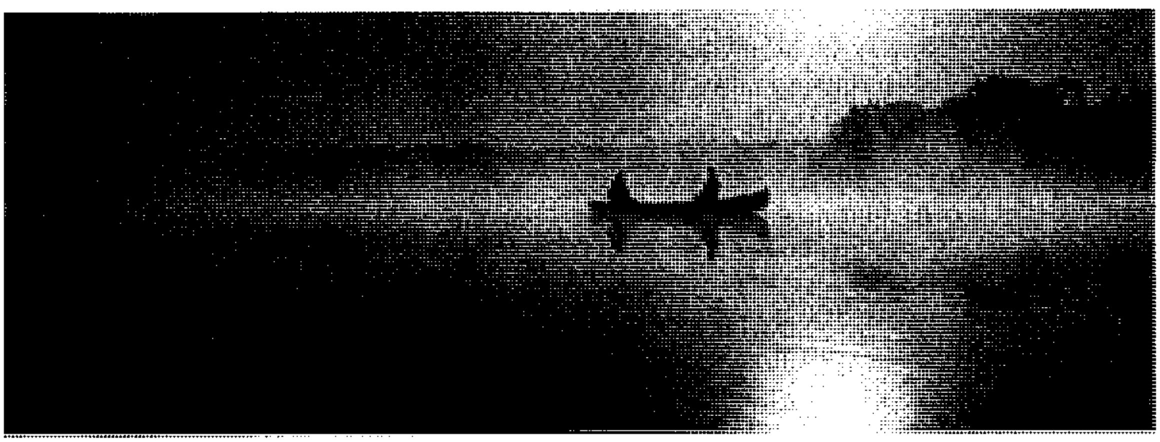
The City of Oakdale, the City of Lake Elmo, and the VBWD entered into a joint powers agreement for storm water management for the 3M property on the east and west sides of Ideal Avenue (in Lake Elmo and Oakdale, respectively). Discharge rates must be compliant with this agreement for any future development of this area. A copy of the agreement is included in the Appendix of the LSWMP.

Plan Revisions and Amendment Procedures

To keep current with local practices and policies and address unintended issues, the City may need to revise and update the adopted LSWMP. Written petitions from residents or business owners for LSWMP amendments must be submitted to the City Administrator stating the reason for the requested amendment and providing supporting information for the request.

The City may reject the petition, delay action on the petition until the next full LSWMP revision/update, or accept the petition as an urgent issue that requires immediate LSWMP amendment. The City of Lake Elmo may also amend the LSWMP in response to City-identified needs. Any amendments made to the LSWMP must be submitted to the three Watershed Districts for review and approval before adoption by the City.

The current LSWMP was adopted in 2009 and is intended to be in effect for 10 years. The City's LSWMP was scheduled to be updated in 2019 as stated within the adopted LSWMP, and therefore is identified as an implementation step in this 2040 Comprehensive Plan. Much of the information contained within the adopted 2009 LSWMP will continue to be relevant and accurate since the City has adopted and incorporated by reference all three Watershed District's rules and regulations, and the updates to the LSWMP are generally anticipated to include any additional information available from the Watershed Districts that was not available in the last planning period.



PHYSICAL ENVIRONMENT AND LAND USE

Existing Land Use and Physical Environment

The City of Lake Elmo was established in 1969. Located in central Washington County on the east side of the seven-county metro area, land use in Lake Elmo reflects the City's past commitment to the rural landscape and investment in development of primarily single-family detached housing. It now possesses a mix of low-density residential, parks and open space, pockets of agriculture, and scattered commercial uses. (See Map 3-1: Existing Land Use Map 2018)

Between 1970 and 1980, Lake Elmo experienced a significant increase in the number of households (84%). Development slowed during the 1980s and 1990s (17 - 19% increases in households). Population was expected to grow significantly between 2010 and 2020, however, the great recession slowed the rate of development, and the expected population growth was less than forecasted in the City's 2030 Comprehensive Plan.

The physical environment of Lake Elmo is primarily a scenic rural landscape and the recreational lifestyle makes the community highly desirable to residents. Gently rolling land, wooded lots, and a series of lakes offer an appealing setting to residents. The City is home to four "priority lakes", varying in size from 87 to 257 acres. Expanses of the natural landscape are protected in park lands, and pockets of property are protected for agricultural use through the agricultural preserve program. Many areas developed for residential land use are lower density or utilize conservation easements to protect the natural features that provide value to the area. Much of the City's high quality natural areas and rare species are found within the Lake Elmo Regional Park Reserve.

Topography and Geology

Topography influences the direction and rate of runoff as it flows over land. Like most of Washington County, the topography of Lake Elmo was established during the late Wisconsinan glaciation when the glacier retreated leaving behind topographic lows and bedrock surface. The melting glacier ice left many depressions that became lakes and wetlands visible today, as well as hills and steep slopes. Some steep slopes can be found throughout the City's landscape as well. The City's topography and topographical features are illustrated in Map 8-3: Topography to follow. In addition, the Valley Branch Watershed District has compiled topographic mapping to determine the steepness of land and the elevations of features throughout the watershed. More information can be found in the VBWD watershed management plan.

Climate and Precipitation

The climate in the seven-county metro area is described as a humid continental climate with moderate precipitation, wide daily temperature variations, warm humid summers and cold winters. The diverse nature of the air masses impacting Minnesota's climate also leads to seasonal temperature extremes. The total average annual precipitation in this area is approximately 31 inches, and annual snowfall averages around 54 inches (equivalent to approximately 5.4 inches of water). The amount, rate, and type of precipitation a watershed receives have a direct effect on its water resources. Average precipitation amounts can vary locally across the region, and precipitation amounts can vary widely across a watershed during individual storm events.

Despite wide variations in climate conditions, climatologists are studying four significant climate trends in the recently determined in the Upper Midwest (Minnesota Weather Almanac, Seeley, 2006):

1. Warmer winters
2. Higher minimum temperatures

3. Higher dew points
4. Changes in precipitation trends – more rainfall is coming from heavy thunderstorm events and increased snowfall

According to the Soil and Water Conservation Society's (SWCS) 2003 report, total precipitation amounts in the United States (and in the Great Lakes region) are trending upward, as are storm intensities.

More information about climate and its impacts on water resources can be found in the Valley Branch Watershed District's Watershed Management Plan, 2015.

Soils

The Soil Conservation Service (SCS), now the Natural Resources Conservation Service (NRCS), published the Soil Survey of Washington and Ramsey Counties in 1980. The publication provides soil location maps and information on the physical properties of soils found in Washington County.

Within the City of Lake Elmo, the NRCS has identified three soil associations (soil patterns), as generally described here:

1. **Antigo-Chetek-Mahtomedi Association** – These soils are formed dominantly in outwash. They are described as nearly level to steep, well drained to excessively drained, medium textured to coarse textured soils; mostly on outwash plains. These soil types are located in the north central and south eastern areas of the City as well as a small portion in the southwestern area of the City.

2. **Santiago Kingsley Association** – These soils formed dominantly in glacial till. They are described as undulating to steep, well drained, medium textured and moderately course textured soils, and are found on uplands. These soils are found generally in the south western portion of the City reaching north easterly through the central area of the City.

3. **Antigo-Comstock Association** – These soils are formed dominantly in silty mantle and the underlying sandy outwash and in silty lacustrine sediments. They are described as level to moderately sloping, well drained and somewhat poorly drained, medium textured soils on outwash plains and glacial lake plains. These soils are found in the south eastern corner of the City as well as the east central border of the City. A small area in the north central area also has these soil characteristics.

The nature of soils comprising the top layer of unconsolidated material in a watershed is important because soil properties are a primary factor in determining the volume of runoff associated with a given rainfall event. The NRCS *Soil Survey* assigns soil types to a hydrologic group depending on the soils ability to infiltrate water during long-duration storms. The four hydrologic soil group classifications are described below.

Hydrologic soil group types indicate the level of infiltration and compatibility with development for each type of soil. More information about the location of these soil groups in Lake Elmo can be found in the Appendix of the LSWMP.

Group A soils have low runoff potential and high infiltration rates even when thoroughly wetted. These consist of deep, well-drained sands or gravels.

Group B soils have moderate infiltration rates and the potential for runoff. They consist of moderately-deep to deep, and moderate to well-drained soils.

Group C soils have low infiltration rates and generally impede the downward movement of water. These soils have more moderately-fine to fine textures and provide greater amounts of runoff volumes when thoroughly wetted.

Group D soils have very low infiltration rates and very high runoff potential. These soils are associated with clays with high swelling potential and soils with a high permanent water table.

NATURAL RESOURCES

The landscape of Lake Elmo comprises a wealth of natural resources, including many lakes and intermittent wetlands. The location of these features, and efforts to preserve and protect them, should contribute to decisions about the development of new parks, trails, and other recreational facilities.

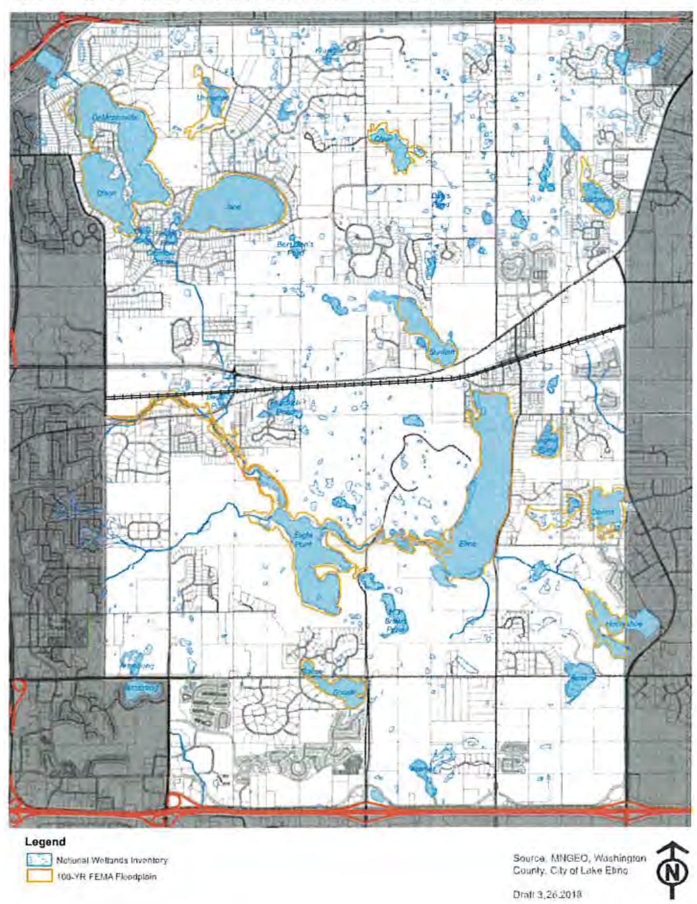
In past planning efforts, the Parks Commission utilized natural resource mapping resources to identify features to include in future park sites. For example, bodies of water and wetlands were characterized with high importance and informed recommendations on future park locations. Locations included forested shoreland on Lake Elmo, shoreland on Goose Lake, shoreland on Clear Lake, shoreland on Kramer Lake, and steep shoreland north of 50th Street. A forested area off of the northern portion of Lake Elmo Avenue was also highlighted.

Other land features and prioritized for different purposes. For instance, relatively flat parcels of land were identified as possible locations for athletic fields. Maps 8-2 through 8-4 identify Lake Elmo's natural resources including wetlands, topography, and significant natural features according to the Minnesota Department of Natural Resources. This mapping will inform decisions when refining locations of future park, trail, and open space uses.

Wetlands

Wetlands provide a rich habitat for wildlife, including birds, mammals, fish, and amphibians, and contribute as well to maintaining the quality of the City's water. Wetlands within parks can be a focal point for nature observation and wildlife watching. Map 6-7 includes wetlands indexed by the National Wetlands Inventory which categorizes wetlands based on quality and significance for habitat, as well as outlines the 100 year floodplain.

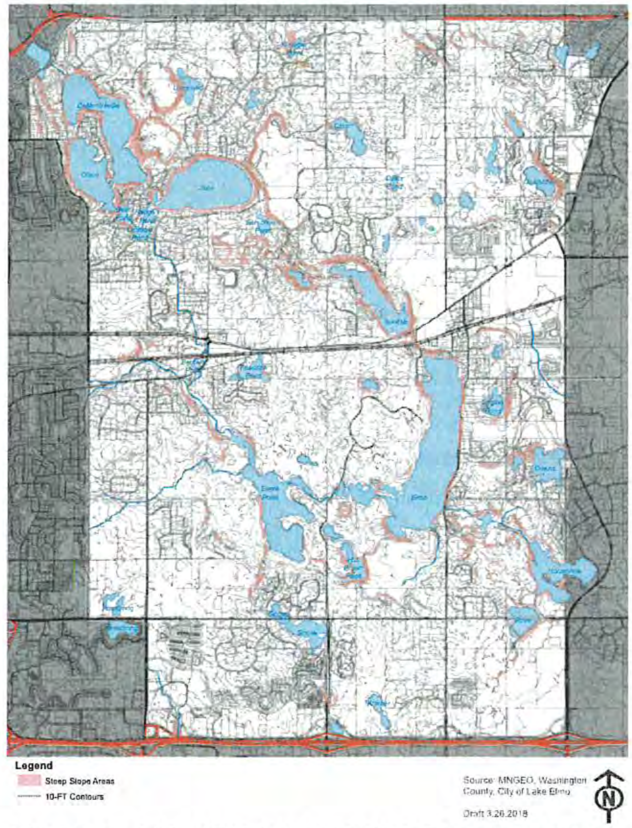
MAP 8-2. WETLANDS AND FLOODPLAIN



Topography

Contour lines describe slopes and flat lands, indicating views and drainage ways. Naturally flat areas are conducive to formal or informal play fields and gardens. High points within parks are opportunities for benches or picnic tables overlooking views below. Slopes may provide opportunities for sledding or natural amphitheaters. Undulating terrain or drainage ways create interest for trails. Playgrounds nestled into a lower area create a sense of safety and separation from nearby streets or homes. Map 8-3 includes contour lines at ten-foot intervals to illustrate topography.

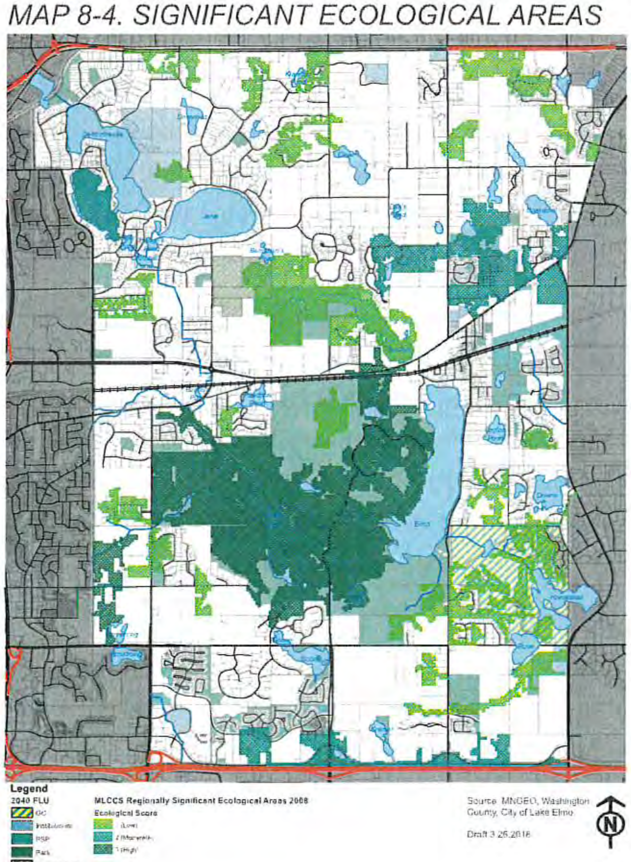
MAP 8-3. TOPOGRAPHY



Biologically Significant Ecological Areas

Land cover refers to vegetation, water, rock, and human-made surfaces on the land. Examples of common land cover in Lake Elmo are agricultural crops, short grass (lawns), forests, woods, and water. Some land cover is identified to special and unique values that make it regionally significant to the quality of natural resources and ecological healthy of the landscape. These lands are important for inclusion in a high-quality PTOS system. Map 8-4 describes significant ecological areas in Lake Elmo.

MAP 8-4. SIGNIFICANT ECOLOGICAL AREAS



Proposed Physical Environment and Future Land Use

Land use data is an important factor for estimating surface water runoff. The hard or impervious surface areas associated with each land use greatly affect the amount of runoff generated from an area. Future land use projections indicate those areas that may be available for water resource enhancement and where improvements should be a priority. Significant changes or intensification of land use can increase runoff due to added impervious surfaces.

The City of Lake Elmo is designated as both an Emerging Suburban Community and a Rural Residential Community meaning that future land use will maintain a mix of rural uses and rural residential densities, as well as suburban-style development. All of the areas potentially available for suburban development are located within the identified MUSA boundaries described as the Village Planning Area and the South Planning Area in this Plan.

Forecasts contained within Chapter 3 of this Plan, indicate that approximately 2,200 additional households will be added to the MUSA planning area in addition to the households already planned for between 2010 and 2020. In addition the additional households within the MUSA, there will likely be some growth within the Rural Residential areas with conventional subdivisions and open space developments.

Utilities

Portions of Lake Elmo are within the Metropolitan Urban Service Area (MUSA), providing sanitary sewer and water service to included properties. A large portion of the City remains outside these boundaries through 2040 and is generally served by private well and septic systems (individual and community). Due to groundwater contamination in the Lake Elmo area, the municipal water system extends beyond the designated MUSA boundaries.

The sanitary sewer system in Lake Elmo is of relatively new construction, most of which has been constructed only since 2013. The sanitary sewer system consists of approximately 23 miles of sewer mains managed by 6 lift stations. The portions of the City's wastewater handled by the public sewer is managed on a metropolitan level and is split between Metro Wastewater Treatment Plant located in St. Paul Minnesota and the Cottage Grove Metropolitan Wastewater Treatment Plant.. Other parts of Lake Elmo utilize Subsurface Sewage Treatment Systems (SSTS) for wastewater management including 8 community treatment systems owned and operated by the City.

The City storm water conveyance system consists largely of rural ditches and swales and the runoff is typically treated and retained near the point of rainfall through a series or lowlands or storm water basins. In the urbanized areas curb and gutter, along with storm sewers are utilized to convey runoff to the storm water treatment basins consisting of pretreatment basins, retention basins and infiltration basins. The City's storm sewer and sub watersheds are mapped and included in the City's MS4 Permit attached in the Appendix. Future street maintenance and redevelopment will likely dictate the extension or reconstruction of the storm drainage system. Mapping of stormwater utilities will be updated as improvements of the system are completed to stay in compliance with MS4 inventory and mapping requirements.

SURFACE WATERS AND DRAINAGE

Watersheds and Sub-Watersheds

As mentioned, three watersheds districts are located within the City of Lake Elmo, however, the Valley Branch Watershed District covers the majority (approximately 90-95%) of the City's waterways and drainage areas. A small portion in the northeast falls within the Brown's Creek Watershed District, and a small portion in the southwest of the City falls within the South Washington Watershed District as shown on Map 8-1.

Subwatersheds within the broader Watersheds District areas identify the more localized drainage and flows with the City of Lake Elmo. The Valley Branch Watershed District developed a management plan for each of the subwatersheds which illustrates boundaries, drainage flows, and elevations within the sub watershed mapping. This Plan chapter refers to these subwatershed management plans for drainage flow and runoff details, which can be found online at http://www.vbwd.org/watershed_management_plan_2015-2025/index.php.

There are 21 total subwatersheds of the Valley Branch Watershed District in Lake Elmo:

Lake Demontreville	Lake Olson	Friedrich's Pond
Long Lake	Beutel Pond	Raleigh Creek
Klawitter Pond	Sunfish Lake	Eagle Point Lake
Goetchel Pond	Cloverdale	Goose Lake
Clear Lake	Legion Pond	Rose Lake
Lake Jane	Lake Elmo	Horseshoe Lake
Kramer Pond	Rest Area Pond	

Public Waters

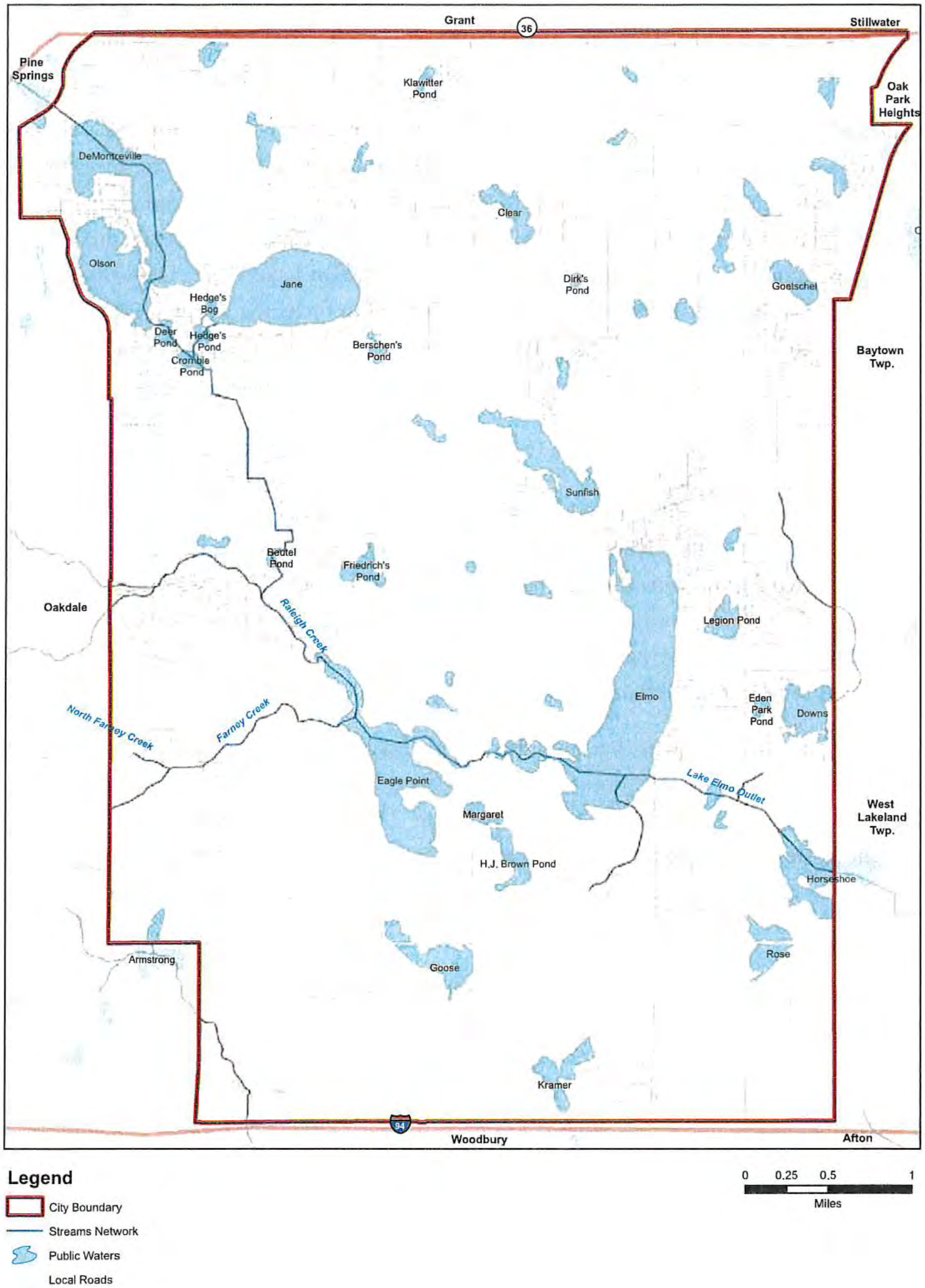
Approximately ten percent (10%) of the City of Lake Elmo is occupied by wetlands and open water features. These water features and watercourses defined as public waters are under regulatory control by the MnDNR. Map 8-5 and the table below identify the major public waters located in the City of Lake Elmo.

Table 8-1. Public Waters, Lakes, and Wetlands

Name	DNR Public Waters No.	Surface Area (Acres)	Maximum Depth (ft)
DeMontreville (Lake)	82-101 P	158	24
Eagle Point (Lake)	82-109 P	154	6
Elmo (Lake)	82-106 P	297	140
Horseshoe (Lake)	82-74 P	76	11
Jane (Lake)	82-104 P	154	39
Olson (Lake)	82-103 P	87	15
Sunfish (Lake)	82-107 P	73	Not determined
Armstrong	82-116 W	6	-
Berschen's Pond	82-105 W	6	-
Beutel's Pond	82-399 W	3	Not determined
Clear	82-99 W	25	10
Crombie Pond	82-386 W	7	-
Deer Pond	82-385 W	6	-
Dirk's Pond	82-389 W	3	-
Downs	82-110 W	38	7
Friedrich Pond	82-108 W	17	Not determined
Goetschel	82-313 W	22	14
Goose	82-113 W	42	5-7
H.J. Brown Pond	82-111 W	21	-
Hedge's Pond	82-387 W	5	-
Klawitter Pond	82-368 W	5	Not determined
Kramer	82-117 W	28	Not determined
Legion Pond	82-462 W	18	Not determined
Rose	82-112 W	26	Not determined
Unnamed Wetlands	82-316; 82-366; 82-367; 82-369; 82-370; 82-371; 82-384; 82-388; 82-390; 82-100; 82-314; 82-315;	198	

Sources: MnDNR, VBWD, City of Lake Elmo

Map 8-5. Lake Elmo Public Waters



Source: City of Lake Elmo, MnDNR

Lakes

There are 7 lakes included in the inventory of public waters in Lake Elmo. Size and depth of these water bodies is also included in the table above where available from the MnDNR.

Lake Information Reports for the seven named lakes in the City are included within the LSWMP. These reports are a summary of MnDNR data and describe available public access information, lake characteristics, water level histories, and water quality information. Additional information on these lakes is available from the VBWD Watershed Management Plan. The Metropolitan Council has identified four priority lakes in Lake Elmo: DeMontreville, Olson, Jane, and Elmo. The "priority lake" designation is used to focus the Council's limited resources and to identify lakes that will require completion of a nutrient budget analysis during environmental review processes.

Wetlands

The relatively flat topography and wet soil conditions in Lake Elmo result in extensive wetland areas. Wetland community types within the City include a full range of wetlands, from emergent wetland habitats, to scrub and shrub wetland habitats, as well as forested wetland habitats. However, the primary wetland features in the City include deep water and shallow water habitats due to the extensive lake network within the City. The wetland areas within the City are illustrated in Map 8-2 Wetlands and Floodplain.

Wetland areas are valuable resources that provide many benefits to the City and surrounding areas. Some of these benefits include ground water recharge, filtration of sediments and nutrients, flood control, wildlife habitat, and scenic value. The three Watershed Districts have adopted standards for wetland management in each of their Watershed Management Plans.

Rivers & Streams

Raleigh Creek is the dominant stream that flows through the City of Lake Elmo and is a major sub watershed within the VBWD. Its course as an intermittent stream begins in the City of Oakdale, west of I-694 and south of TH 5. Water flows easterly as it enters the City of Lake Elmo and crosses Stillwater Boulevard near its intersection with 31st Street North east of Tablyn Park. A tributary enters Raleigh Creek from south of Stillwater Boulevard and east of the Ideal Avenue intersection. In addition, the discharge from Beutel Pond also enters Raleigh Creek near Stillwater Boulevard. From near Tablyn Park and Stillwater Boulevard, Raleigh Creek flows southerly to Lake Elmo Park Reserve and the northernmost bay of Eagle Point Lake. VBWD has completed a Watershed Management Plan for Raleigh Creek and extensive information about this sub watershed can be found in the VBWD's Watershed Management Plan.

Farney Creek and North Farney Creek are located within the Eagle Point Lake sub watershed within the VBWD. These creeks are located south of Raleigh Creek in the City of Lake Elmo and drain into Eagle Point Lake. Farney Creek is an intermittent stream that enters the lake's west side. Additional details can also be found in the VBWD's Watershed Management Plan for Eagle Point Lake.

Groundwater

The City of Lake Elmo follows regulations and standards for groundwater protection, preservation, and use from various state and local agencies charged with monitoring and regulating water quality and consumption. These agencies include:

The MPCA, which monitors water quality and enforces laws relating to water pollution.

The Minnesota Geological Survey which complies a state inventory of groundwater resources.

The MnDNR which regulates the usage rate and volume of drinking water. Domestic water use is regulated with permits. Use in excess of 25 people or use that exceeds 10,000 gallons per day or 1,000,000 gallons per year must obtain a water appropriation permit from the MnDNR.

The Minnesota Department of Health (MDH) is responsible for environmental groundwater quality protection and facilitates well abandonment and installation of new wells.

Local Watershed Districts are generally responsible for groundwater protection and use, but their role is limited to cooperating and assisting state agencies in their groundwater protection efforts.

Washington County developed the Washington County Groundwater Plan that provides a county-wide structure for preserving and protecting the county's groundwater supply. The groundwater plan can be found online at https://www.co.washington.mn.us/DocumentCenter/View/794.

EXISTING AND POTENTIAL WATER RESOURCE-RELATED PROBLEMS

Existing Water Resource Problems

The City of Lake Elmo's existing LSWMP contains a list of known water resource problems within the City. They are listed by the Watershed where the issue is located. Corrective actions are identified in the current LSWMP and have been updated in the following section.

Valley Branch Watershed District Area

The VBWD Watershed Management Plan identifies the following problems in the City of Lake Elmo that is within the Watershed District. The City and VBWD have discussed these problems, and the City proposes the following actions to address the problems:

> Village Area Flooding

Potential flooding in the Lake Elmo Village Area and the potential water quality and quantity impacts of storm water runoff from proposed future development, particularly on Down's Lake.

Assessment of Problem: The Lake Elmo Old Village Area was urbanized decades ago within areas of very flat terrain and with the lack of adequate stormwater management or conveyance systems in place to either store or infiltrate the water or to convey the water efficiently through the downtown area. Persistent and regular flooding has caused problems ranging from nuisance flooding of properties and roadways to more significant flooding of homes and commercial structures. In addition, Downs Lake is relatively small, with a large tributary area. The lake has a history of wide fluctuations in water levels, from potential for flooding in some years to very low water levels during drought years. Two homes are within the 100-year floodplain of Down's Lake and connecting waterbodies.

- The Watershed District and the City have studied conditions on the lake and in its watershed several times. A proposal by VBWD for a more detailed study and flood-relief project were opposed by Washington County, the DNR, Washington SWCD, MPCA, the City and some residents.
- The Lake Elmo Old Village Area AUAR analyzed the proposed development scenarios for this area, which drains to Down's Lake. The AUAR analyzed the potential impacts to the lake and other water bodies, and recommended strategies to avoid, minimize or mitigate for impacts.

Proposed Corrective Actions: A Regional Stormwater Management Study was completed by SEH, in May 2015, to develop a regional drainage strategy and approach for managing stormwater to reduce the flooding in the Village Center Area and to identify opportunities for water quality treatment in the Downs Lake subwatershed. An important aspect of this approach was to consider future development / redevelopment in the watershed and to explore the potential for amenities such as water features or the potential for green infrastructure.

The study identified a regional strategy that includes the following recommendations, with the first two recommendations already completed:

- A regional infiltration basin was constructed in 2015 directly downstream from the Old Village Center together with the construction of a new large diameter storm sewer system along Lake Elmo Avenue, Laverne Avenue, 36th Street, and Upper 33rd Street.
- Goetschel Pond Stormwater Diversion. As part of multiple development projects, storm water was diverted from 2 large new subdivisions from draining to the Down's Lake subwatershed to the Goetschel Pond subwatershed, effectively diverting 50+ acres of drainage area from entering the Old Village center, and ultimately Down's Lake.
- Continue to construct stormwater retention ponds upstream of the Village Center as new development occurs. By enforcing VBWD and City storm water management practices, the rate and volume of storm water runoff will be reduced with any development project.
- Complete further evaluation and consider implementation of the Sunfish Lake Diversion plan.
- Continue to improve storm water conveyance through the Village Center to further reduce flooding and incorporate small scale green infrastructure with future Village Center projects as opportunities become available.
- Complete the ongoing maintenance of proposed and existing storm water facilities

> Flooding near Friedrich's Pond

Assessment of the Problem: The VBWD noted from the late 1970s to the mid 1980s Friedrich's Pond experienced high water levels resulting from above average precipitation and decreased ground water seepage from Friedrich's Pond, which resulted in basement flooding to the adjacent homes. There have been no further reports of high water levels until recently in 2016 and 2017 from one property owner having a driveway inundated and reporting high groundwater levels near the home. Land uses are proposed to remain the same in the area in the City's 2040 Comprehensive Plan.

Proposed Corrective Actions: The VBWD has identified the following mitigation options to address the high water level in Friedrich's Pond: Installation of a controlled gravity outlet and drainage routes, utilizing a pumped outlet structure, flood proofing the affected homes, flood insurance, and a do nothing approach. The City and VBWD have not proposed any specific solution and have not yet identified a public purpose for making improvements since the potential high water risks are very limited and exist on private property. Any permit applications for this area will be reviewed per the City of Lake Elmo Flood Plain Ordinance.

> Flooding near Legion Pond

Assessment of Problem: In the 1980's the VBWD reported high water levels in the Legion Pond/ Eden Park area which threatened the nearby homes. Several proposals were developed to mitigate the flooding, including overflow pumping to Lake Elmo. The residents located in the floodplain rejected the pumping proposals, objecting to the high cost and lack of a permanent solution to the problem as reasons. The high water levels were later relieved by a onetime overflow pumping of the pond to Lake Elmo, and later by the drought of 1987-1988. Residents have bermed around their homes to help protect against future high water levels.

Proposed Corrective Action: The VBWD proposed three feasible mitigation plans to the Legion Pond's high water problem: the first option involves constructing a pumped outlet to Lake Elmo. This option would incur annual operation and maintenance costs. The second option is to construct a gravity outlet from Legion Pond to Lake Elmo. The third option is to provide only emergency pumping relief.

- Beginning in 1984, the City constructed a community wastewater facility as part of the 201 System and hooked up 2764, 2778, 2790, and 2814 Legion Avenue North. This addressed the location of the individual septic systems on these lots. If future flood mitigation is pursued, it could focus on the remaining septic systems not connected to the 201 System and the walk out elevations of all homes in the affected area.
- The second option (constructing a gravity outlet to Lake Elmo) now becomes a more feasible option with the availability of the 201 System. The City would consider all options provided in the VBWD Plan - the preferred corrective action will depend on the timing, urgency, public comment, agency comment, and available funding. However, due to the current trend of low water levels and the Project 1007 flood-relief improvements, the City does not find any immediate need to address flooding issues in this area.
- The City will work directly with the VBWD to continue to monitor the situation. Any permit applications for this area will be reviewed per the City of Lake Elmo Flood Plain Ordinance. This ordinance is included in the Appendix of this Report.

> Low Water Levels on Sunfish Lake

Assessment of Problem: Residents have expressed concerns related to low water levels on Sunfish Lake.

Proposed Corrective Actions: The City and VBWD have discussed the problem and agreed that there is little that the City can do to address this issue.

> Minimum Building Elevations to prevent flooding

The City will continue to enforce the VBWD standard that minimum floor elevations of buildings be 2' or more above the 100- year flood plain and will continue to enforce the standard on development that is not reviewed by the Watershed District. The District requires the minimum floor elevations of structures to be at least two feet higher than the adjacent water body's critical 100-year flood level. The VBWD rule applies to all water bodies, whether they are mapped as floodplains on FEMA flood insurance rate maps or not.

Proposed Corrective Action: The City has adopted the Watershed District standard in its Engineering Standards and reviews development plans and building permits accordingly.

South Washington Watershed District Area

The SWWD Water Management Plan has identified the following problems in the area of Lake Elmo that is within the Watershed District. The City and SWWD discussed these problems, and the City is proposing the following actions to address the problems:

> Wilmes Lake Flooding Issues

Assessment of Problem: The SWWD has completed studies of Wilmes Lake and potential flooding issues. Areas in the Wilmes Lake sub watershed within Lake Elmo contribute to the lake's drainage area but are not the cause of the flooding concern. No structures are currently below the 100-year flood elevation. The Watershed District and City of Woodbury have established and funded a program to provide protection to homes on the east side of the lake.

Proposed Corrective Action:. The City concurs with and adopts the SWWD volume control standard in this LSWMP and will conrinue to implement its ordinances requiring volume control.

> Wilmes Lake Water Quality Issue

Assessment of Problem: Wilmes Lake has been classified as an impaired water for nutrients. The SWWD has not completed a TMDL study for the lake but is likely to complete a study and develop recommendations to address the nutrient problems in the future.

Proposed Corrective Action: The City will support the District's TMDL study for Wilmes Lake, and work with the District to implement its recommendations. The City has, and will continue to enforce volume control requirements for new development within the subwatershed to benefit water quality in Wilmes Lake. The City adopts the District's standards for volume control and allowable phosphorus loading to Wilmes Lake, and will address these requirements as it manages land use and development within the Wilmes Lake Subwatershed area.

Brown's Creek Watershed District

> Impaired Waters Issues

Assessment of Problem: The BCWD area within Lake Elmo includes wetland areas and some areas that may still be developed. The area drains to Long Lake, Brown's Creek, and the St. Croix River. All of these water bodies are impaired waters. The BCWD is currently completing TMDL studies for Long Lake and Brown Creek. The St. Croix Basin Team has set a goal to reduce nutrient loading to the St. Croix basin by 20 percent.

Proposed Corrective Action: The City will participate in the District's TMDL studies of Long Lake and Brown's Creek and will work with the District to implement the recommendations of these studies. The City will implement its land use plan and ordinances to assist with the protection of surface waters in this area.

Groundwater Resource Problems

> Sustainable Water Supply for Drinking Water

Assessment of Problem: Groundwater contamination has been present within the Lake Elmo area since discovery of PFCs in early 2004. Ongoing investigation, mitigation, and management of the contamination continues to take place and is primarily managed through the Minnesota Department of Health, Minnesota Pollution Control Agency and Minnesota Department of Natural Resources. The City has contamination in Well #3, which was nevet placed into service, and more recently has discontinued use of Well #1 after receiving a well advisory from the MDH in April 2018. These wells will require the construction and implementation of high cost treatment facilities if these wells are ever placed into service again.

The City's two remaining water supply wells (Well #2 and Well #4) are located in the northeast part of the City, located in areas free from groundwater contamination. However, these wells are Jordan Aquifer Wells and are located near or within the jurisdiction of the White Bear Lake Court Order (5 mile radius) and have become subjected to appropriation restrictions and limitations.

As the City continues to grow, the City will require 2 to 3 additional water supply wells, however there is a severe limitation on groundwater use. A moratorium has been placed on appropriation permits impacting White Bear Lake. Currently, no new drinking wells can be located within 5 miles of White Bear Lake, which affects approximately the northern half of the City of Lake Elmo. The southern parts of Lake Elmo overlay the PFC groundwater contamination plume.

Proposed Corrective Action: The City will work with the MDH, MPCAs, MnDNR, and neighboring municipalities to identify appropriate water supply sources and water supply well locations.

> Drinking Lake Elmo Water Quality

Assessment of Problem: Lake Elmo is a ground water discharge waterbody. Impacts to ground water resources may impact lake quality.

Proposed Action: City will implement its land use plan and ordinances to protect ground water recharge areas.

> Jordan Aquifer Impacts

Assessment of Problem: The City of Lake Elmo has two municipal wells located in the northeast quadrant of Lake Elmo. These wells are cased to the Jordan aquifer, which is the same aquifer that feeds Lake Elmo. The City, the DNR, Washington County, and the VBWD have not performed any calculations to determine the long-term sustainability of the Jordan aquifer in this area and if the pumping is or will impact the water levels of the lake. Nor has any agency determined if there will be conflict between the drinking water well and the lake.

More recently, court action has prevented new wells from being located within 5 miles of White Bear Lake. [ADD MORE]

Proposed Action: The City will work cooperatively with the VBWD, the MnDNR, Washington County, and other entities as this issue is further studied.

> Special Well Construction Areas (SWCA)

Assessment of Problem: Portions of the City in both VBWD and SWWD were designated by the Minnesota Department of Health as a Special Well Construction Area (SWCA) in 1988 and 2007. This designation applies to the construction repair, modification, and sealing of wells and borings. The primary purpose of SWCAs is to protect public health and ground water quality by ensuring wells and borings are constructed to obtain ground water from a protected aquifer(s) and to help prevent spread of contamination. Storm water related activities in these areas, such as geotechnical evaluations for a pond or infiltration feature, should reflect appropriate compliance with requirements set forth by the Department of Health given the criteria for environmental bore holes. Nonstructural methods for controlling storm water runoff volumes should generally be given priority over structural methods.

Proposed Action: The City will cooperate with the MPCA, MDH, and the Watershed Districts to address ground water quality issues and enforce its Zoning and Subdivision ordinances to protect ground water quality.

> The SWWD Groundwater Management

Assessment of Problem: The SWWD's ground water management initiative consists of monitoring and data analysis. The objective is to compile baseline data to characterize dynamics between storm water and ground water. Outcomes of the ground water management include setting or adjusting thresholds or standards to best addtess storm water management and ground water protection and identifying potential ground water resources trends in the context of storm water management efforts.

Proposed Action: The City will support these efforts as they relate to the area within the SWWD in Lake Elmo.

> Washington County Groundwater Management

Assessment of Problems: Reduced ground water recharge resulting from urbanization. Degraded quality of ground water as a result of increased non-point source pollution. Reduced ground water flows to surface waters, lowered lake levels, and well interference resulring from overuse of ground water. Need for citizens and public officials to understand ground water-related issues.

Proposed Actions: The County Ground water Plan identifies the following actions to implement: Provide education to citizens and public officials on the interaction of surface and ground water quality and quantity; the value of and need to protect ground water recharge areas.

Impaired Waters

The Minnesota Pollution Control Agency (MPCA) compiles water quality data for water bodies in the state. The impaired waters within Lake Elmo's drainage are listed in Table 8-2, and Map 8-6 shows locations of impaired waters in Lake Elmo. More information about water quality data and monitoring can be found at https://www.pca.state.mn.us/water/water-quality-data.

Table 8-1: 2018 Impaired Waters List

Water body name	Water body type	Year added to List	Affected designated use	Pollutant or stressor	TMDL target completion year	EPA category	Mercury TMDL region	Year TMDL plan approved	Approved TMDL EPA ID#
Downs	Lake	2012	Aquatic Recreation	Nutrient/eutrophication biological indicators	2024	5			
Elmo	Lake	1998	Aquatic Consumption	Mercury in fish tissue		4A	SW	2007	32414
Elmo	Lake	2008	Aquatic Consumption	Perfluorooctane Sulfonate (PFOS) in fish tissue	2025	5			
Goose (South)	Lake	2012	Aquatic Recreation	Nutrient/eutrophication biological indicators	2024	5			
Jane	Lake	2006	Aquatic Consumption	Mercury in fish tissue	2021	5	SW		
Sunfish	Lake	2008	Aquatic Recreation	Nutrient/eutrophication biological indicators		4A		2016	66249

Source: MPCA

Total Maximum Daily Load (TMDL) Studies

As with nearly all of the east metro communities, Lake Elmo is upstream of Lake Pepin and therefore is required to implement TMDL plans for this impaired water body. The St. Croix Basin Team has set a goal to reduce nutrient loading to the St. Croix basin by 20%, to protect this Outstanding Resource Value Water (ORVW). The City adopted a BMP in its MS4 Permit to cooperate with the Watershed Districts to create a process to identify all discharges from the City's MS4 system to the St. Croix and determine if discharges to the ORVW can be eliminated, or to identify and adopt BMP's that allow the existing high quality of the St. Croix River to be maintained. If modifications are needed, the City will modify its SWPPP and submit the modifications to the MPCA.

The City will work with the Watershed Districts and other organizations as they complete TMDL studies and enforce its ordinances to assist in protection and improvement of these resources.

Potential Water Resource Problems

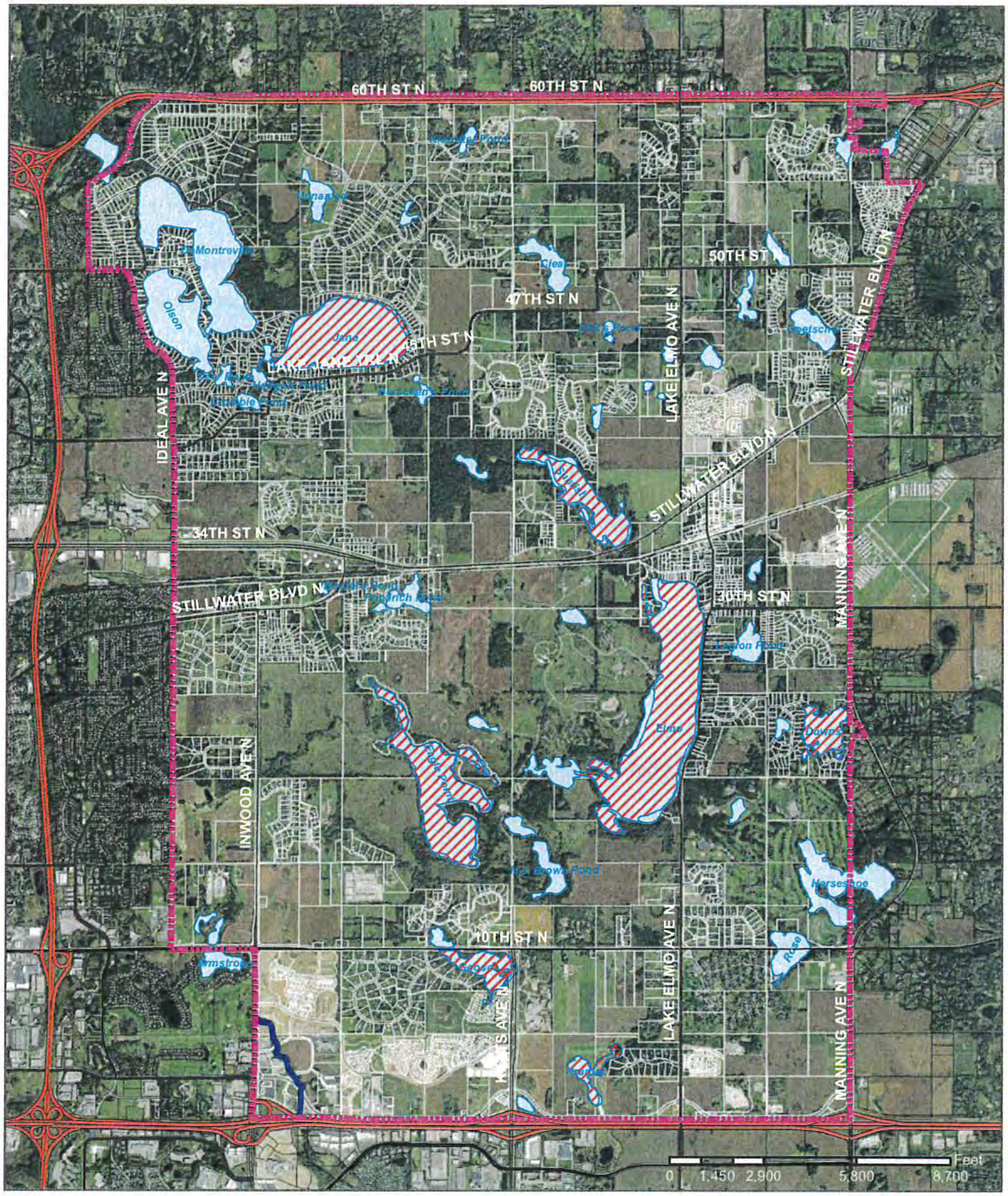
> Maintaining and updating Municipal Stormwater Infrastructure

The City of Lake Elmo is responsible for maintenance of its storm sewer system in conformance with the MS4 Permit Program. This system inclndes pipes, constructed ponds, lakes, wetlands, ditches, swales, and other infiltration features and drainageways and provides needed flood management and water quality mitigation. The City's current SWPPP can be found in the Appendix of the LSWMP.

Other units of government are responsible for maintaining the stormwater systems under their control:

- MnDOT is responsible for maintaining the ditch and infiltration areas along Trunk Highway 36 and Interstate 94.
- Washington County is responsible for maintaining storm sewer catch basins and leads in the county roads. Private stormwater facilities must also be maintained in compliance with original performance design standards. Owners are responsible for removing and properly disposing of all settled materials, including solids, from ponds, sumps, grit chambers, and other devices. The City and/or local Watershed Districts may inspect private stormwater facilities and work with owners to bring cleaning and maintenance up to date.

Map 8-6. Lake Elmo Impaired Waters



Impaired Waterbodies (2014 Draft)

Impaired Streams

Impaired Lakes

Source: Metropolitan Council, MnGEO
Prepared by: SHC
Date: 4/24/2017

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GOALS AND POLICIES

General

The goals in Lake Elmo's Local Surface Water Management Plan are consistent with the goals of the Brown's Creek Watershed, Valley Branch Watershed District, and South Washington Watershed District while addressing the more specific and changing needs of the City. The goals are also established in accordance with Minnesota Statutes 103B and Minnesota Rules 8410.

The policies of Brown's Creek Watershed District, Valley Branch Watershed District, and South Washington Watershed District have been adopted by reference for the portions of the watershed districts within the City, as shown in Map 8-1.

The City of Lake Elmo recognizes that BCWD, VBWD, and SWWD will continue to have permitting authority for areas within each district. The most recent rules and regulations for each district can be found at the relative locations online:

- Brown's Creek Watershed District (BCWD) www.bcwd.org
- Valley Branch Watershed District (VBWD) www.vbwd.org
- South Washington Watershed District (SWWD) www.swwdmn.org

Local surface water goals will continue to be implemented through annual review and updates of the City's Storm Water Pollution Prevention Plan (SWPPP), as well as compliance with the NPDES MS4 Permit. Additional goals and policies of the City are contained as follows.

LSWMP Goals and Policies

The following goals and policies are part of the City of Lake Elmo's adopted Local Surface Water Management Plan:

1. The City of Lake Elmo is committed to a goal of no adverse impacts to ground and surface water resources in the area.

Policies:

- The City will work cooperatively with local water management organizations, state agencies, and landowners to protect local wetlands, lakes, streams, and ground water to preserve the values of these resources for future generations.
- The City concurs with and adopts the Valley Branch, South Washington and Brown's Creek Watershed Districts' Watershed Management Plans, rules and standards by reference through this LSWMP. The Watershed Districts will continue to enforce

surface water regulations and permitting within the City within the boundaries of their districts. The City will coordinate its review of development proposals with the Watershed Organizations, by providing review comments to the districts.

- The City will manage land use to support protection of surface and ground waters through the following elements of its Zoning and Subdivision Ordinance:

  Chapter 53 Stormwater Management Urility

  Chapter 91 Forests and Trees

  Chapter 152 Flood Plain Management

  Chapter 153 Subdivision Regulations

  Chapter 154 Zoning Code

- The City will implement its ordinances and standards and cooperate with the County, MPCA and the Watershed Organizations in managing land use to protect ground water resources. Additional goals and policies for ground water protection are included in the Water Supply element of the City's Comprehensive Plan.

- The City encourages the use of best management practices for agricultural land uses to minimize erosion and to protect the quality of surface and ground water resources.

- The City supports and will encourage developers and landowners to use storm water practices that promote infiltration/filtration and decrease impervious areas through site design and use of Low Impact Development (LID) techniques and Green Design.

- The City supports inspection of on-site individual sewage treatment systems by an MPCA certified inspector at the time of property sale or transfer and requirements that these systems meet state standards.

GOAL 2. The City will work with local Watershed Districts to collaborate in the plan review and permitting new development and redevelopment projects to meet ordinances and design standards thereby implementing rate and volume control practices,

Policies:

- The City will continue to review and implement the recommendations of the Village Regional Stormwater Study to further mitigate water quantity and quality concerns in the Old Village center and Down's Lake Watershed.

- Review developments and require they meet SWWD permit requirements.

GOAL 3. Protect the quality of local lakes by supporting the Watershed Districts' goals and plans for managing lakes in the City.

Policies:

- The City will update and implement its land use plan, zoning and subdivision ordinances to protect shoreland areas and lake water quality, and work with the Watershed Districts to achieve the lake management goals identified in the Watershed's Water Management Plans.
- The City will participate in the Watershed Districts' Total Maximum Daily Load (TMDL) studies and implementation plans to address impaired water bodies within the City and areas downstream.

GOAL 4. Protect and enhance the quality of wetland resources.

Policies:

- The City will cooperate with the Valley Branch Watershed District as they serve as the LGU for the WCA within its watershed area.
- The City will serve as the LGU for the WCA within the BCWD and SWWD areas of the City. The City will utilize the technical assistance provided by the Washington Conservation District in this role.
- The City will support and help to implement Watershed District requirements for wetland management, including District water quality standards, buffer requirements, and pretreatment of storm water prior to discharge into all wetlands.
- Wetlands that have not been inventoried by the Watershed Districts will be required to complete a functions and values assessment as a part of the development application. Watershed rules regarding wetland management will be applied based on the results of the assessment and the wetland classification.

GOAL 5. Protect and enhance the quality of natural resources.

Policies:

- The City will work with state agencies, Washingron County, local watershed districts and residents and landowners to protect and enhance natural communities and natural resources in Lake Elmo.
- The City will encourage developers and landowners to retain native vegetation and undisturbed areas to protect habitat and manage storm water.

- The City will require subdivision design that preserves natural drainage systems and protects and restores wetlands and wetland buffers.
- The City will work with other organizations and landowners to protect the greenway corridors and habitat connections identified in Lake Elmo.
- The City will work with other organizations and support efforts to control the spread of invasive exotic species.

GOAL 6. Protect ground water quality and quantity.

Policies:

- The City will cooperate with the Minnesota Pollution Control Agency, Minnesota Department of Health, Washington County, and local watershed districts to address ground water quality and quantity issues. The City will enforce its Zoning and Subdivision ordinances to protect ground water quality, ground water quantity, and to manage ground water recharge areas.
- The City will coordinate with other LGUs for ground water sensitive areas, wellhead protection areas, water use contingency, and allocation plans, and other ground water issues where the plans may affect other jurisdictions.
- The City has completed a Wellhead Protection Plan (included in the Appendix) and will continue to evaluate and monitor implementation of the objectives and plans of actions identified in this Plan.
- The City will consider requiring a ground water monitoring plan or ground water protection plan as part of a permit application for businesses that store, use, or transport hazardous materials and for properties formerly used as a waste disposal site or waste transfer facility.

TRIN Goal #1. Provide improved infrastructure, including sewer, water, and facilities, to serve new residents in the developing areas of the community.

- Chapter 1: Vision, Goals & Strategies

IMPLEMENTATION PLAN

City Role and Responsibilities

The City will complete the following specific implementation actions to implement the Surface Water chapter of this Plan:

1. The City adopts and incorporates by reference the Watershed Management Plans of the three Watershed Districts with presence in Lake Elmo, including the standards and rules, into this Comprehensive Plan and as a part of the City's permitting and development review process. The Watershed Districts will continue to enforce surface water regulations and permitting within the City and within their geographic areas. The City will coordinate its review of development proposals with the Watershed Districts and will manage land use to support protection of surface and ground waters through its Zoning and Subdivision Ordinance.

2. The City will update its Local Surface Water Management Plan (LSWMP) by the end of 2019 consistent with the timeline adopted in the 2009 LSWMP. The City understands that its LSWMP must be consistent with each Watershed District's Watershed Management Plans.

    a) The City understands that the Valley Branch Watershed District, Brown's Creek Watershed District and South Washington Watershed District have prepared models for portions of the City, but not all modeling work is complete. The City will rely on each watershed district completing this work and will update its LSWMP as information and data become available.

    b) The City will update its LSWMP and submit a copy to each of the Watershed Districts for review, comment, and approval once complete.

3. *City Process for Proposed Development.* The City of Lake Elmo reviews proposed development per its Subdivision Ordinance. Design must be in compliance with Engineering Design Standards. An approved Watershed District permit is required prior to final plat acceptance. WCD approval of any wetland impact must be provided if located in BCWD or SWWD. Any impacts to public waters must be reviewed by the MnDNR. An NPDES Permit must be received from the MPCA when applicable. An approved SWPPP must be provided for all subdivisions. No building permit will be issued until the following has been completed: The City will support the Watershed Districts' implementation of their standards for management of water quantity and quality, including control of peak runoff, volume control, infiltration and filtration, wetland quality, and best management practices to control Total Suspended Solids (TSS), Total Phosphorus (TP), and runoff from development or redevelopment within the City.

4. The Watershed Districts will continue to play the primary role in reviewing storm water plans for development applications within the City, and the City will condition any development approvals on demonstrated compliance with Watershed District Rules. The City will direct applicants to submit completed permit applications of any development proposals at time of application and will work cooperatively with the Watershed Districts through the review and approval process.

5. The City will continue to work with each Watershed District on refinement of coordination of permit and development application review processes and timelines.

6. The City will update its ordinances to be consistent with Watershed Management Plans, standards and rules, and with NPDES construction storm water permit requirements for erosion and sediment control if necessary.

7. The City will cooperate with the Watershed Districts to address concerns related to impaired waters and, as the Watershed Districts complete TMDL studies, will manage land use to avoid impacts to water resources within the City.

8. Continue to implement the City's MS4 Permit and SWPPP requirements.

9. *Funding Mechanisms.* The City will continue to use general fund revenues and storm water utility funds to fund improvements when needed to address water quality and quantity concerns and maintain City-owned storm water management facilities. The City's commitments to system maintenance are described in detail in its MS4 permit and SWPPP. The City requires that developers finance the improvements that are required with new development and redevelopment to ensure that private developments meet City and watershed requirements.

10. *Capital Improvement Plan (CIP).* The City's CIP will incorporate specific implementation strategies for surface water management as part of the budgeting process.

11. The City's inspection and maintenance program and pollution prevention/good housekeeping is completed under the MS4 Permit and documented per the SWPPP.

12. The City will continue to implement the strategies and recommendations as needed from the Old Village Area Regional Stormwater Management Study that was completed by SEH, in May 2015, to continue to address and mitigate the Old Village Area flooding problems and to protect resources in the Down's Lake Watershed and downstream. *City Ordinances.* The City's adopted ordinances that provide standards and regulations to manage water resources include the following:

    - Chapter 53 Stormwater Management Utility
    - Chapter 91 Forests and Trees
    - Chapter 150 Illicit Discharge and Connection
    - Chapter 152 Flood Plain Management
    - Chapter 153 Subdivision Regulations
    - Chapter 154 Zoning Code

NPDES Phase II

The City of Lake Elmo is required to have a Municipal Separate Storm Sewer System (MS4) permit through the MPCA's National Pollutant Discharge Elimination System (NPDES) Phase II Program of the Minnesota Pollution Control Agency (MPCA). MS4 Permits are required for communities with urban development and populations over 10,000 or with urban development and populations over 5,000 that have potential to discharge to valuable or polluted waters.

In accordance with an MS4 Permit, the City of Lake Elmo is required at a minimum to implement six control measures:

1. Public Education and Outreach
2. Public Participation/Involvement
3. Illicit Discharge Detection and Elimination
4. Construction Site Stormwater Runoff Control
5. Post-Construction Stormwater Management
6. Pollution Prevention/Good Housekeeping for Municipal Operations

For more information on the MS4 Permit requirements, see the MPCA's rules online at www.pca.state.mn.us.

Official Controls

The City of lake Elmo maintains official controls for the purposes of water management and environment protection within their Municipal Code.

Stormwater Management Utility

Lake Elmo maintains a stormwater management utility as outlined in ordinance Chapter 53 of the Municipal Code. The code states that "The municipal surface water system shall be operated as a public utility, pursuant to M.S. § 444.075, ...from which revenues will be derived subject to the provisions of this chapter and Minnesota Statutes.

In general, revenue from the surface water utility shall be used for preparation of a Surface Water Management Plan, maintenance of existing ditches, culverts, pond, and storm sewers, capital improvement in developed areas, equipment, planning, inventories, and water quality improvements, including weed control."

Wetland Protection and Preservation Overlay District (WPP)

(Chapter 150, Section 215)

The purpose of the Wetland Protection and Preservation Overlay District is to "provide for the protection, preservation, proper maintenance, and use of the city's wetlands, to minimize the disturbance ro them and to prevent damage from excessive sedimentation, eutrophication, or pollution, to prevent loss of fish or other beneficial aquatic organisms, and/or loss of wildlife and vegetation or the habitants of the same; to provide for the protection of the city's probable fresh water supplies from the dangers of drought, overdraft, pollution, or mismanagement; to secure safety from floods; to reduce the financial burdens imposed upon the communities through rescue and relief efforts occasioned by the occupancy or use of areas subject to periodic flooding to prevent loss of life, property damage, and the losses and risks associated with flood conditions; to preserve the location, character, and extent of natural drainage courses."

Shoreland District and Standards

(Chapter 150, Section 250)

The Shoreland District is identified to protect water features from potential development and land use impacts. Generally, the ordinance outlines standards that "apply to all shorelands of the protected waters. Where the requirements of the underlying zoning district as shown on the official zoning map are more restrictive than those set forth in §§ 150.250et seq., the more restrictive standards shall apply. Only land above the ordinary high water level of public waters can be used to meet lot area standards, and lot width standards must be met at both the ordinary high water level and at the building line."

Storm Water and Erosion and Sediment Control

(Chapter 150, Section 270)

As part of the Land Usage chapter (Chapter 150), the municipal code also regulates maintenance of storm water facilities, both public and privately-owned. It also requires that all site construction undergo regular monitoring and inspections for compliance with appropriate NPDES permit requirements.

Illicit Discharge and Connection

(Chapter 150, Section 300)

This Chapter of the Municipal Code regulates discharge and watercourse protection, and directly supports requirements in the MS4 Permit. It states "No person shall throw, drain, or otherwise discharge, cause, or allow others under its control to throw, drain, or otherwise discharge into the MS4 any pollutants or waters containing any pollutants, other than storm water." For privately-owned land along a public watercourse, the ordinance also states "Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, yard waste, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse."

Floodplain Management

Lake Elmo maintains a floodplain management ordinance in Chapter 152 of the Municipal Code. The ordinance generally regulates development and construction within floodways and floodplains. The purpose of the ordinance is to promote the public health, safety, and general welfare and to minimize those losses" applicable "to all lands within the jurisdiction of Lake Elmo shown on the official zoning map and/or the attachments thereto as being located within the boundaries of the Floodway, Flood Fringe, or General Flood Plain Districts.

Others

Other rules part of the official controls contribute to the goals and policies for surface water management and are contained within the Municipal Code. These chapters include Chapter 91, Forests and Trees; Chapter 153 Subdivision Regulations; and Chapter 154 Zoning.

There are no major changes identified at this time to the City's Official Controls as they relate to the management of surface water in the City. As the Lake Elmo 2040 Comprehensive Plan Update is adopted, Zoning Codes will be updated to match the Future Land Use Plan. These Zoning Codes may incorporate additional standards that support implementation of best practices in surface water management as development occurs. The added standards may help achieve City goals for improved groundwater recharge, reduction of runoff, and increased water quality.

Education Program

As part of Lake Elmo's commitment to education, and an important component of the MS4 Permit compliance, the City will continue to organize education programs for increased public awareness and participation in local surface water management. Lake Elmo is a member of the East Metro Water Resource Education Program (EMWREP) to assist in establishing and facilitating education programs for water management. More information about EMWREP can be found online at www.mnwcd.org/emwrep.

Other opportunities will continue to be presented for residents, business owners, developers, and others to help improve strategies and implementation for increasing water quality and reducing runoff in all areas of Lake Elmo. Appropriate advertising of events and programs will be facilitated accordingly. Example programs may include:

- Wetland buffer delineation and management
- Best management practices for storm water infiltration
- Best management practices for storm water runoff reduction and control
- Invasive species control
- Conservation easements
- Sustainable groundwater recharge

Collaboration with Agencies & Organizations

There are a number of local, state, and federal agencies that have rules and regulations related to local water management. The City recognizes the roles of these other agencies and will cooperate, coordinate, and when possible partner with these agencies.

This Plan chapter recognizes the many agencies and organization involved with regulating surface warer management. It is the intention of the City of Lake Elmo to cooperate, collaborate, and coordinate efforts with these agencies to achieve successful water management within the City. Each of these organizations hosts various resources, plans, data, rules, and regulations for water management at the related website:

Federal

- Environmental Protection Agency www.epa.gov
- US Army Corps of Engineers www.mvp.usace.army.mi
- US Fish and Wildlife Service www.fws.gov

State

- Minnesota Environmental Quality Board www.eqb.state.mn.us
- Minnesota Department of Natural Resources www.dnr.state.mn.us

- Minnesota Pollution Control Agency www.pca.state.mn.us
- Minnesota Department of Health www.health.state.mn.us
- Board of Water and Soil Resources www.bwsr.state.mn.us
- Minnesota Department of Agriculture www.mda.state.mn.us

County

- Washington County http://www.co.washington.mn.us/
- Washington Conservation District http://www.mnwcd.org/

Regional

- South Washington Watershed District www.swwdmn.org
- Valley Branch Watershed District http://vbwd.org/
- Brown's Creek Watershed District http://bcwd.org/
- Metropolitan Council www.metrocouncil.org

TRIN Goal #2. Maintain the level of city services to existing neighborhoods and plan through appropriate capital expenditures for necessary improvements.

- Chapter 1: Vision, Goals & Strategies

Table 8-3. Local Water Management Implementation Plan

DRAFT TABLE 8-3. LOCAL SURFACE WATER MANAGEMENT IMPLEMENTATION PLAN

Project Description	MS4 Permit Requirement	Initial 12 Mo. Requirement	Annual Requirement	Projects, Programs & Studies	10 Year Cost Estimate	Possible Funding Sources	Proposed Cost By Year										
							2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	Comments
Update LSWMP	X	X					$10,000	$40,000									The current LSWMP expires in 2019; the update will be complete and adopted prior to this date; and budgeted for in 2018 – 2022 CIP
Education Activity Implementation Plan	X	X	X				$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	
Annual SWPPP Assessment & Annual Reporting	X		X				$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	$2,500	
Annual Public Meeting/Event	X		X				$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	$1,000	
Online Availability of the SWPPP	X	X	X				$250	$250	$250	$250	$250	$250	$250	$250	$250	$250	
IDDE Inspections	X	X	X				$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	$3,000	
Phase 2 Regional Drainage Improvements								$1,200,000	$800,000								As shown in City adopted 2018-2022 CIP
Phase 3 Regional Drainage Improvements									$500,000								As shown in City adopted 2018-2022 CIP
Kramer Lake Floodplain study											$60,000						As shown in City adopted 2018-2022 CIP; contingent on grant from watershed district
Renew MS4 Permit								$10,000									Part of the next 5-year update to the SWPPP
Stormwater Conveyance System Repair and Replacement							$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	$40,000	

DRAFT Chapter 9: Wastewater Services

1

INTRODUCTION

The City of Lake Elmo is located within Washington County and is bordered by the City of Oak Park Heights, Baytown Township, and West Lakeland Township to its east; City of Woodbury to its south; the City of Oakdale to its west; and the City of Grant to its north.

A large portion of Lake Elmo is designated as Rural Residential, to which there are no plans to provide urban infrastructure, such as a centralized sanitary sewer collection. Two areas are designated as Emerging Suburban Edge and are in the Metropolitan Urban Service Area (MUSA), the Old Village MUSA Area and South Planning MUSA Area. In addition, there is a small MUSA area along the west side of Lake Olson where lake home properties connect to the City of Oakdale Sanitary Sewer system. The Comprehensive Wastewater Management Plan will focus heavily on the needs and future plans for the City sanitary sewer system needed to serve the Old Village and South Planning MUSA Areas.

The purpose of the Wastewater Management Chapter is to describe the existing wastewater management systems within the City and to outline timing and sequence of future improvements, allowing the City to build and improve a sanitary sewer collection system for the defined 2040 MUSA in the most efficient and cost-effective manner.

The City of Lake Elmo's Sanitary Sewer Plan was developed to conform to the Metropolitan Council's Thrive 2040 Water Resources Policy Plan, which outlines goals for the wastewater system, including environmental sustainability. Additionally, the Thrive 2040 Plan includes population, household, and employment projections alongside projected wastewater flows.

Wastewater flows are anticipated to increase significantly through 2040 as a result of projected population increases and land use changes within Lake Elmo. The Sanitary Sewer Plan serves as a guiding document for City infrastructure improvements and expansion.

CITY SANITARY SEWER SYSTEM AND URBAN SERVICES AREAS

Typically, municipal wastewater management systems consist of two elements: sanitary sewer collection and wastewater treatment. Collection systems include sewer services, trunk sewer pipe, lateral sewer pipe, manholes, lift stations, and forcemains which collect the sewer flows from private residential, commercial, and industrial properties within the city. Treatment systems include the biological or chemical treatment to remove targeted contaminants from the wastewater.

The City's sanitary sewer system is defined by four primary sanitary sewer service areas as follows: 1) the Old Village MUSA, 2) the Southeast Planning MUSA (Keats Avenue – Manning Avenue), and 3) the Southwest Planning MUSA (Inwood Avenue – Keats Avenue), and 4) Lake Olson MUSA.

Old Village MUSA

In 2013, the City constructed a lift station-forcemain system to convey wastewater from the Village Planning Area. The lift station-forcemain system was designed to serve the planned 1,100 new housing units and approximately 400 existing housing units with additional reserve capacity for future needs. The lift station was located near Reid Park at 30th Street and Lisbon Avenue, at the southern boundary of the Village Planning area. Two gravity trunk mains were extended north from the lift station, an 18-inch trunk main was extended on the Village east side through the new development growth areas, then along 39th Street from CSAH 14 to Lake Elmo Avenue. A 15-inch trunk main was extended west from the lift station along 30th Street, then north along Lake Elmo Avenue to serve existing residential properties. 8-inch lateral mains are being installed through a 7 Phase "Old Village Capital Improvement Plan" to replace aging and failed onsite wastewater systems, including two of the four community 201 wastewater systems. All Village wastewater is pumped through a 16-inch forcemain running approximately 3 miles and discharging to a 24-inch trunk main at Lake Elmo Avenue and 5th Street North.

Southeast Planning MUSA (Keats Avenue – Manning Avenue)

Sanitary sewer service was also initiated in 2013 to serve portions of the Southeast Planning MUSA beginning at the intersection of Lake Elmo Avenue and 5th Street. A 24-inch trunk main was extended north from the MCES Cottage Grove Ravine Meter Station in Lake Elmo and 8-inch lateral mains were extended to serve two new residential developments. As identified above, the 24-inch trunk main was designed to receive the Old Village MUSA wastewater and convey it to the MCES Cottage Grove Ravine Meter Station, located along Hudson Boulevard near Lake Elmo Avenue.

In 2017, following a Comprehensive Plan Amendment, sanitary sewer was extended to the Tartan Park area, just north of the Southeast Planning MUSA to serve the Royal Golf Club (RGC) residential development. The RGC sanitary sewer system consists of lateral gravity sanitary sewer mains within three separate lift station service areas. The multiple lift stations were needed to convey wastewater through a highly variable topography. The largest of the lift stations is located along 10th Street (the southern RGC boundary) and receives all wastewater generated from the development and pumps it to the existing 16-inch forcemain along Lake Elmo Avenue. The construction for two of the lift stations will be completed in 2018 with the third lift station to be phased in with the future build-out of the development.

The 2020 Staging Plan includes the extension of a second trunk sewer from the MCES Cottage Grove Ravine Meter Station to serve the portions of the Southeast Planning MUSA from Lake Elmo Avenue to Manning Avenue. In addition to serving new development in this area, service will be extended to the existing Cimarron manufactured home park consisting of approximately 510 units. Cimarron owns and operates a private sewer collection and wastewater treatment system. A new lift station will likely be required to connect to the City sanitary sewer system. This service area also includes the future connection to the existing Oakland Junior High School to replace an existing on-site wastewater treatment facility. These flows are included in the forecasts.

The 2030 Staging Plan includes the extension of two additional trunk sewer mains west of Lake Elmo Avenue, one from the MCES Cottage Grove Ravine Meter Station along Hudson Boulevard running west across Lake Elmo Avenue to serve new development south of the Forest Addition, and the second extending west from the intersection of Lake Elmo Avenue and 5th Street N. to serve the areas north and west of the Forest Addition. Both trunk sewer mains will discharge to a new lift station to be located on the west side of the Lake Elmo Avenue that will pumped across Lake Elmo Avenue to the adjacent gravity trunk mains.

Southwest Planning MUSA (Inwood Avenue – Keats Avenue)

The Eagle Point Business Park, located in the southeast 1/4 of Section 33, was platted and developed beginning in year 2000. The area was brought into the Metropolitan Urban Service Area (MUSA) and gravity sanitary sewer was constructed to serve the business park. Wastewater is conveyed to the I-94 lift station located on north side of Hudson Boulevard, about 1/3 mile east of Inwood Avenue (CSAH 13). Through agreement with the City of Oakdale, the I-94 lift station discharges to a City of Oakdale sanitary sewer main in Hudson Boulevard. From there it enters the WONE interceptor. Under the agreement with the City of Oakdale, Lake Elmo is limited to the amount it can discharge.

In 2014, significant residential development was initiated in the remaining Southwest Planning MUSA area, first to the east of the Eagle Point Business Park and later to the north. A sanitary sewer conveyance system was developed to serve the entire MUSA area consisting mostly of gravity sanitary sewer. A 12-inch trunk main was extended along Hudson Boulevard approximately 4,200 feet to the east of the I-94 lift station. At Jade Trail, another 12-inch trunk main is extended north into the Inwood development (north of the Eagle Point Business Park) which later transitions down to a 10-inch main at 10th Street and Island Trail. A lift station (Keats Avenue Lift Station) was needed to capture wastewater flows from the lower topographic area adjacent to Keats Avenue and Goose Lake. The forcemain from this lift station runs south along Keats Avenue, then west along Hudson Boulevard and discharging back to the 12-inch trunk main on Hudson Boulevard.

The current staging areas (up to 2020) have been platted for the most part and the sanitary sewer system installed, although some areas have not been fully built-out. The commercial areas remain unbuilt along Inwood Avenue and just north of the Eagle Point Business Park.

The 2020 Staging Plan consists of about 125 aces located between the Eagle Point Business Park and Keats Avenue, and south of 5th Street North. The existing sanitary sewer system is in place and readily available to serve this area.

Lake Olson MUSA

In 2013, the City of Lake Elmo and City of Oakdale entered into a cooperative agreement, which is included in this Chapter as Appendix D, to jointly install sanitary sewer along Olson Lake Trail in the Tri-Lakes area, a border street with Lake Elmo properties on the east side and Oakdale properties on the west side. The sanitary sewer extension provides public sewer service to 21 Lake Elmo properties but connects to an Oakdale owned and operated sanitary sewer system. Five properties were connected to sewer in 2013 and the remaining properties were connected in 2017. No future extensions are anticipated for this MUSA area at this time.

METROPOLITAN COUNCIL ENVIRONMENTAL SERVICES

For the City of Lake Elmo, the Metropolitan Council Environmental Services (MCES) provides wastewater treatment for Lake Elmo's sanitary sewer flows. Therefore, the City's sanitary sewer system consists of only a collection system which connects and discharge to MCES interceptors. MCES owns and operates a system of sewer interceptors that convey wastewater across City boundaries to regional treatment facilities. Wastewater flows from Lake Elmo enter the MCES Interceptor system at two locations. The western portion of the South Planning MUSA, between Inwood Avenue and Keats Avenue, are conveyed to the MCES Metropolitan Wastewater Treatment Plant (WWTP) located in the City of St. Paul, directly adjacent to the Mississippi River. This area connects to the MCES system through a 10-inch gravity sewer extending across eastern Oakdale and connecting to the MCES 15-inch 1-WO-500 (WONE) interceptor sewer that crosses under I-94 into Woodbury. The Old Village MUSA and eastern portion of the South Planning MUSA, between Keats Avenue and Manning Avenue, are conveyed to the MCES Eagle Point Plant in Cottage Grove which serves southern Washington County. This area connects to the MCES system at a meter station/interceptor that also crosses under I-94 into Woodbury. The connection point is located along Hudson Boulevard approximately 1,000 feet east of Lake Elmo Avenue.

The MCES plans to extend a new sewer connection for the City of Lake Elmo to replace the connection through Oakdale for the western portion of the South Planning MUSA, more specifically the east 1/2 of Section 33 and all of Section 34. The new WONE connection point will be near the City's existing I-94 lift station and will greatly reduce that lift station's forcemain length. The I-94 lift station will continue to be active and maintained by the City.

The existing units in the Cimarron manufactured home park will be served by regional sewer between 2030 and 2040 unless environmental threats require a more immediate connection. The remaining homes and businesses not currently served by sewer within the Village Planning Area are assumed to be served by regional sewer between 2018 and 2030.

Lift Stations

The City's current system includes 5 lift stations, as summarized in Table 9-1.

TABLE 9-1 LIFT STATIONS

No.	Lift Station	Year Constructed	Pumping Capacity (gpm)
1	I-94 (along Hudson Blvd.)	2018 (rebuilt)	825
2	Reid Park	2013	1,200
3	Keats Avenue	2014	390
4	RGC 1st Addition	2018	100
5	10th Street	2018	325

FORECASTS

Population

The Metropolitan Council projects and publishes population and sewer usage forecasts for each City in the Metropolitan Area. This allocation is used in projecting future wastewater flows and system capacity to plan for additional infrastructure needs. Table 9-2 shows such forecasts for Lake Elmo.

TABLE 9-2 POPULATION FORECASTS FOR LAKE ELMO

Forecast Year	Forecast Component	Population	Households	Employment
2010	MCES Sewered	0	0	623
2010	Unsewered	8,061	2,776	1,318
2020	MCES Sewered	3,712	1,359	2,338
2020	Unsewered	6,788	2,441	562
2030	MCES Sewered	6,960	2,540	2,788
2030	Unsewered	7,140	2,760	562
2040	MCES Sewered	10,208	3,721	3,238
2040	Unsewered	7,992	3,379	562

Community Forecast for Areas Served by Regional Sewer Service

Wastewater flow projections were generated for each MUSA area and regional interceptor for the 2020, 2030 and 2040 planning periods based on the anticipated land uses. Table 9-3 summarizes these projections by sewer REC units, average day wastewater flows and peak day wastewater flows.

TABLE 9-3 PROJECTIONS BY SEWER REC UNITS

Current (2020) Wastewater Flows by Interceptor						
	MCES WONE Interceptor/Oakdale			MCES Cottage Grove Ravine Interceptor		
	REC Units	Average Day Projected Flow (MGD)	Peak Day Projected Flow (MGD)	REC Units	Average Day Projected Flow (MGD)	Peak Day Projected Flow (MGD)
Old Village MUSA				1,542	0.42	1.48
Southeast Planning MUSA				170	0.05	0.19
Southwest Planning MUSA	1,682	0.46	1.61			
TOTALS	1,682	0.46	1.61	1,712	0.47	1.67

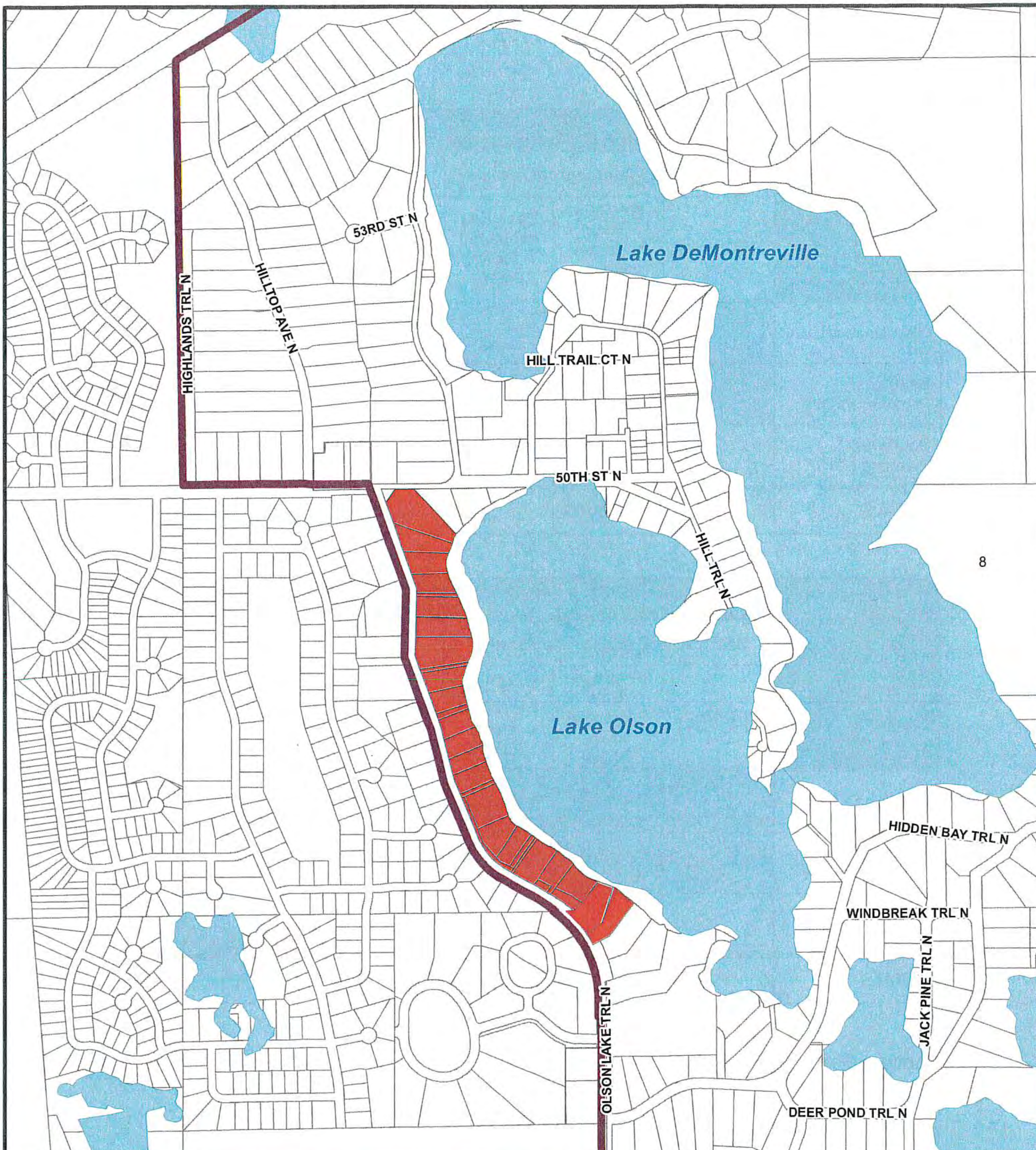
2020-2030 Wastewater Flows						
	MCES WONE Interceptor/Oakdale			MCES Cottage Grove Ravine Interceptor		
	REC Units	Average Day Projected Flow (MGD)	Peak Day Projected Flow (MGD)	REC Units	Average Day Projected Flow (MGD)	Peak Day Projected Flow (MGD)
Old Village MUSA				1,823	0.50	1.70
Southeast Planning MUSA				3,001	0.82	2.63
Southwest Planning MUSA	2,613	0.72	2.36			
TOTALS	2,613	0.72	2.36	4,824	1.32	4.33

2030-2040 Wastewater Flows by Interceptor						
	MCES WONE Interceptor/Oakdale			MCES Cottage Grove Ravine Interceptor		
	REC Units	Average Day Projected Flow (MGD)	Peak Day Projected Flow (MGD)	REC Units	Average Day Projected Flow (MGD)	Peak Day Projected Flow (MGD)
Old Village MUSA				2,537	0.70	2.29
Southeast Planning MUSA				5,344	1.46	4.39
Southwest Planning MUSA	2,613	0.72	2.36			
TOTALS	2,613	0.72	2.36	7,881	2.16	6.69

Sanitary Sewer Plan Map

The Sewer Staging Plan Map (Map 9-1) [to be inserted at a later date - see land use chapter] shows sewer service staging in four phases in accordance with the Land Use Plan.

The Sewer Services Area – Tri Lakes Map (Map 9-2) shows the sewer service area for existing homes to be provided with service along Lake Olson.



Sewer Service Area - Tri Lakes

Lake Elmo Comprehensive Plan Update

THE CITY OF LAKE ELMO

Public Sewer Service Area

Map 9-2

Projected Flows for Each MCES Interceptor Service Area (MGD)

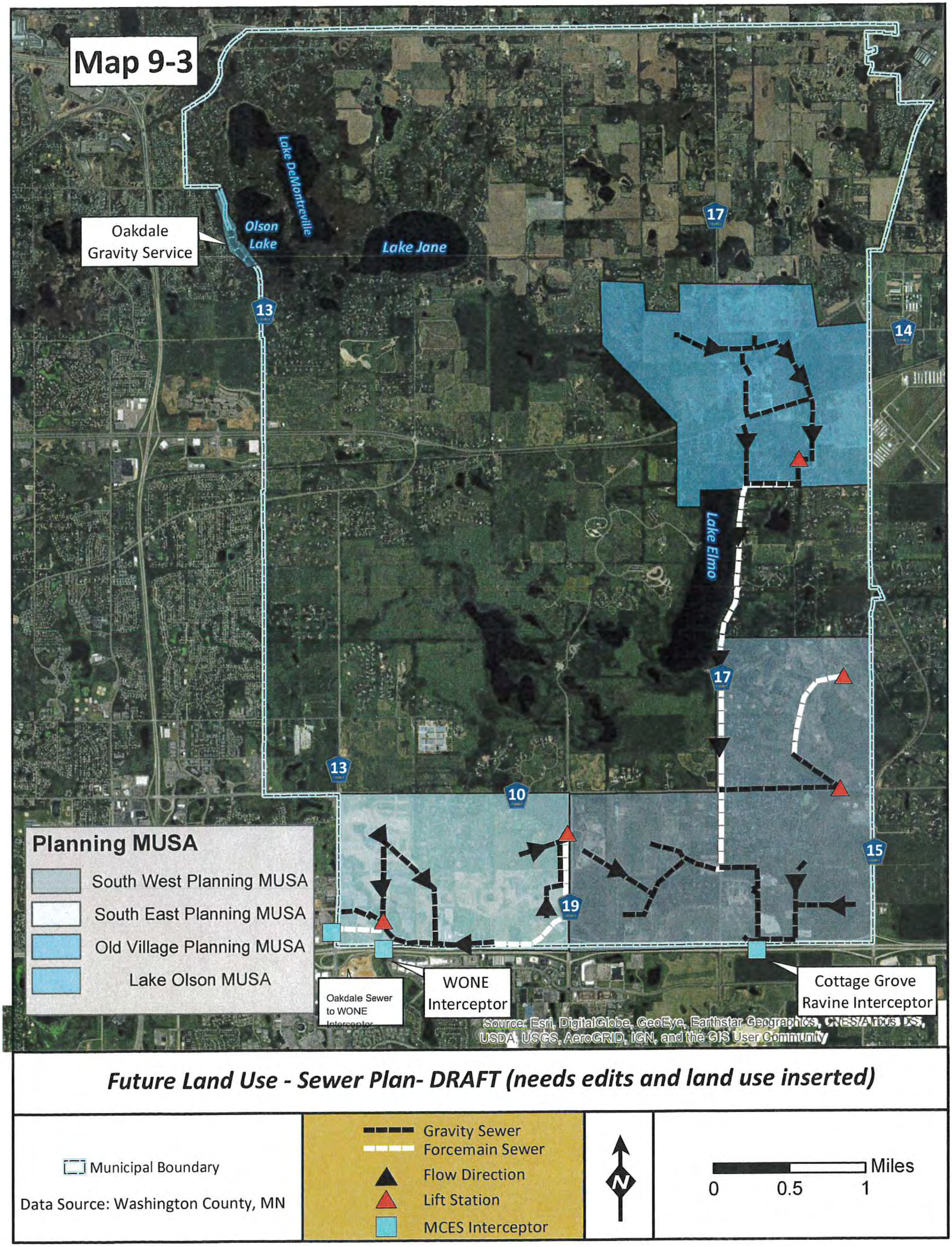
TABLE 9-4 PROJECTED FLOWS FOR EACH MCES INTERCEPTOR SERVICE AREA (MGD)

Average Day Projected Wastewater Flows by Interceptor (MGD)			
Year	WONE	Cottage Grove	TOTAL
2020	0.46	0.47	0.93
2030	0.72	1.32	2.04
2040	0.72	2.16	2.88

Peak Day Projected Wastewater Flows by Interceptor (MGD)			
Year	WONE	Cottage Grove	TOTAL
2020	1.61	1.67	3.28
2030	2.36	4.33	6.69
2040	2.36	6.69	9.05

Land Use Plan Map

The general plan for providing sanitary sewer to the planned service area is outlined in Map 9-3.



Future Land Use - Sewer Plan- DRAFT (needs edits and land use inserted)

INFILTRATION AND INFLOW (I/I)

Inflow is water, typically stormwater, which enters the sewer system through broken manhole covers, sewer cleanouts, sump pumps, foundation drains, and rain leaders. ***Infiltration*** is water, typically groundwater, which leaks into the sewer system through cracks in the sewer mains, laterals, joints, and manholes. Water from inflow and infiltration (I/I) can consume available capacity in the wastewater collection system and increase the flow into treatment facilities. As a sewer system ages, I/I can become an increasing burden on a City's system and consume otherwise available capacity. Therefore, it is imperative that I/I be reduced whenever it is cost effective to do so.

In February 2006, the MCES began an Ongoing I/I Program which requires communities within their service area to eliminate excessive I/I. The City of Lake Elmo's sanitary sewer system is very new, primarily installed since 2013. Therefore, Lake Elmo currently does not have excessive I/I concerns.

The City of Lake Elmo's goal is to have no inflow or infiltration into its sewer system, and to attain the goal of preventing and reducing excessive infiltration and inflow as the sewer system ages. To meet that goal the City will observe the following procedures:

- All sewer mains will be air tested in accordance with the Minnesota City Engineers Association Standards for Utility Construction.
- All new sewer mains will be televised.
- Homes and businesses will be checked for sump pump discharge into the sewer system prior to issuance of a Certificate of Occupancy.
- The City will monitor actual sewer flows during storm events to see if there is an increase in sewer discharge.
- The City will develop a schedule to inspect and clean all sewers.

Additionally, City Code Section 150.300 prohibits discharge from and requires disconnection of existing sump pumps, foundation drains, and/or rain leaders to the sanitary sewer system, a copy of which is attached as in Appendix A.

AREAS NOT SERVED BY THE REGIONAL SYSTEM

Description of the City's Current Management Program

The City has adopted Chapter 4: Subsurface Sewage Treatment System Regulations of the Washington County Development Code by reference. A copy of the City's Ordinance and a description of the SSTS monitoring system are included as Appendix B. Washington County currently monitors SSTS installations and administers the code for the City. The City's Agreement with Washington County is included as Appendix C.
Cimarron Manufactured Home Park operates and maintains a packaged treatment plant with a capacity of 0.15 MGD. There is a State permit for this facility.

Information, including location, of non-conforming systems or systems with known problems may be obtained from the Washington County Comprehensive Plan 2040.

Conditions Under Which Septic Systems Are Allowed

Septic Systems are allowed for all land uses within the City outside of the planned sewer service areas in accordance with Chapter 4: Subsurface Sewage Treatment System Regulations of the Washington County Development code as adopted by reference by the City of Lake Elmo.

Private Community Wastewater Treatment Systems

Map 9-4 and Table 9-5 Private Community Wastewater Treatment Systems shows the privately owned sewage treatment systems that have been constructed in the City. These community wastewater collection and treatment systems were installed in accordance with Minnesota Rules 7080 to serve open space developments including Carriage Station, Discover Crossing, Farms of Lake Elmo, Fields of St. Croix, Hamlet on Sunfish Lake, Hidden Meadows, St. Croix's Sanctuary, Tamarack Farm Estates, Tana Ridge, Tapestry at Charlotte's Grove, Whistling Valley, and Wildflower Shores. These systems have all been constructed since 1998. The homeowners within these new subdivisions are responsible for ownership, operation and maintenance. The Private Community Wastewater Treatment Systems consist of "wetland treatment systems" or "community drainfield systems". Systems over 10,000 gallons per day have a State Disposal Permit.

TABLE 9-5 PRIVATE COMMUNITY WASTEWATER TREATMENT SYSTEMS

Private Community Wastewater Treatment Systems			
Subdivision	**Number of Homes**	**Design Flow (GPD)**	**State Permit**
Carriage Station	111	44,875	Yes
Discover Crossing	28	9,045	No
Farms of Lake Elmo	33	12,375	Yes
Fields of St. Croix	135	35,589	Yes
Hamlet on Sunfish Lake	41	8,200	Pending
Hidden Meadows	25 and church	13,375	Yes
St. Croix's Sanctuary	62	20,000	Yes
Tamarack Farm Estates	20	4,000	No
Tana Ridge	20	5,841	Yes
Tapestry at Charlotte's Grove	67	25,125	Yes
Whistling Valley	46	20,000	Yes
Wildflower Shores	25	3,600	No

Private Treatment Systems

There are currently 1,981 known individual sewage treatment systems (ISTSs or septic systems) within the City of Lake Elmo, as shown in Map 9-5.

City-Owned Community Wastewater Treatment Systems (201 Systems)

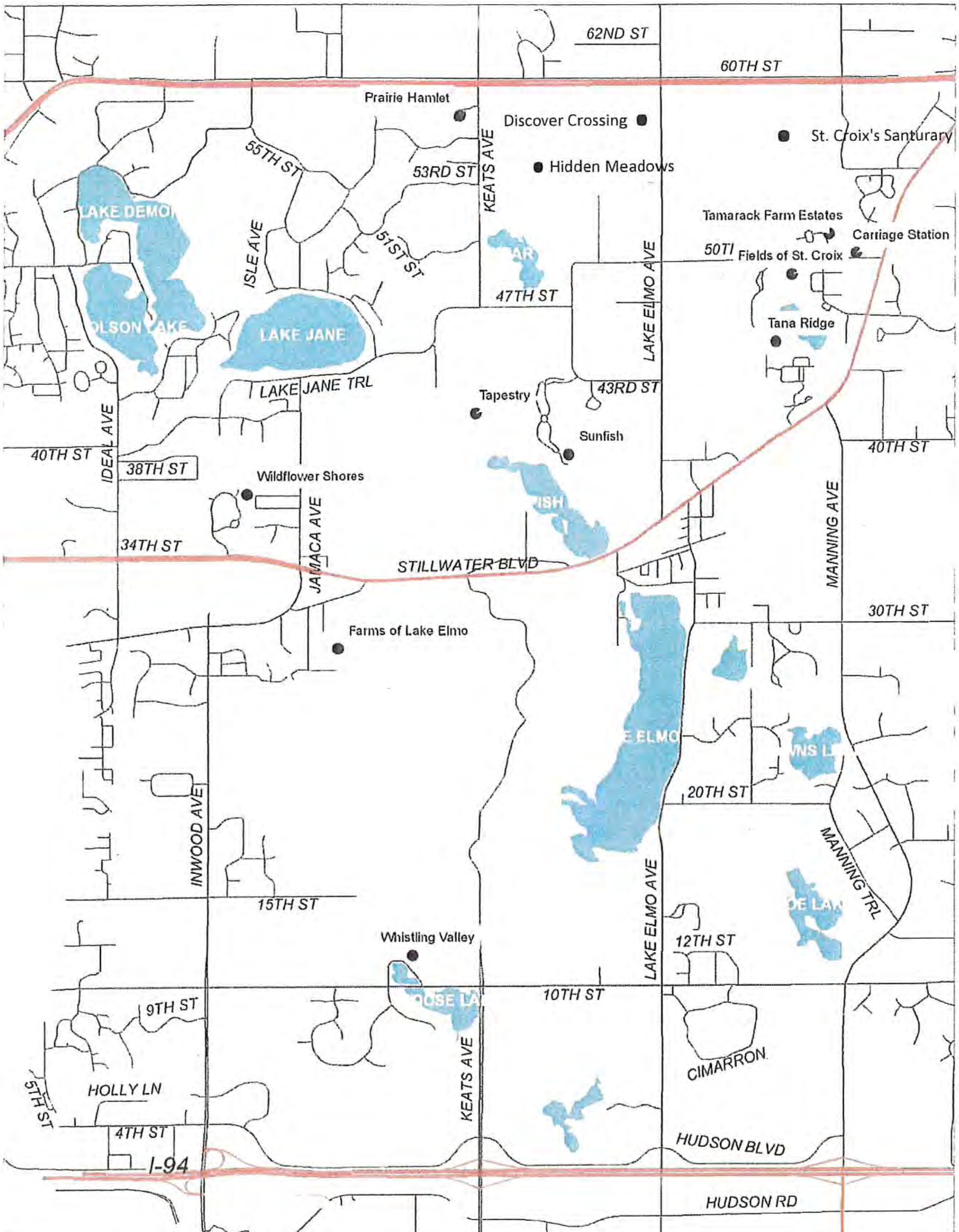
In the late 1980's, the City of Lake Elmo participated in the Federal 201 program which provided grant funds to help communities build shared wastewater treatment systems. The City of Lake Elmo designed and constructed eight (8) 201 shared wastewater treatment systems under this program to replace failing septic systems on private property. The systems provided individual septic tanks for private properties with shared wastewater drain fields and were constructed in the Old Village and Tri-Lakes areas. Two of the four Old Village 201 systems were replaced in 2015 and 2016 through the extension of City sanitary sewer, including Old Village Remote B and D. There are also four 201 systems located in the Tri-Lakes area.

Map 9-6 Existing 201 Shared Wastewater Treatment Systems shows the location of these systems, which includes the following facilities, as shown in Table 9-6:

TABLE 9-6 SHARED WASTEWATER TREATMENT SYSTEMS

City-Owned 201 Wastewater Treatment Systems		
Old Village Remote A	6	3,750
Old Village Remote B	REPLACED	0
Old Village Remote C	8	1,500
Old Village Remote D	REPLACED	0
Tri-Lakes Remote A	1	450
Tri-Lakes Remote B	3	1,500
Tri-Lakes Remote C	2	600
Tri-Lakes Remote D	3	1,350

Map 9-4



ENGINEERED WETLAND TREATMENT SYSTEMS

Lake Elmo Comprehensive Plan 2005 - 2030

Limitation of Liability

This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and city offices and other sources.

Map Date: August 24, 2005

Created By: TKDA

N W E S

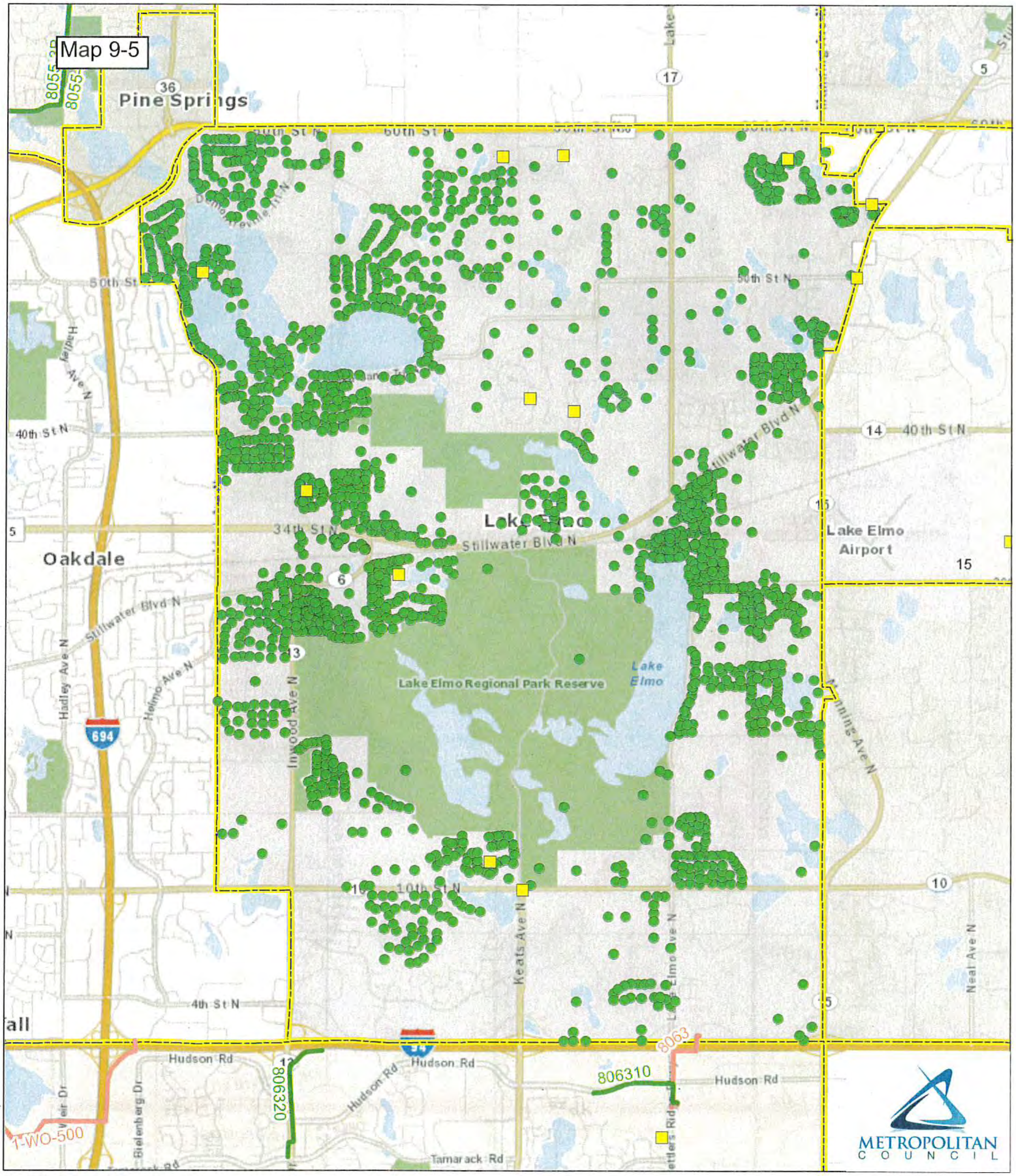
0 600 1,200 2,400 3,600

Feet

Treatment Systems

Wetland Treatment Location

Lake Elmo City Boundary



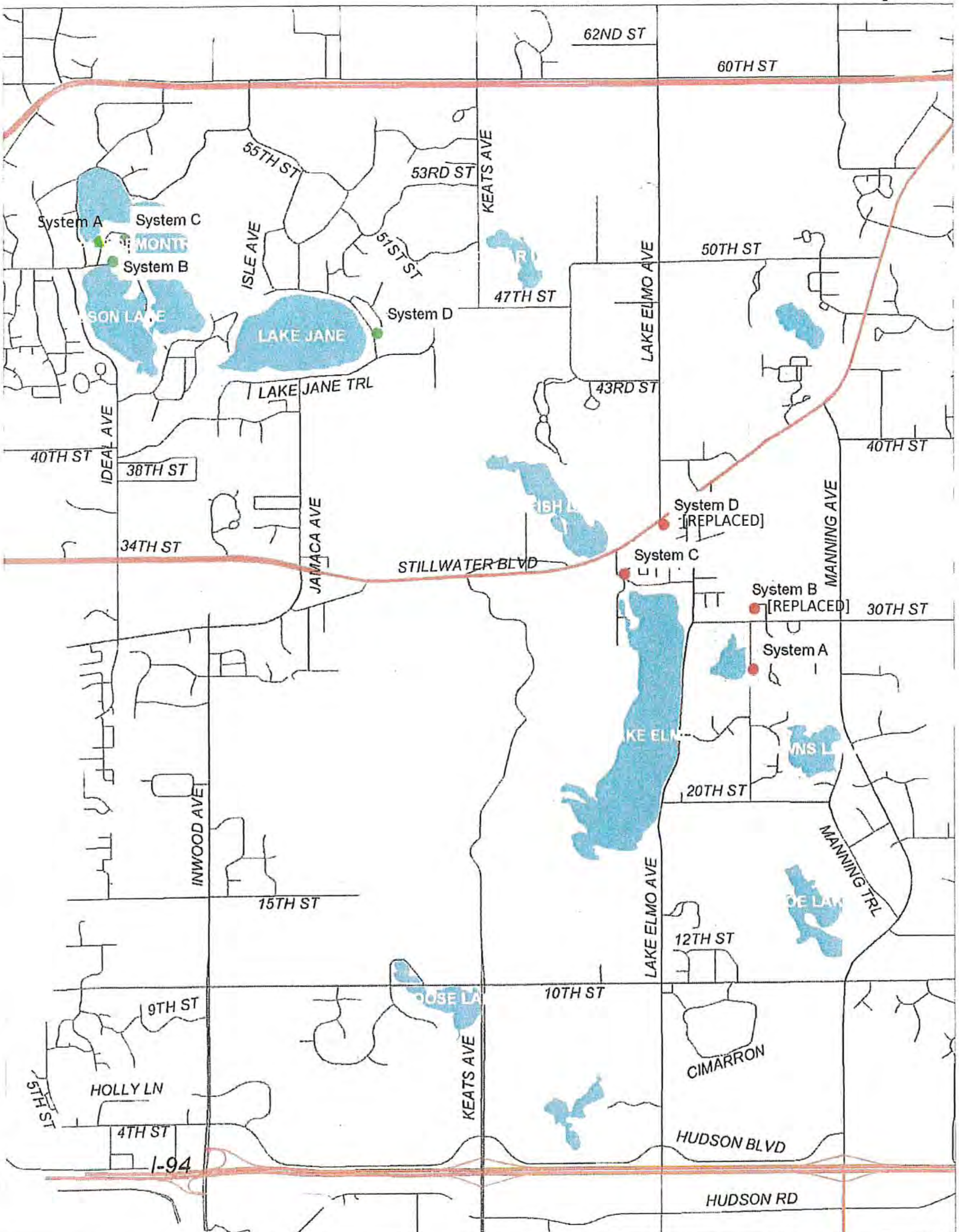
Individual Sewer Treatment Systems (ISTS)

City of Lake Elmo

Source Data: SSTS, (ISTS) Washington County (June 2017), NCompass Technologies and MCES. Map created by MCES.

- Individual Sewer Treatment Systems (ISTS) (Approx. 1,982 Systems)
- Private Wastewater Treatment (Approx. 12 Systems)
- Gravity Interceptor
- Forcemain Interceptor
- City & Township Boundaries

0 2,000 4,000 Feet



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EXISTING 201 COMMON WASTEWATER SYSTEMS

Lake Elmo Comprehensive Plan 2005 - 2030

Limitation of Liability

This document is not a legally recorded map or survey and is not intended to be used as one. This map is a compilation of records and information from various state, county, and city offices, and other sources

Map Date: August 24, 2005

Created By: TKDA

N W E S

0 600 1,200 2,400 3,600

Feet

Legend

- Old Village System
- Tri-Lakes System

Lake Elmo City Boundary

Appendix A: Illicit Discharge Connection Ordinance

Print

Lake Elmo, MN Code of Ordinances

ILLICIT DISCHARGE AND CONNECTION

§ 150.300 PURPOSE.

The general purpose of this subchapter is to provide for the health, safety, and general welfare of the public through the regulation of non-storm water discharges to the storm drainage system to the maximum extent practicable as required by federal and state law. This subchapter establishes methods for controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the MS4 permit issued to the City of Lake Elmo by the Minnesota Pollution control Agency (MPCA) under the National Pollutant Discharge Elimination System (NPDES) permit process. The objections of this subchapter are:

(A) To regulate the contribution of pollutants to the MS4 by storm water discharges by any user;

(B) To prohibit illicit connections and discharges to the MS4;

(C) To establish legal authority to carry out all inspection, surveillance, monitoring, and enforcement procedures necessary to ensure compliance with this subchapter. 17

(Ord. 2012-59, passed 6-5-2012)

§ 150.301 APPLICABILITY.

This subchapter shall apply to all water entering the storm drainage system generated on any developed and undeveloped lands unless explicitly exempted by § 150.306(A)(1) through (A)(4) of this subchapter.

(Ord. 2012-59, passed 6-5-2012)

§ 150.302 DEFINITIONS.

For the purposes of this subchapter, all terms, phrases, words, and their derivatives shall have the meanings as stated in Chapter 11 of the City Code.

(Ord. 2012-59, passed 6-5-2012)

§ 150.303 RESPONSIBILITY FOR ADMINISTRATION.

The City of Lake Elmo shall administer, implement, and enforce the provisions of this subchapter. Any powers granted or duties imposed upon the City of Lake Elmo maybe delegated in writing by the City Administrator to persons or entities acting in the beneficial interest of or in the employ of the city.

(Ord. 2012-59, passed 6-5-2012)

§ 150.304 COMPATIBILITY WITH OTHER REGULATIONS.

This subchapter is not intended to modify or repeal any other ordinance, rule, regulation, or other provision of law. The requirements of this subchapter are in addition to the requirements of any other ordinance, rule, regulation, or other provision of law, and where any provision of this subchapter imposes restrictions different from those imposed by any other ordinance, rule, regulation, or other provision of law, whichever provision is more restrictive or imposes higher protective standards for human health or the environment shall control.

(Ord. 2012-59, passed 6-5-2012)

§ 150.305 ULTIMATE RESPONSIBILITY.

The standards set forth herein and promulgated pursuant to this subchapter are minimum standards; therefore this subchapter does not intend or imply that compliance by any person will ensue that there will be no contamination, pollution, or unauthorized discharge of pollutants.

(Ord. 2012-59, passed 6-5-2012)

§ 150.306 DISCHARGE PROHIBITIONS.

(A) *Prohibition of illegal discharges.* No person shall throw, drain, or otherwise discharge, cause, or allow others under its control to throw, drain, or otherwise discharge into the MS4 any pollutants or waters 18
containing any pollutants, other than storm water. The commencement, conduct or continuance of any illegal discharge to the storm drain system is prohibited except as described as follows:

(1) The following discharges are exempt from discharge prohibitions established by this subchapter: water line flushing, landscape irrigation, diverted stream flows, rising groundwater, uncontaminated groundwater infiltration, uncontaminated pumped groundwater, discharges from potable water sources, foundation drains, air conditioning condensation, irrigation water, springs, water from crawl space pumps, footing drains, lawn watering, individual residential car washing, flows from riparian habitats and wetlands, street wash water, dechlorinated swimming pool water, and any other water source not containing a pollutant.

(a) For swimming pool discharges, water shall sit seven days without the addition of chlorine to allow for chlorine to evaporate before discharge.

(b) Discharge of swimming pools, crawl spaces, sump pumps, footing drains and other sources that may be determined to contain sediment or other forms or pollutants may NOT be discharged directly to a gutter or storm sewer. This discharge must be allowed to flow over a vegetated area to allow filtering of pollutants, evaporation of chemicals and infiltration of water consistent with the storm water requirements of the City of Lake Elmo.

(2) Discharges or flow from firefighting, and other discharges specified in writing by the City of Lake Elmo as being necessary to protect public health and safety.

(3) Discharges associated with dye testing, however this activity requires a written notification to the City of Lake Elmo prior to the time of the test.

(4) The prohibition shall not apply to any non-storm water discharge permitted under an NPDES permit, waiver, or waste discharge order issued to the discharger and administered under the authority of the MPCA, provided that the discharger is in foil compliance with all requirements of the permit, waiver, or order and other applicable laws and regulations, and provided that written approval has been granted for any discharge to the storm drain system.

(B) *Prohibition of illicit connections.*

(1) The construction, use, maintenance or continued existence of illicit connections to the storm drain system is prohibited.

(2) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.

(3) A person is considered to be in violation of this subchapter if the person connects a line conveying sewage to the MS4, or allows such a connection to continue.

(4) Improper connections in violation of this subchapter must be disconnected and redirected, if necessary, to an approved onsite wastewater management system or the sanitary sewer system upon approval of the City of Lake Elmo.

(5) Any drain or conveyance that has not been documented in plans, maps or equivalent, and which may be connected to the storm sewer system, shall be located by the owner or occupant of that property upon receipt of written notice of violation from the City of Lake Elmo requiring that such locating be completed. Such notice will specify a reasonable time period within which the location of the drain or conveyance is to be determined, that the drain or conveyance be identified as storm sewer, sanitary sewer or other, and that the outfall location or point of connection to the storm sewer system, sanitary sewer system or other discharge point be identified. Results of these investigations are to be documented and provided to the City of Lake Elmo.

(C) *Additional discharge prohibitions.* Any owner or occupant of property within the City of Lake Elmo 19
shall comply with the following requirements:

(1) Subsurface sewage treatment systems shall be maintained to prevent failure.

(2) Recreational vehicle sewage shall be disposed of to a proper sanitary waste facility.

(3) Mobile washing companies (carpet cleaning, mobile vehicle washing, and the like) shall dispose of wastewater to the sanitary sewer.

(4) All motor vehicle parking lots and private streets shall be swept, at a minimum, once a year in the spring to remove debris. Such debris shall be collected and properly disposed.

(5) Fuel, chemical residue, household hazardous waste or other types of potentially harmful material shall be disposed of properly.

(6) Objects, such as motor vehicle parts, containing grease, oil or other hazardous substances, and unsealed receptacles containing hazardous materials, shall not be stored in areas susceptible to runoff.

(7) Any machinery or equipment that is to be repaired or maintained in areas susceptible to runoff shall be placed in a confined area to contain leaks, spills or discharges.

(Ord. 2012-59, passed 6-5-2012)

§ 150.307 WATERCOURSE PROTECTION.

Every person owning property through which a watercourse passes, or such person's lessee, shall keep and maintain that part of the watercourse within the property free of trash, debris, yard waste, excessive vegetation, and other obstacles that would pollute, contaminate, or significantly retard the flow of water through the watercourse. In addition, the owner or lessee shall maintain existing privately owned structures within or adjacent to a watercourse, so that such structures will not become a hazard to the use, function, or physical integrity of the watercourse.

(Ord. 2012-59, passed 6-5-2012)

§ 150.308 INDUSTRIAL OR CONSTRUCTION ACTIVITY DISCHARGES.

Submission of Notice of Intent (NOI) to the City of Lake Elmo.

(A) Any person subject to an industrial or construction activity NPDES storm water discharge permit shall comply with all provisions of such permit. Proof of compliance with said permit is required in a form acceptable to the City of Lake Elmo prior to the allowing of discharges to the MS4.

(1) Industrial activity includes activities subject to NPDES Industrial Storm Water Permits as defined in 40 CFR, Section 122.26 (b)(14).

(2) Construction activity includes activities subject to NPDES Construction Permits. These include construction projects resulting in land disturbance of one acre or more. Such activities include but are not limited to clearing and grubbing, grading, excavating, and demolition.

(B) The operator of a facility, including construction sites, required to have an NPDES permit to discharge storm water associated with industrial activity shall submit a copy of the NOI to the City of Lake Elmo at the same time the operator submits the original NOI to the EPA as applicable.

(C) The copy of the NOI must be delivered to the City of Lake Elmo either in person or by mailing it to:

Notice of Intent to Discharge Storm Water
City of Lake Elmo
3800 Laverne Avenue S.
Lake Elmo, MN 55042 20

(D) A person commits an offense if the person operates a facility that is discharging storm water associated with industrial activity without having submitted a copy of the NOI to do so to the City of Lake Elmo.

(Ord. 2012-59, passed 6-5-2012)

§ 150.309 REQUIREMENT TO PREVENT, CONTROL, AND REDUCE STORM WATER POLLUTANTS BY THE USE OF BEST MANAGEMENT PRACTICES.

The City of Lake Elmo will adopt requirements identifying best management practices for any activity, operation, or facility which may cause or contribute to pollution or contamination of storm water, the storm drain system, or waters of the United States. The owner or operator of such activity, operation, or facility shall provide, at their own expense, reasonable protection from accidental discharge of prohibited materials or other wastes into the municipal storm drain system or watercourses through the use of these structural and non-structural BMPs. Further, any person responsible for a property or premise that is, or may be, the source of an illicit discharge, may be required to implement, at said person's expense, additional structural and non-structural BMPs to prevent the further discharge of pollutants to the MS4. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of storm water associated with industrial activity, to the extent practicable, shall be deemed compliance with the provisions of this subchapter. These BMPs shall be part of a storm water management plan (SWMP) as necessary for compliance with requirements of the NPDES permit.

(Ord. 2012-59, passed 6-5-2012)

§ 150.310 NOTIFICATION OF SPILLS.

Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting or may result in illegal discharges or pollutants discharging into storm water, the storm drain system, or waters of the United States, said person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials said person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, said person shall notify the City of Lake Elmo in person or by phone no later than the next business day. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the discharge and the actions taken to prevent its recurrence. Failure to provide notification of a release as provided above is a violation of this subchapter.

(Ord. 2012-59, passed 6-5-2012)

§ 150.311 RIGHT OF ENTRY.

The City of Lake Elmo shall be permitted to enter and inspect facilities subject to regulation under this subchapter as often as may be necessary to determine compliance with this subchapter, including the right to set up, or require facilities owner to set up devices necessary to conduct monitoring and/or sampling of the facilities storm water discharge.

(Ord. 2012-59, passed 6-5-2012)

§ 150.312 ENFORCEMENT. 21

(A) *Enforcement.* The City of Lake Elmo shall be responsible for enforcing this subchapter.

(B) *Penalties.* Any person, firm or corporation failing to comply with or violating any of the provisions of this subchapter, shall be deemed guilty of a misdemeanor, and each day during which any violation of any of the provisions of this subchapter is committed, continued or permitted, shall constitute a separate offense. All land use and building permits shall be suspended until the applicant has corrected any and all violations.

(C) *Emergency cease and desist orders.* When the City of Lake Elmo finds that any person has violated, or continues to violate, any provision of this subchapter, or any order issued hereunder, or that the person's past violations are likely to recur, and that the person's violation(s) has (have) caused or contributed to an actual or threatened discharge to the MS4 or waters of the state which reasonably appears to present an imminent or substantial endangerment to the health or welfare of persons or to the environment, the City of Lake Elmo may issue an order to the violator directing it immediately to cease and desist all such violations.

(D) *Suspension due to the detection of illicit discharge.* Any person discharging to the MS4 in violation of this subchapter may have their MS4 access terminated if such termination would abate or reduce an illicit discharge. Such suspension may also be imposed if it is necessary to stop an actual or threatened discharge which presents or may present imminent and substantial danger.

(E) *Violations deemed a public nuisance.* In addition to the enforcement processes and penalties provided, any condition caused or permitted to exist in violation of any of the provisions of this subchapter is a threat to public health, safety, and welfare, and is declared and deemed a nuisance, and may be summarily abated or restored at the violator's expense; and/or a civil action to abate, enjoin, or otherwise compel the cessation of such nuisance may be taken.

(Ord. 2012-59, passed 6-5-2012)

§ 150.313 SEVERABILITY.

The provisions of this subchapter are severable. If any provision of this subchapter or the application of any provision of this subchapter to any circumstance is held invalid, such invalidity shall not affect other provisions or applications of this subchapter, which can be given effect without the invalid provision or application.

(Ord. 2012-59, passed 6-5-2012)

§ 150.314 AUTHORITY.

This subchapter shall become effective upon its passage and publication in accordance with the law.

(Ord. 2012-59, passed 6-5-2012)

Appendix B: Wastewater Treatment Systems Ordinance

Lake Elmo, MN Code of Ordinances

CHAPTER 51: WASTE WATER TREATMENT SYSTEMS

Section

SUBSURFACE SEWAGE TREATMENT SYSTEMS

§ 51.001 INTENT AND PURPOSE.

This subchapter is adopted for the purpose of protecting the health, safety and welfare of the residents of the city through regulating the location, design, installation, use and maintenance of individual sewage treatment systems so as to prevent contamination of surface waters and groundwater.

(1997 Code, § 700.02) (Am. Ord. 08-029, passed 9-21-2010; Am. Ord. 08-159, passed 12-6-2016)

§ 51.002 REGULATIONS ADOPTED BY REFERENCE.

Chapter 4 of the Washington County Development Code entitled *Subsurface Sewage Treatment Systems Regulations, Ordinance # 196 (the "County Regulations")*, with the exception of Sections 3.1, 3.3, 3.4, 24
22.10, 23, 26.3, 28.1, and 29.1 is hereby adopted by reference and made part of this chapter. Whenever the term "Department" appears in the County Regulations, it shall mean the "Lake Elmo Planning Department." Whenever the word "County" appears in the County Regulations, it shall mean the "City of Lake Elmo" except as used in Section 3.14 of the County Regulations. Whenever the term "local unit of government" appears in the County Regulations, it shall mean the "City of Lake Elmo."

(Ord. 08-029, passed 9-21-2010; Am. Ord. 08-159, passed 12-6-2016)

§ 51.003 EXCEPTIONS TO COUNTY REGULATIONS.

(A) The following provisions are adopted in addition to the County Regulations and are more restrictive than the County Regulations:

Mound systems are not allowed for new collector systems in the OP Open Space Preservation District except to replace existing non-compliant systems.

(Ord. 08-029, passed 9-21-2010; Am. Ord. 08-159, passed 12-6-2016)

§ 51.004 GENERALLY.

General requirements - community sewage treatment systems.

(A) (1) Lawful connections to community sewage treatment systems will be allowed, with a city permit.

(2) When an existing individual sewage treatment system is failing and the property in question is near the community sewage treatment system provided capacity is available in all components of the community sewage treatment system.

(3) A new connection to a community sewage treatment system will not be permitted for new construction, unless the previous structure in which the new construction occurs was previously connected

to the existing community sewage treatment system. In that event, a city permit is required.

(Am. Ord. 97-105, passed 4-2-2002)

(B) The fee for new connections will be determined by the city. The new user will be responsible for paying all costs to connect to the system, plus a charge to pay for previously built drainfield areas.

(C) No person(s) shall uncover, make any connections with or opening into, use, alter, or disturb any community sewage treatment system or appurtenance of the system without first obtaining a written permit from the city. This provision shall not apply to certified qualified employees performing tasks within their area of certification for which a permit is not required. The definition of a ***CERTIFIED QUALIFIED EMPLOYEE*** shall be as set forth in the County Regulations.

(1997 Code, § 700.04) (Am. Ord. 08-029, passed 9-21-2010; Am. Ord. 08-159, passed 12-6-2016) Penalty, see § 10.99

§ 51.005 ADMINISTRATION.

(A) *Board of Adjustment and Appeals.*

(1) *Administrative appeals.*

(a) An aggrieved party may appeal a decision by the permitting authority regarding the interpretation 25
or application of the provisions of §§ 51.001*et seq.*

(b) Appeals shall be reviewed and determined by the city's Board of Adjustment and Appeals.

(2) *Variance procedures.*

(a) Request for variances to the provisions of §§ 51.001*et seq.* shall be reviewed pursuant to the procedures and standards contained in the zoning code.

(b) No variances with respect to Sections 4.1, 4.7, 4.8, 4.9, and Sections 16.2(1) through 16.2(4) of the County Regulations will be considered or granted by the city. The city may grant a variance with respect to Section 4.8(4)(A) of the County Regulations for replacement MSTS serving existing dwellings or other establishments.

(Am. Ord. 97-124, passed 11-18-2003; Am. Ord. 08-029, passed 9-21-2010; Am. Ord. 08-159, passed 12-6-2016)

MUNICIPAL SANITARY SEWER SYSTEM

§ 51.020 GENERAL OPERATION.

The municipal sanitary sewer system shall be operated as a public utility and convenience from which revenues will be derived, subject to the provisions of this chapter.

(1997 Code, § 705.01)

§ 51.021 DEFINITIONS.

Unless specifically defined within §§ 51.020*et seq.*, common definitions, words, and phrases used in §§ 51.020 *et seq.* shall be interpreted so as to give them the same meaning throughout this code, and are found in § 11.01.

(1997 Code, § 705.02)

§ 51.022 CONNECTIONS WITH SEWER REQUIRED.

(A) Any building used for human habitation or in which a toilet or other plumbing facility for the disposal of human waste is installed and located on property adjacent to a sewer main, or in a platted block through which the system extends, shall be connected to the municipal sanitary sewer system within 2 years from the date on which a connection is available to the building.

(B) All buildings subsequently constructed within the city on property adjacent to a sewer main or in a platted block through which the municipal sanitary sewer system extends, shall be provided with a connection to the sewer system for the disposal of all human waste.

(1997 Code, § 705.03) (Am. Ord. 08-139, passed 6-21-2016) Penalty, see § 10.99

§ 51.023 SUPERVISION OF SEWER CONNECTIONS.

(A) The Building Official shall supervise all sewer connections made to the municipal sanitary sewer system and excavations for installing or repairing the connections. 26

(B) All sewer installers shall verify the location and elevation of a sewer connection stub by securing a written statement from the City Engineer before proceeding with the installation of the sewer house connection.

(C) The City Engineer shall not deviate from the planned location without written permission from the Council.

(1997 Code, § 705.04) Penalty, see § 10.99

§ 51.024 PERMITS.

(A) Persons desiring a connection to the municipal sanitary sewer system shall apply to the city for a permit. The application shall be made on forms furnished by the Administrator and shall be accompanied by plans, specifications, and other information required by the Building Official, together with a permit fee as set forth from time to time by resolution of the Council. When reinspection is necessary, a fee as set forth from time to time by resolution of the Council for the reinspection shall be paid. All costs and expenses incident to the installation and connection shall be borne by the owner, and the owner shall indemnify the city for any loss or damage that may, directly or indirectly, be occasioned by the installation of the sewer connection, including restoring streets and street surfaces.

(B) Permits for connections will be issued only to the property owner or to a person duly licensed to make the connection under the provisions of this chapter.

(1997 Code, § 705.05) Penalty, see § 10.99

§ 51.025 CONNECTION CHARGE.

(A) A connection charge as determined by resolution of the Council and the permit fee as set forth from time to time by resolution of the Council shall be paid at the time of making application for a connection to the municipal sanitary sewer system.

(B) Before a permit shall be issued, the following conditions shall be complied with.

(1) *Permit requirements.* No permit shall be issued to connect any lot or tract of land with the municipal sanitary sewer system of the city, either directly or indirectly, unless it shall be determined that:

(a) The lot or tract of land to be served by the connection has been assessed for the cost of construction of the sanitary sewer main with which the connection is made;

(b) If no assessment has been levied for the construction cost, the proceedings for levying the assessment have been or will be commenced and completed in due course; or

(c) If no assessment has been levied, and no assessment proceedings will be completed in due course, a sum equal to the portion of cost of construction of the sanitary sewer main which would be assessable against the lot or tract has been paid to the city.

(2) *Additional connection fee.*

(a) If none of the above conditions are met, no permit to connect to any sanitary sewer main shall be issued unless the applicant shall pay an additional connection fee which shall be equal to the portion of the cost of construction of the sanitary sewer main which would be assessable against the lot or tract to be served by the connection.

(b) The assessable cost is to be determined by the Administrator upon the same basis as any assessment previously levied against other property for the main.

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(c) If no assessment has been levied, the assessable cost will be determined upon the basis of the uniform charge which may have been or which shall be charged for similar connection with the sanitary sewer main, determined on the basis of the total assessable cost of the main, allocated on a frontage basis, acreage basis, or both.

(1997 Code, § 705.06) Penalty, see § 10.99

§ 51.026 TYPES OF WASTES PROHIBITED.

(A) *Unlawful discharges.* It is unlawful to discharge any of the following described waters or wastes into the municipal sanitary sewer system:

(1) Any liquid or vapor having a temperature higher than 150°F;

(2) Any water or waste containing more than 100 parts per million by weight of fat, oil, or grease;

(3) Any liquids, solids, or gases which by reason of their nature or quantity are, or may be, sufficient either alone or by interaction with other substances to cause fire or explosion or be injurious in any other way to the waste water disposal system or to the operation of the system. Prohibited materials include, but are not limited to, gasoline, kerosene, naphtha, benzene, toluene, xylene, ethers, alcohols, ketones, aldehydes, peroxides, chlorates, perchlorates, bromates, carbides, hydrides, and sulfides;

(4) Any waste water having a pH of less than 5.0 or greater than 9.5 or having any other corrosive property capable of causing damage or hazard to structures, equipment, and personnel of the waste water disposal system;

(5) Any waste water containing toxic pollutants, including pesticides and herbicides, in sufficient quantity, either single or by interaction with other pollutants, to inhibit or disrupt any waste water treatment process, constitute a hazard to humans or animals, or create a toxic effect in the receiving waters of the waste water disposal system. A toxic pollutant shall include but not be limited to any pollutant identified pursuant to § 307(a) of the Clean Water Act of 1977, as amended;

(6) Any garbage that has not been properly shredded;

(7) Any ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, plastics, wood, manure, or any other solid or viscous substances capable of causing obstruction to the flow in sewers or other interference with the proper operation of the sewage system;

(8) Any waters or wastes containing suspended solids of a character and quantity that unusual attention or expense is required to handle the materials at the sewage treatment plant;

(9) Any noxious or malodorous gas or substance capable of creating a public nuisance; and/or

(10) Grease, oil, and sand interceptors shall be provided when, in the opinion of the Building Official, they are necessary for the proper handling of liquid wastes containing grease in excessive amounts, or any inflammable wastes, sand, or other harmful ingredients; except that the interceptors shall not be required for private dwelling units which discharge only normal wastes. Grease and oil interceptors shall be of substantial construction, watertight, and equipped with easily removable covers, which, when bolted in place, shall be gastight and watertight. All grease, oil, and sand interceptors shall be maintained by the owner, at owner's expense, and in continuously efficient operation at all times.

(B) *Substances prohibited.*

(1) No person shall discharge or cause to be discharged directly or indirectly the following described substances to any public sewers unless, in the opinion of the city, the discharge will not harm the municipal sanitary sewer system facilities, nor cause obstruction to free flow in sewers, nor otherwise endanger life, limb, or public property, nor constitute a nuisance. In forming its opinion as to the acceptability of the wastes, the city may give consideration to the factors as the materials or construction of the sewers, nature 28
of the sewage treatment process, capacity of the municipal sanitary sewer system facilities, the city's S.D.S./N.P.D.E.S. permit and other pertinent factors. City may make the determination either on a general basis or as a discharges from individual users or specific discharges, and may prohibit certain discharges from individual users because of unusual concentrations or combinations which may occur.

(2) The substances prohibited are:

(a) Any water or wastes containing strong acid, iron and pickling wastes, or concentrated plating solutions, whether neutralized or not;

(b) Any water or wastes containing phenols or other taste or odor-producing substances which constitute a nuisance or hazard to the structures, equipment, or personnel of the sewage works, or which interfere with the treatment required to meet the requirements of the state or federal government, or any other public agency with proper authority to regulate the discharge from the sewage treatment plant; and

(c) Any radioactive wastes or isotopes of the half-life or concentration that they are not in compliance with regulations issued by the appropriate authority having control over their use or may cause damage or hazards to the treatment works or personnel operating it.

(C) *Water runoff discharge prohibited.* It shall be unlawful to discharge or cause to be discharged into the municipal sanitary sewer system, either directly or indirectly, any roof, storm, surface or ground water of any type or kind, or water discharged from any air conditioning unit or system.

(1997 Code, § 705.08) Penalty, see § 10.99

§ 51.027 PRETREATMENT, CONTROL, AND REFUSAL OF EXTRAORDINARY WASTES.

(A) *Generally.*

(1) If any water or wastes are discharged, or are proposed to be discharged directly or indirectly to the public sewers, which water or wastes do not meet the standards set out in or promulgated under this section, or which in the judgment of the city may have a deleterious effect upon the treatment facilities, processes,

equipment, and soil, vegetation, and ground water or which otherwise create a hazard to life, or constitute a public nuisance, the city may take all or any of the following steps:

(a) Refuse to accept the discharges;

(b) Require control over the quantities and rates of discharge;

(c) Require pretreatment to an acceptable condition for the discharge to the public sewers; and/or

(d) Require payment to cover the added cost of handling or treating the wastes.

(2) The design and installation of plant or equipment for pretreatment or equalization of flows shall be subject to the review and approval of the city, and subject to the requirements of 40 C.F.R. § 403, as it may be amended from time to time, entitled "Pretreatment Standards," and the Minnesota Pollution Control Agency.

(B) *Operation and maintenance; preliminary treatment.* Where preliminary treatment, flow equalization, or interceptors are required for any water or waste, they shall be effectively operated and maintained continuously in satisfactory and effective condition by the owner at owner's expense and shall be available for inspection by the city at all reasonable times.

(C) *Control; observation devices.*

(1) When required by the city, the owner of any property services by a building sewer carrying industrial wastes shall install a suitable control structure together with the necessary meters and other 29
appurtenances in the building sewer to facilitate observation, sampling, and measurement of the wastes.

(2) The structure and equipment, when required, shall be constructed at the owner's expense in accordance with plans approved by the city and shall be maintained by the owner so as to be safe and accessible at all times.

(D) *Sampling.* All measurements, tests, and analysis of the characteristics of water and waste to which reference is made in this section shall be determined in accordance with 40 C.F.R. § 136, as it may be amended from time to time, "Guidelines Establishing Test Procedures for the Analysis of Pollutants"; the latest edition of Standard Methods for the Examination of Water and Waste Water and shall be determined at the control structure provided, or upon suitable samples taken at the control structure. If no special structure has been required, the control structure shall be considered to be the nearest downstream manhole in the public sewer from the point at which the building sewer is connected. Sampling shall be carried out by customarily accepted methods to reflect the effluent constituents and their effect upon the treatment works and to determine the existence of hazards to life, health, and property. Sampling methods location, times, durations, and frequencies are to be determined on an individual basis subject to approval by the city.

(E) *Proof of compliance.* The owner of any property serviced by a building sewer carrying industrial wastes shall, at the discretion of the city, be required to provide laboratory measurements, tests, and analysis of waters or wastes to illustrate compliance with §§ 51.020*et seq.* and any special condition for discharge established by the city or regulatory agencies having jurisdiction over the discharge. The number, type, and frequency of sampling and laboratory analysis to be performed by the owner shall be as stipulated by the city. The industry must supply a complete analysis of the constituents of the waste water discharge to assure that compliance with the federal, state, and local standards are being met. The owner shall bear the expense of all measurements, analysis, and reporting required by the city. At the times as deemed necessary, the city reserves the right to take measurements and samples for analysis by an outside laboratory.

(F) *New connections; sufficient capacity.* New connections to the sanitary sewer system shall be prohibited unless sufficient flow capacity is available in all downstream facilities.

(G) *Special considerations.* No statement contained in §§ 51.020*et seq.* shall be construed as preventing any special agreement or arrangement between the city and any industrial concern where an industrial waste of unusual strength or character may be accepted by the city for treatment, subject to payment for the special agreement/arrangement by the industrial concern, providing that National Categorical Pretreatment Standards and the city's N.P.D.E.S. and/or state disposal system permit limitations are not violated.

(1997 Code, § 705.09) Penalty, see § 10.99

§ 51.028 TAMPERING WITH MUNICIPAL SANITARY SEWER SYSTEM PROHIBITED.

No person shall maliciously, willfully, or negligently damage, destroy, uncover, deface, or tamper with any part of the municipal sewer system.

(1997 Code, § 705.10) Penalty, see § 10.99

§ 51.029 ENTRY UPON PRIVATE PROPERTY.

The Building Official, bearing proper credentials and identification, shall at reasonable times be permitted to enter upon all properties connected to the municipal sanitary sewer system for the purpose of inspection, observation, measurement, sampling, and testing in connection with the operation of the municipal sanitary sewer system.

(1997 Code, § 705.11) 30

§ 51.030 MAINTENANCE OF MUNICIPAL SANITARY SEWER CONNECTIONS.

Each property owner shall be responsible at all times for the maintenance of owner's sewer connection to the municipal sanitary sewer system, and shall have the obligation to keep the connection in good repair, to the end that there shall be no interference or obstruction to the sewer system as a whole, nor shall there be any violation of this chapter, and the laws of the state. The Building Official is authorized to make the inspections of the sewer connections as the Building Official may deem necessary to accomplish this purpose, and the property owner shall be responsible for carrying out the instructions as the Building Official deems necessary to accomplish this purpose.

(1997 Code, § 705.12) Penalty, see § 10.99

§ 51.031 RATES AND CHARGES.

Except as provided in §§ 51.020*et seq.*, the Council shall prescribe by resolution the rates to be charged for sewer service and the method of billing and payments. Delinquent accounts may be assessed against the respective property served.

(1997 Code, § 705.13)

§ 51.032 ESTABLISHMENT OF STRENGTH CHARGES.

(A) The Metropolitan Waste Control Commission, a metropolitan commission organized and existing under the laws of the State of Minnesota (the "Commission"), in order to receive and retain grants in compliance with the Federal Water Pollution Control Act Amendments of 1972 (the "Acts"), as amended from time to time, and the regulations under the Act, has determined to impose an industrial user sewer strength charge upon users of the Metropolitan Disposal System (as defined in M.S. § 473.121, Subd. 24, as it may be amended from time to time) to recover operation and maintenance costs of treatment works attributable to the strength of the discharge of industrial waste, the sewer strength charge being in addition to the charge based upon the volume of discharge. In order for the city to pay the costs based upon strength of industrial discharge and allocated to it each year by the Commission, it is found, determined, and declared to be necessary to establish sewer strength charges and a formula for the computation of the charges for all industrial users receiving waste treatment services within or served by the city. Furthermore, M.S. § 444.075, Subd. 3, as it may be amended from time to time, empowers the city to make the sewer charge a charge against the owner, lessee, occupant, or all of them and certify unpaid charges to the county auditor as a tax lien against the property served.

(B) For the purpose of paying the costs allocated to the city each year by the Metropolitan Waste Control Commission that are based on the strength of discharge of all industrial users receiving waste treatment service within or served by the city, in addition to sewer charge based on volume of discharge, a sewer charge upon each person, company, or corporation receiving waste treatment services within or served by the city, based upon strength of industrial waste discharged into the sewer system of the city, the charges referred to as "strength charge."

(1) *Establishment of strength charge formula.* For the purpose of computation of the strength charge established by this section, there is established, approved, and adopted the same strength charge formula designated in Resolution No. 76-172 adopted by the Metropolitan Waste Control Commission on 6-15-1976, a formula based upon pollution qualities and difficulty of disposal of the sewage produced through an evaluation of pollution qualities and quantities in excess of an annual average base and the proportionate costs of operation and maintenance of waste treatment service provided by the commission.

(2) *Strength charge payment.* The strength charge established by this section shall be paid by each 31
industrial user receiving waste treatment services and subject to the charge before the twentieth day next succeeding the date of billing of the charge to the user by or on behalf of the city. The payment of the charge shall be deemed to be delinquent if not paid to the billing entity before the date. If the payment is not paid before the date an industrial user shall pay interest compounded monthly at the rate of 2/3 of 1% per month on the unpaid balance due.

(3) *Establishment of tax lien.*

(a) As provided by M.S. § 444.075, Subd. 3, as it may be amended from time to time, if payment of the strength charge established by this section is not paid before the sixtieth day next succeeding the date of billing of the charge to the industrial user by or on behalf of the city, the delinquent sewer strength charge, plus accrued interest, shall be deemed to be a charge against the property served, and the city or its agent shall certify the unpaid delinquent balance to the collection as other taxes are collected.

(b) The certification shall not preclude the city or its agent from recovery of the delinquent sewer strength charge and interest on the charge under any other available remedy.

(1997 Code, § 705.14)

COMMUNITY SEWAGE TREATMENT SYSTEM SERVICE CHARGE

§ 51.045 INTENT AND PURPOSE.

Sections 51.045*et seq.* is adopted for the purpose of:

(A) Setting forth the requirements for accruing revenues to enable the city to comply with the state and federal laws and to provide sufficient revenues to financially balance expenditures for the administration of those waste water systems within the city constructed with federal and state grant funds; and

(B) Charging those users of the waste water utilities within the city, which are constructed with federal and state grant funds, for the operation, maintenance, and replacement costs in proportion to use.

(1997 Code, § 710.02)

§ 51.046 REGULATIONS.

(A) The city has established a waste water service charge system whereby revenues collected from users of the waste water treatment facilities will be used to offset all expenditures incurred for administration, annual operation and maintenance, and equipment replacement.

(B) (1) A passive maintenance program shall be required of all those properties utilizing individual onsite sewage treatment systems while all properties connected to community collection and treatment systems, cluster system, or individual off-site treatment systems shall be on the active maintenance program.

(2) For those properties on the passive maintenance program, the property owner shall be responsible for the cost of operating, maintaining, and replacing owner's system. This will include arranging for all repairs and maintenance to septic tanks, pipes, pumps, controls, drain fields, as well as septic tank pumping. The property owner shall report all problems and the steps taken to alleviate the problems to the City Administrator. The city will supply inspection cards to the pumpers within the city. When a septic tank is pumped, the tank will also be inspected by the pumper and the signed inspection card returned to the 32
city. The city shall, at regular intervals, and at least biennially, determine which septic tanks have not been inspected and/or pumped. If owners on passive maintenance fail to pump their septic tanks or to return the inspection card, the city will, at its option, inspect the system and perform the required maintenance. All costs of the inspection and maintenance shall be charged to the property owner.

(3) For those properties on the active maintenance program, the city shall be responsible for operating, maintaining, and replacing the collection and final treatment and disposal system. The city shall arrange for all repairs and maintenance on sewers, lift stations, controls, and drain fields. The property owner shall be responsible for all repairs and maintenance to septic tanks, including septic tank pumping, and to all individual pump stations and sewer pipes up to the collector sewer or final treatment and disposal system. Unless otherwise prescribed, city ownership and the city's responsibility for conducting operation, maintenance, and replacement shall begin at the property line.

(4) If owners on active maintenance fail to pump their septic tanks or to return the inspection card, the city will, at its option, inspect the system and perform the required maintenance. All costs of the inspection and maintenance shall be charged to the property owner. Property owners shall report all problems to the City Administrator who will determine responsibility for their correction. Damages caused by the abuse of the system by the property owner will be repaired by the city and assessed against the property owner.

(5) When it has been determined that maintenance and replacement is necessary on an individual or community sewage treatment system (apart from septic tank pumping addressed above), the maintenance and replacement shall be accomplished in a manner acceptable to the city. Replacement parts, equipment, and appurtenances shall be of a design and quality acceptable to the city and shall be installed in a manner acceptable to the city and in conformance with requirements of State of Minnesota Rule 7080, "Individual Sewage Treatment Systems," as it may be amended from time to time. In the absence of code provisions or in the amplification of code provisions, materials and procedures shall be as set forth in appropriate specifications of the A.S.T.M., and W.P.C.F. Manual of Practice No. 9. Replacement effected on individual systems shall be reported to the sewer authority.

(C) Community sewage treatment system service charges will be established based on equivalent residential units (E.R.U.). One E.R.U. is defined as a unit of waste water volume of 250 gallons per day with a theoretical waste strength of 250 mg/l of B.O.D. and 300 mg/l of total suspended solids. The assignment of E.R.U.s will be made by the City Administrator in accordance with Tables I and II of Appendix A.

(D) In accordance with federal and state requirements, each user will be notified annually at the beginning of each calendar year of the user charge rates attributable to waste water treatment services.

(E) In accordance with federal and state requirements, the city will be responsible for maintaining all records necessary to document compliance with the waste water service charge system adopted.

(1997 Code, § 710.05) Penalty, see § 10.99

§ 51.047 DETERMINATION OF COMMUNITY SEWAGE TREATMENT SYSTEM SERVICE CHARGE.

(A) *Intent.*

(1) It is the intent of §§ 51.045*et seq.* that the user charges shall cover the costs of operating and maintaining the waste water systems, and that costs are recovered from all users in a proportionate manner. The City Administrator shall maintain a proper system of accounts suitable for determining the operation and maintenance, equipment replacement, and debt retirement costs of the collection and treatment facilities.

(2) These costs shall be reviewed at regular annual intervals. The city shall determine whether or not 33
sufficient revenue is being generated for the effective operation and maintenance and management of the waste water system, and that user charges are being distributed proportionately to all users. Any inequities and/or shortages shall be corrected by adjusting the rates accordingly by Council resolution.

(3) The annual user charge per equivalent residential unit is described as follows.

(a) User charge rate per equivalent residential unit:

$$\frac{Uc}{ERU} = \frac{Comr}{Total\ ERUs}$$

(b) Where:

1. Uc = Annual User Charge;

2. Comr = Total Annual OM&R Costs;

3. ERU = Equivalent Residential Unit; and

4. Total ERUs = The total number of ERUs connected to community sewage treatment systems.

(B) *Use formula.* All users shall be charged in accordance with the methodology described below.

(1) (a) Individual off-site or clustered sewage treatment units:

$$SCC = \frac{Uc}{ERU} * \#ERU + Ac$$

(b) Where:

1. SCC = Sewer Service Charge;

2. Uc = User charge for operation, maintenance, and replacement;

3. Ac = Administration charge; and

4. #ERU = Number of ERUs assigned to a particular connection.

(2) (a) Individual on-site sewage treatment units:

$$SCC = Ac$$

(b) Where:

1. SCC = Sewer service charge; and

2. Ac = Administration charge.

(C) *Basis for annual user charge.* All users of the waste water treatment facilities shall be charged annually for sewer service based on the number of equivalent residential units assigned to each and based on whether the unit is seasonal or year-round.

(D) *Additional requirements.*

(1) If a user discharges toxic pollutants or wastes of unusual strength of character to the treatment facilities which cause or increase the operation and maintenance costs, the user shall be ordered either to install pretreatment facilities or pay for the extra costs of treating the wastes.

(2) This decision will be made by the City Administrator at the time the user begins to discharge extra strength wastes.

(1997 Code, § 710.06) 34

§ 51.048 DELINQUENT ACCOUNTS; REVOCATION.

(A) *Delinquent accounts.* Any bill not paid for 4 weeks after date of billing shall be declared delinquent and a past-due notice shall be issued to the billed party. The past-due notice shall contain an additional charge to cover the costs of the rebilling. Additional delinquent notices including their respective charges shall be sent at 8 and 12 weeks after the billing date. Should a bill still be delinquent after 120 days, the city may elect to take the following actions.

(1) *Tax.* Whenever waste water service charge bills become delinquent, the amount due shall be certified to the City Auditor for inclusion with the following year's tax statement.

(2) *Lien.* Whenever waste water treatment bills become delinquent, the same shall become and constitute a lien upon the real estate to which the sewer service is supplied. Statements rendered for the charge shall be deemed notice to all parties, whether or not the person charged with the statement is the owner of the property served. The claim for lien shall be made in the form of a sworn statement setting forth:

(a) A description of the real estate, sufficient for the identification of the real estate, upon or for which the sewage service was supplied;

(b) The amount of money due for the sewage service; and

(c) The date or dates when the amount or amounts became delinquent. If all amounts shown due remain unpaid after recording as provided by state statutes, the city may foreclose the lien in the same manner and with the same effect as in the foreclosure of mortgages on real estate.

(3) *Civil action.*

(a) In the alternative of levying a lien, the city may, at its discretion, file suit in a civil action to collect the amounts as are delinquent and due against the occupant or user of the real estate and shall collect, as well, all attorney's fees incurred by the city in filing the civil action.

(b) The attorney's fees shall be fixed by order of the court.

(B) *Delinquent account penalties.* In addition to all penalties and costs attributable and chargeable to recording notices of the lien or filing a civil action, the owner or user of the real estate being served by the treatment works shall be liable for interest upon all unpaid balances at the rate of 12% per annum.

(C) *Revocation.* The city reserves the right to revoke discharge permits and to disconnect service to any user whenever waste water treatment becomes delinquent.

(1997 Code, § 710.07)

§ 51.049 COMMUNITY SEWAGE TREATMENT SYSTEM SERVICE FUND.

(A) *Purpose.*

(1) The city, by §§ 51.045*et seq.*, establishes a "Sewer Service Fund" as an income fund to receive all revenues generated by the sewer service charge system, and all other income dedicated to the operation, maintenance, replacement, and construction of the waste water treatment works, including taxes, special charges, fees, and assessments intended to retire construction debt.

(2) The city also establishes the following accounts as income and expenditure accounts within the Sewer Service Fund:

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(a) Operation and Maintenance Account;

(b) Equipment Replacement Account; and

(c) Debt Retirement Account.

(B) *Management of funds.*

(1) All revenue generated by the sewer service charge system, and all other income pertinent to the treatment system, including taxes and special assessments dedicated to retire construction debt, shall be held by the Clerk separate and apart from all other funds of the city.

(2) Funds received by the Sewer Service Fund shall be transferred to the Operation and Maintenance Account, the Equipment Replacement Account, and the Debt Retirement Account in accordance with state and federal regulations and the provisions of §§ 51.045*et seq.*

(C) *Replacement.* Revenue generated by the sewer service charge system sufficient to ensure adequate replacement throughout the design of useful life, whichever is longer, of the waste water facility shall be held separate and apart in the Equipment Replacement Account and dedicated to effecting replacement costs. Interest income generated by the Equipment Replacement Account shall remain in the Equipment Replacement Account.

(D) *Operation and maintenance.* Revenue generated by the sewer service charge system sufficient for operation and maintenance shall be held separate and apart in the Operation and Maintenance Account.

(1997 Code, § 710.08)

ALTERNATIVE WASTE DISPOSAL SYSTEMS; WETLAND TREATMENT SYSTEMS

§ 51.065 INTENT AND PURPOSE.

(A) *Health, safety, and welfare.* The purpose of §§ 51.065*et seq.* is to protect the health, safety, and welfare of the residents of the community, present and future.

(B) *Contamination of surface/ground water.* The purpose of §§ 51.065*et seq.* is to regulate the location, design, installation, use, and maintenance of alternative waste disposal systems so as to prevent the contamination of the surface and ground water within the community.

(C) *Contamination of private water supply wells.* The intent of §§ 51.065*et seq.* is to protect the individual water supply wells of the community from contamination by inadequate, improperly designed, located, installed, or maintained individual and community sewage treatment systems.

(D) *Open space development.* The intent of §§ 51.065*et seq.* is to allow subsurface flow "wetland treatment" systems to be an allowed alternative system within cluster developments.

(1997 Code, § 720.02)

§ 51.066 RULES.

(A) *Specifications which apply.* Lake Elmo Municipal Code §§ 51.001*et seq.* shall apply, except as provided below: § 51.003(B)(1). Each dwelling shall have its own sewage tank and a stilling tank shall be installed before the first cell.

(B) *Location of systems.* 36

(1) *Setbacks.*

(a) All components of a wetland treatment system within a new residential or commercial development, including stilling tanks, pump stations, and treatment cells, shall be located a minimum of 100 feet from any property line, and 200 feet from any existing or proposed home. Stilling tanks may however be located 50 feet from a street right-of-way.

(b) Wetland treatment systems used to replace failed septic systems shall have setbacks considered reasonable for the site and the neighboring properties.

(2) *Ground water.* Treatment cells shall have a minimum of 3 feet between the bottom of the cell and the ground water table. Drain tile or French drains shall not be used to artificially lower the ground water table.

(C) *System design.*

(1) *Designer.* Wetland treatment systems shall be designed by a registered professional engineer with experience and specific training in the design of these types of systems.

(2) *Design flow.* Wetland treatment systems shall be sized based on a minimum of 50 gallons per day per person.

(3) *Level of treatment.*

(a) Wetland treatment systems shall be designed to remove total suspended solids (T.S.S.), phosphorous (P.), total nitrogen (T.N.), and fecal coliforms (F.C.), and reduce the 5-day carbonaceous biochemical oxygen demand (C.B.O.D.5). Calculations showing the design level of treatment shall be submitted.

(b) Prior to discharge into the infiltration cell, the following discharge limits shall be met:

1. C.B.O.D.5 - 50 mg/l;

2. T.S.S. - 20 mg/l;

3. T.N. - 15 mg/l;

4. N.H.4 - 10 mg/l;

5. T.P. - 5 mg/l; and

6. F.C. - 200 mg/l.

(c) One foot below the infiltration cell, the following discharge limits shall be met:

1. C.B.O.D.5 - 0 mg/l;

2. T.S.S. - 0 mg/l;

3. T.N. - 5 mg/l;

4. N.H.4 - 1 mg/l;

5. T.P. - 1 mg/l; and

6. F.C. - 10 mg/l.

(4) *Inspection points.* Inspection and monitoring ports shall be located within the system so that the water level can be determined, and a water sample can be easily taken in each treatment cell, and 1 foot below the infiltration cell.

(5) *Operating plan.* An operating plan shall be developed by the designer. This plan shall include 37
standard operating procedures and maintenance of the system.

(6) *Monitoring plan.*

(a) Systems designed for greater than 1,500 gallons per day shall have a monitoring plan developed by the designer. It shall include monitoring of sludge and scum levels in the septic tanks and pumping stations, effluent flow into the system. Water quality exiting the first treatment cell shall be monitored to ensure that it meets the design level of treatment. Monitoring 1 foot below the second treatment cell shall be done to ensure that it meets the design level of treatment. Monitoring shall be conducted annually.

(b) The city shall be sent a copy of all test results.

(7) *Mitigation plan.* The system designer shall develop a plan to follow in case expansion or abandonment of the system is necessary.

(8) *City review.* The city shall review and approve all parts of the system design and associated plans prior to any construction taking place. Once approval of the system is given, a permit shall be issued by the city.

(D) *Construction.*

(1) *Sanitary sewers.* All sanitary sewers shall be constructed and tested in accordance with the City Engineers Association of Minnesota Standards for Utility Construction.

(2) *Treatment cells; testing.*

(a) Liners of treatment cells shall be visually inspected for tears, holes, or poor seams prior to placing rock. A leak test shall be performed after the rock is in placed. The liner shall be uncovered, repaired, and the test rerun if any leaks show up during this testing.

(b) A city representative shall be present for all treatment cell testing.

(3) *Turf establishment; plant growth.*

(a) The designer shall prepare a vegetation plan to establish a wetland community over the treatment cells.

(b) Prior to final acceptance, wetland plants shall display vigorous growth, and turf shall be established outside of the treatment cell area.

(c) No erosion shall be present on the site.

(4) *Certification.* The system designer shall certify in writing to the city that the treatment system has been constructed in accordance with the approved plans and specifications, and that all test requirements have been met. This certification must be reccived before start-up of the system.

(1997 Code, § 720.03) Penalty, see § 10.99

Contract # 9297

Dept. PHE

SEPTK 1/1/15 - 12/31/16

20498

Agreement for Subsurface Sewage Treatment System Inspection Services

This agreement is made and entered into, by and between the County of Washington (hereinafter referred to as the County) and City of Lake Elmo (hereinafter referred to as the City).

I. WITNESSETH

WHEREAS, the City wishes to contract with the County to perform subsurface sewage treatment system (SSTS) inspection services within the City's boundaries; and

WHEREAS, the City adopted the County's Subsurface Sewage Treatment System Regulations Ordinance #179 (Washington County Development Code Chapter 4), hereinafter SSTSRO, regulating subsurface sewage treatment systems, which applies to all areas of the City; and

WHEREAS, the County agrees to provide subsurface sewage treatment system inspection services under the terms and conditions hereinafter set forth; and 39

WHEREAS, this contract is authorized under Section 471.59 of the Minnesota Statutes.

NOW THEREFORE, it is mutually agreed between the County and City as follows:

II. SCOPE OF SERVICES

County's Responsibilities

1. The County agrees to provide, through its Department of Public Health and Environment, subsurface sewage treatment system inspection services for the City. The County shall provide a Qualified Employee(s), as described in Minn. Rule 7083.1010 and 7083.0020 subp 17.

2. The standards of performance, method of providing subsurface sewage treatment system inspection services, and other matters incident to the performance of services under this Agreement, including personnel to be employed, shall be determined by the County. The City shall be notified in advance of any proposed changes in standards of performance or methods of providing services.

3. The County shall provide the necessary SSTS application review and sewage system plan approval as required by laws, regulations and ordinances, provide all job site inspections of projects under permit, and conduct special inspections as deemed necessary to ensure compliance with the SSTSRO. Services shall include clerical support incidental to the performance of this agreement.

4. The County shall provide and issue all sewage permits as required by the SSTSRO, existing laws or regulations and shall maintain records of all such permits. If the City requests a copy of a granted permit, the County shall provide a copy to the City within 5 (five) working days.

5. The County shall send a copy of the County's issuance of a certificate of compliance of the sewage system's completion to the City within 10 (ten) working days of the County granting the certificate.

6. In the event of a violation or threatened violation of the SSTSRO or sewage permit the County may pursue the administrative issuance of stop work orders on the installation of the septic system, and/or issue corrective orders, and/or issue notices of non-compliance.

7. The County shall advise the City if a misdemeanor citation is warranted for any violation of a sewage permit or SSTSRO.

8. The County may request appropriate actions or proceedings be brought by the City, to 40
prevent, restrain, correct or abate violations or threatened violations of a sewage permit or SSTSRO.

9. The County will cooperate with the City's officials and/or employees in fulfilling its obligations under this Agreement.

City's Responsibilities:

1. In areas not served by municipal sewer, the City shall not issue a building permit for new dwelling construction and/or for the addition of bedrooms until the County has issued a sewage permit for the new construction and/or addition of bedrooms.

2. The City shall act on all applications for special permits and SSTSRO variance requests.

3. Upon request from the County the City shall issue a stop work order on projects commencing construction prior to the issuance of a sewage permit.

4. The City is responsible for commencing appropriate actions or proceedings to prevent, restrain, correct or abate violations or threatened violations of a sewage permit or SSTSRO and shall represent the County during appeals of the administrative remedies issued by the County.

5. The City may issue misdemeanor citations for violations of the SSTSRO or sewage permit.

6. The City shall not issue a certificate of occupancy for new construction or the addition of bedrooms prior to receipt of the County's certificate of compliance.

7. The City, and its agents and employees, will cooperate and assist the County in the performance of this Agreement.

8. In the event of County SSTS Ordinance revision, the City may adopt a revised SSTS Ordinance which is consistent with or more restrictive than the County's revised SSTS Ordinance no more than 12 (twelve) months after the County revised SSTS Ordinance has been adopted.

III. SCHEDULE OF FEES AND CHARGES

1. The County shall establish the schedule of fees for its subsurface sewage treatment system inspection services. The septic permit application and installation fees shall be in accordance with the fee schedule adopted annually by the Washington County Board of Commissioners. The County shall collect, receipt for, disburse, and maintain records for all fees and charges collected incident to the administration of subsurface sewage treatment system inspection and permit services contained herein. 41

1. Fees and charges shall be due and payable by the applicant upon issuance of the permit and will be collected by the County from the applicant for said permit.

2. The City agrees that in payment for the subsurface sewage treatment system inspection and permit services provided by the County that the County shall retain, out of the fees and charges collected incident to this service, an amount equal to one hundred percent (100%) of all SSTS permit fees.

3. The City shall not assume any liability for the direct payment of any salary, wage, or other compensation to any County employee performing subsurface sewage treatment system inspection services pursuant to this agreement.

IV. GENERAL TERMS AND CONDITIONS

Data Privacy

1. All data collected, created, received, maintained or disseminated for any purposes by the activities of the County because of this Agreement is governed by the Minnesota Government Data Practices Act, Minnesota Chapter 13, as amended, the Minnesota Rules implementing such Act now in force or as adopted, as well as Federal Regulations on data privacy, including but not limited to, the Health Insurance Portability and Accountability Act (HIPAA) where it applies. The City and County agree to abide by these statutes, rules and regulations and as they may be amended.

Indemnity Clause

2. The City agrees that it will indemnify and hold harmless the County, its officers and employees, against any and all liability, loss, costs, damages and expenses which the County, its officers or employees may hereafter sustain, incur, or be required to pay arising out of the City's negligent performance or failure to adequately perform its obligations pursuant to this Agreement.

   The County agrees that it will indemnify and hold harmless the City, its officers and employees, against any and all liability, loss, costs, damages and expenses which the City, its officers or employees may hereafter sustain, incur, or be required to pay arising out of the County's negligent performance or failure to adequately perform its obligations pursuant to this Agreement.

Insurance

3. The City further agrees that in order to protect itself, as well as the County, under the 42
indemnifications provisions set forth above that it shall at all times during the terms of this Agreement, provide maximum tort liability limits as set forth in Minnesota Statute, Sections 3.736 and 466.04. This provision shall be set as a condition subsequent; failure to abide by this provision shall be deemed a substantial breach of contract.

   The County further agrees that in order to protect itself, as well as the City, under the indemnifications provisions set forth above that it shall at all times during the terms of this Agreement, provide maximum tort liability limits as set forth in Minnesota Statute, Section 466.04. This provision shall be set as a condition subsequent; failure to abide by this provision shall be deemed a substantial breach of contract.

Records – Availability and Retention

4. Pursuant to Minnesota Statute 16C.05, Subd 5., the County/City agrees that the County/City, the State Auditor, or any of their duly authorized representatives at any time during normal business hours and as often as they may reasonably deem necessary, shall have access to and the right to examine, audit, excerpt, and transcribe any books, documents, papers, records, etc. which are pertinent to the accounting practices and procedures of the County/City and involve transactions relating to this agreement. The County/City agrees to maintain these records for a period of six years from the date of termination of this Agreement and make available as requested.

Nondiscrimination

4. The provisions of Minn. Stat. 181.59 and of any applicable ordinance relating to civil rights and discrimination shall be considered part of this Agreement as if fully set forth herein, and

shall be part of any Agreement entered into by the parties with any contractor, subcontractor, or material suppliers.

Merger and Modification

6. It is understood and agreed that the entire Agreement between the parties is contained here and that this agreement supersedes all oral agreements and negotiations between the parties relating to the subject matter.

   Any material alterations, variations, modifications, or waivers of provisions of this Agreement shall be valid only when they have been reduced to writing as an amendment and signed by the parties.

Severability

7. Every section, provision or part of this Agreement is declared severable from every other section, provision or part thereof to the extent that if any sections, provision or part of this Agreement shall be held invalid by a court of competent jurisdiction, it shall not invalidate any other section, provision or part thereof. 43

V. TERM AND EFFECTIVE DATE

1. The effective date of this agreement shall be January 1, 2015, notwithstanding the date of the signatures below.

2. This agreement shall run until December 31, 2016, at which time it will automatically terminate unless it is renewed by official action of both the City and the County prior to the termination date. Notice of either the City's intent or the County's intent not to renew the agreement should be given to the other party ninety (90) days in advance of the December 31, 2016, termination date.

IN WITNESS WHEREOF, the City has caused this agreement to be signed by its Mayor and attested to by its Clerk, and the County of Washington, by order of its Board of County Commissioners, has caused this Agreement to be signed by its Board Chair and attested to by its County Administrator.

City of Lake Elmo, Minnesota

By:____________________
Mayor

Date: 12-2-14

By:____________________
City Clerk

Washington County, Minnesota

By:____________________
Chair, Board of Commissioners

Date: 2-10-15

By:____________________
County Administrator

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Approved as to Form:

____
Assistant Washington County Attorney

SANITARY SEWER SERVICE AGREEMENT

THIS AGREEMENT is made and entered into as of the 14th day of May, 2013 by and between the City of Lake Elmo, a Minnesota municipal corporation ("Lake Elmo") and the City of Oakdale, a Minnesota municipal corporation ("Oakdale").

RECITALS

1. Lake Elmo and Oakdale are each authorized by law to construct, operate and maintain municipal sanitary sewer utilities for the purpose of supplying sanitary sewer services to properties within their respective corporate limits.

2. Lake Elmo and Oakdale have entered into a Joint Powers Agreement pursuant to which sanitary sewer service will be extended to properties that abut Olson Lake Trail both in Lake Elmo and Oakdale. The sanitary sewer is an extension of an existing sanitary sewer line in Oakdale. The new sanitary sewer will therefore be part of Oakdale's sanitary sewer system.

3. Lake Elmo does not have sanitary sewer services that are available to the Lake Elmo properties that will be served by the new sanitary sewer line.

4. Oakdale is able to supply sanitary sewer service to the Lake Elmo properties from the new sanitary sewer line.

5. Lake Elmo has requested that Oakdale allow the Lake Elmo properties ("Properties") to be connected to Oakdale's sanitary sewer services and that Oakdale provide those Properties with sanitary sewer services.

6. Oakdale has agreed to allow the Properties to be connected to its sanitary sewer services and to provide sanitary sewer services to the Properties, pursuant to the following conditions.

AGREEMENT

NOW THEREFORE, in consideration of the mutual covenants contained in this agreement, the parties agree as follows:

1. Sanitary Sewer Service. Oakdale agrees to allow the Properties to connect to its sanitary sewer system. Sanitary sewer service to the Properties shall be supplied by Oakdale. The owners of each of the Properties will be responsible for connecting their respective property to Oakdale's sanitary sewer system.

2. Connection Permit and Fees. When the owners of the Properties connect to Oakdale's sanitary sewer system, Lake Elmo shall ensure that the owners apply for a connection permit from Oakdale. Oakdale shall be responsible for issuing the connection permit and for collecting its current sanitary sewer connection fees and availability charges from the owners at the time of application. The amount of the fees and charges shall be established by Oakdale and shall

be equal to the Oakdale resident fees or charges. Oakdale shall be entitled to retain all fees and charges collected.

3. Water Meters. The Properties are served by private wells and are not connected to either the Oakdale or Lake Elmo municipal water systems. The owners of the Properties will be responsible for purchasing a water meter and transmitter from Oakdale and installing that equipment on their wells before connecting to the Oakdale sanitary sewer system.

4. Service Charges. Oakdale shall be responsible for billing the resident or property owners and collecting the sanitary sewer service charges attributable to the Properties. The sanitary sewer service charges shall be equal to the Oakdale resident rates plus 5% unless otherwise jointly agreed by the City of Oakdale and City of Lake Elmo. Lake Elmo shall cooperate with Oakdale in the event that any unpaid sanitary sewer service charges need to be certified to the County Auditor for collection with the property taxes or assessed against the Properties.

5. Notices. Any notice or correspondence to be given under this Agreement shall be deemed to be given if delivered personally or mailed postage prepaid, certified mail, return receipt requested: 46

a)	as to Oakdale:	City of Oakdale 1584 Hadley Avenue North Oakdale, MN 55128-5407 ATTN: City Administrator
b)	as to Lake Elmo:	City of Lake Elmo 3800 Laverne Avenue North Lake Elmo, MN 55042 ATTN: City Administrator

or at such other address as either party may from time to time notify the other in writing in accordance with this paragraph.

6. Severability. In the event that any provision of this Agreement shall be held invalid, illegal or unenforceable by any court of competent jurisdiction, such holding shall pertain only to such section and shall not invalidate or render unenforceable any other provision of this Agreement.

7. Termination of Agreement. In the event that Lake Elmo constructs parallel sanitary sewer mains in the area of the Properties, this Agreement may be terminated by either party.

8. Services Agreement. This Agreement is a services agreement. The parties do not intend to undertake or create, and nothing herein shall be construed as creating, a joint powers agreement, joint venture, or joint enterprise between the parties.

9. Minnesota Law Governs. This Agreement shall be governed by and construed in accordance with the internal laws of the State of Minnesota. All proceedings related to this Agreement shall be venued in the State of Minnesota.

Pursuant to authorization of their respective city councils, Lake Elmo and Oakdale have entered into this Agreement as of the day and year first above written.

CITY OF LAKE ELMO

By: ______________________
Mayor

By: ______________________
City Administrator

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CITY OF OAKDALE

By: ______________________
Carmen Sarrack, Mayor

By: ______________________
Craig Waldron, City Administrator

Chapter 10: Water Supply

Local Water Supply Plan Template
Third Generation for 2016-2018
Revised April 10, 2017

Formerly called Water Emergency & Water Conservation Plan

DEPARTMENT OF NATURAL RESOURCES

Cover photo by Molly Shodeen

DEPARTMENT OF NATURAL RESOURCES

For more information on this Water Supply Plan Template, please contact the DNR Division of Ecological and Water Resources at (651) 259-5034 or (651) 259-5100.

This information is available in an alternative format upon request.

Equal opportunity to participate in and benefit from programs of the Minnesota Department of Natural Resources is available to all individuals regardless of race, color, creed, religion, national origin, sex, marital status, public assistance status, age, sexual orientation, disability or activity on behalf of a local human rights commission. Discrimination inquiries should be sent to Minnesota DNR, 500 Lafayette Road, St. Paul, MN 55155-4049; or the Equal Opportunity Office, Department of the Interior, Washington, DC 20240.

Table of contents

DEPARTMENT OF NATURAL RESOURCES – DIVISION OF ECOLOGICAL AND WATER RESOURCES AND METROPOLITAN COUNCIL

INTRODUCTION TO WATER SUPPLY PLANS (WSP)

Who needs to complete a Water Supply Plan

Public water suppliers serving more than 1,000 people, large private water suppliers in designated Groundwater Management Areas, and all water suppliers in the Twin Cities metropolitan area are required to prepare and submit a water supply plan.

The goal of the WSP is to help water suppliers: 1) implement long term water sustainability and conservation measures; and 2) develop critical emergency preparedness measures. Your community needs to know what measures will be implemented in case of a water crisis. A lot of emergencies can be avoided or mitigated if long term sustainability measures are implemented.

Groundwater Management Areas (GWMA)

The DNR has designated three areas of the state as Groundwater Management Areas (GWMAs) to focus groundwater management efforts in specific geographies where there is an added risk of overuse or water quality degradation. A plan directing the DNRs actions within each GWMA has been prepared. Although there are no specific additional requirements with respect to the water supply planning for communities within designated GWMAs, communities should be aware of the issues and actions planned if they are within the boundary of one of the GWMAs. The three GWMAs are the North and East Metro GWMA (Twin Cities Metro), the Bonanza Valley GWMA and the Straight River GWMA (near Park Rapids). Additional information and maps are included in the DNR Groundwater Management Areas webpage.

Benefits of completing a WSP

Completing a WSP using this template, fulfills a water supplier's statutory obligations under M.S. M.S.103G.291 to complete a water supply plan. For water suppliers in the metropolitan area, the WSP will help local governmental units to fulfill their requirements under M.S. 473.859 to complete a local comprehensive plan. Additional benefits of completing WSP template:

- The standardized format allows for quicker and easier review and approval
- Help water suppliers prepare for droughts and water emergencies.
- Create eligibility for funding requests to the Minnesota Department of Health (MDH) for the Drinking Water Revolving Fund.
- Allow water suppliers to submit requests for new wells or expanded capacity of existing wells.
- Simplify the development of county comprehensive water plans and watershed plans.
- Fulfill the contingency plan provisions required in the MDH wellhead protection and surface water protection plans.
- Fulfill the demand reduction requirements of Minnesota Statutes, section 103G.291 subd 3 and 4.

- Upon implementation, contribute to maintaining aquifer levels, reducing potential well interference and water use conflicts, and reducing the need to drill new wells or expand system capacity.
- Enable DNR to compile and analyze water use and conservation data to help guide decisions.
- Conserve Minnesota's water resources

If your community needs assistance completing the Water Supply Plan, assistance is available from your area hydrologist or groundwater specialist, the MN Rural Waters Association circuit rider program, or in the metropolitan area from Metropolitan Council staff. Many private consultants are also available.

WSP Approval Process

10 Basic Steps for completing a 10-Year Water Supply Plan

1. Download the DNR/Metropolitan Council Water Supply Plan Template from the DNR Water Supply Plan webpage.
2. Save the document with a file name with this naming convention: WSP_cityname_permitnumber_date.doc.
3. The template is a form that should be completed electronically.
4. Compile the required water use data (Part 1) and emergency procedures information (Part 2)
5. The Water Conservation section (Part 3) may need discussion with the water department, council, or planning commission, if your community does not already have an active water conservation program.
6. Communities in the seven-county Twin Cities metropolitan area should complete all the information discussed in Part 4. The Metropolitan Council has additional guidance information on their Water Supply webpage. All out-state water suppliers ***do not*** need to complete the content addressed in Part 4.
7. Use the Plan instructions and Checklist document from the DNR Water Supply Plan webpage to insure all data is complete and attachments are included. This will allow for a quicker approval process.
8. Plans should be submitted electronically using the MPARS website – no paper documents are required.
9. DNR hydrologist will review plans (in cooperation with Metropolitan Council in Metro area) and approve the plan or make recommendations.
10. Once approved, communities should complete a Certification of Adoption form, and send a copy to the DNR.

Complete Table 1 with information about the public water supply system covered by this WSP.

Table 1. General information regarding this WSP

Requested Information	Description
DNR Water Appropriation Permit Number(s)	**611031**
Ownership	☒ Public or ☐ Private
Metropolitan Council Area	☒ Yes or ☐ No (and county name) Washington
Street Address	**3800 Laverne Ave. N**
City, State, Zip	**Lake Elmo, MN 55042**
Contact Person Name	Rob Weldon
Title	Public Works Director
Phone Number	651-747-3941
MDH Supplier Classification	Municipal, Non-municipal transient, non-municipal non-transient, etc.

PART 1. WATER SUPPLY SYSTEM DESCRIPTION AND EVALUATION

The first step in any water supply analysis is to assess the current status of demand and availability. Information summarized in Part 1 can be used to develop Emergency Preparedness Procedures (Part 2) and the Water Conservation Plan (Part 3). This data is also needed to track progress for water efficiency measures.

A. Analysis of Water Demand

Complete Table 2 showing the past 10 years of water demand data.

- Some of this information may be in your Wellhead Protection Plan.
- If you do not have this information, do your best, call your engineer for assistance or if necessary leave blank.

If your customer categories are different than the ones listed in Table 2, please describe the differences below:

Table 2. Historic water demand (see definitions in the glossary after Part 4 of this template)

Year	Pop. Served	Total Connections	Residential Water Delivered (MG)	C/I/I Water Delivered (MG)	Water used for Non-essential	Wholesale Deliveries (MG)	Total Water Delivered (MG)	Total Water Pumped (MG)	Water Supplier Services	Percent Unmetered/ Unaccounted	Average Daily Demand (MGD)	Max. Daily Demand (MGD)	Date of Max. Demand	Residential Per Capita Demand (GPCD)	Total per capita Demand (GPCD)
2005	2077	495	46	6		.106	52	56		1	.142	.660	7/17	60	68
2006	2919	651	70	6		.139	76	82		1	.208	.813	7/13	66	71
2007	2980	671	108	9		.756	117	142		1	.321	1	7/26	99	108
2008	3400	868	109	8		.120	117	129		1	.321	1	7/3	89	94
2009	2551	905	103	8		3	114	130		1	.312	.970	7/17	110	122
2010	3153	911	81	7		5	94	103		1	.256	.736	8/29	70	82
2011	3212	932	93	7		3	103	112		1	.282	.876	6/30	79	88
2012								165							
2013	3200	1050	94	31		4	125	129		1	.342	1	8/25	80	107
2014	3200	1069	89	22		.635	111	112		1	.304			76	95
2015	3600	1152	84	22		.759	106	110		1	.290	.831	8/3	64	81
Avg. 2010-2015	3273	1029	88	18		2.68	108	122		1	.295	.861		74	91

MG – Million Gallons **MGD** – Million Gallons per Day **GPCD** – Gallons per Capita per Day

See Glossary for definitions. A list of Acronyms and Initialisms can be found after the Glossary.

Complete Table 3 by listing the top 10 water users by volume, from largest to smallest. For each user, include information about the category of use (residential, commercial, industrial, institutional, or wholesale), the amount of water used in gallons per year, the percent of total water delivered, and the status of water conservation measures.

Table 3. Large volume users

Customer	Use Category (Residential, Industrial, Commercial, Institutional, Wholesale)	Amount Used (Gallons per Year)	Percent of Total Annual Water Delivered	Implementing Water Conservation Measures? (Yes/No/Unknown)
1. HOLIDAY INN	COMMERCIAL	3,124,000	2.45	UNKNOWN
2. MACHINE SHED	COMMERCIAL	1,681,600	1.32	UNKNOWN
3. HIGH POINTE	COMMERCIAL	1,193,000	0.94	UNKNOWN
4. LAKE ELMO INN	COMMERCIAL	999,998	0.79	UNKNOWN
5. BREMER BANK	COMMERCIAL	992,000	0.78	UNKNOWN
6. ROCKPOINT	COMMERCIAL	588,000	0.46	UNKNOWN
7. MI HOMES	RESIDENTIAL	527,000	0.41	UNKNOWN
8. BARTHELEMY	RESIDENTIAL	477,000	0.37	UNKNOWN
9. LAKE ELMO ELEM	COMMERCIAL	467,000	0.37	UNKNOWN
10. ELMO INN ENT	COMMERCIAL	450,000	0.35	UNKNOWN

B. Treatment and Storage Capacity

Complete Table 4 with a description of where water is treated, the year treatment facilities were constructed, water treatment capacity, the treatment methods (i.e. chemical addition, reverse osmosis, coagulation, sedimentation, etc.) and treatment types used (i.e. fluoridation, softening, chlorination, Fe/MN removal, coagulation, etc.). Also describe the annual amount and method of disposal of treatment residuals. Add rows to the table as needed.

Table 4. Water treatment capacity and treatment processes

Treatment Site ID (Plant Name or Well ID)	Year Constructed	Treatment Capacity (GPD)	Treatment Method	Treatment Type	Annual Volume of Residuals	Disposal Process for Residuals	Do You Reclaim Filter Backwash Water?
Insert Facility ID here							
Add rows as needed							
Total	NA		NA	NA		NA	

Complete Table 5 with information about storage structures. Describe the type (i.e. elevated, ground, etc.), the storage capacity of each type of structure, the year each structure was constructed, and the primary material for each structure. Add rows to the table as needed.

Table 5. Storage capacity, as of the end of the last calendar year

Structure Name	Type of Storage Structure	Year Constructed	Primary Material	Storage Capacity (Gallons)
Water Tower #1	Elevated storage	1962	Steel	75,000
Water Tower #2	Elevated storage	2006	Composite	750,000
Add rows as needed	Other -			
Total	NA	NA	NA	825,000

Treatment and storage capacity versus demand

It is recommended that total storage equal or exceed the average daily demand.

Discuss the difference between current storage and treatment capacity versus the water supplier's projected average water demand over the next 10 years (see Table 7 for projected water demand):

C. Water Sources

Complete Table 6 by listing all types of water sources that supply water to the system, including groundwater, surface water, interconnections with other water suppliers, or others. Provide the name of each source (aquifer name, river or lake name, name of interconnecting water supplier) and the Minnesota unique well number or intake ID, as appropriate. Report the year the source was installed or established and the current capacity. Provide information about the depth of all wells. Describe the status of the source (active, inactive, emergency only, retail/wholesale interconnection) and if the source facilities have a dedicated emergency power source. Add rows to the table as needed for each installation.

Include copies of well records and maintenance summary for each well that has occurred since your last approved plan in **Appendix 1.**

Table 6. Water sources and status

Resource Type (Groundwater, Surface water, Interconnection)	Resource Name	MN Unique Well # or Intake ID	Year Installed	Capacity (Gallons per Minute)	Well Depth (Feet)	Status of Normal and Emergency Operations (active, inactive, emergency only, retail/wholesale interconnection))	Does this Source have a Dedicated Emergency Power Source? (Yes or No)
Ground Water	Well #1	208448	1962	500	808	Active	No
Ground Water	Well #2	603085	2001	1000	285	Active	No
Ground Water	Well #3	655910		1000		Inactive	N/A
Ground Water	Well #4	767874	2015	1250	290	Active	Yes
Interconnect	City of Oakdale	Hudson Blvd.	1996	607		Retail	N/A
Interconnect	City of Oakdale	Ideal Ave.		1400		Residential/Inactive	

Limits on Emergency Interconnections

Discuss any limitations on the use of the water sources (e.g. not to be operated simultaneously, limitations due to blending, aquifer recovery issues etc.) and the use of interconnections, including capacity limits or timing constraints (i.e. only 200 gallons per minute are available from the City of Prior Lake, and it is estimated to take 6 hours to establish the emergency connection). If there are no limitations, list none.

Interconnects with City of Oakdale Hudson Blvd = 12" Ideal Ave = 6"

D. Future Demand Projections - *Key Metropolitan Council Benchmark*

Water Use Trends

Use the data in Table 2 to describe trends in 1) population served; 2) total per capita water demand; 3) average daily demand; 4) maximum daily demand. Then explain the causes for upward or downward trends. For example, over the ten years has the average daily demand trended up or down? Why is this occurring?

Demand and population have increased and will continue to increase due to growth and development.

Use the water use trend information discussed above to complete Table 7 with projected annual demand for the next ten years. Communities in the seven-county Twin Cities metropolitan area must also include projections for 2030 and 2040 as part of their local comprehensive planning.

Projected demand should be consistent with trends evident in the historical data in Table 2, as discussed above. Projected demand should also reflect state demographer population projections and/or other planning projections.

Table 7. Projected annual water demand ***[Table to be updated with new projected numbers. TBU=to be updated]***

Year	Projected Total Population	Projected Population Served	Projected Total Per Capita Water Demand (GPCD)	Projected Average Daily Demand (MGD)	Projected Maximum Daily Demand (MGD)
2016	8,122	3,960	84	.333	.999
2017	8,872	4,830	74	.359	1
2018	9,622	5,580	74	.414	1.2
2019	10,372	6,330	74	.469	1.4
2020	11,122	7,080	74	.523	1.6
2021	11,872	7,830	74	.580	1.7
2022	12,622	8,580	74	.635	1.9
2023	13,372	9,330	74	.690	2
2024	14,122	10,080	74	.745	2.2
2025	14,452	10,410	74	.770	2.3
2030	18,000	13,860	74	1.045	3.135
2040	23,735	20,649	74	1.595	4.785

GPCD – Gallons per Capita per Day **MGD** – Million Gallons per Day

Projection Method

Describe the method used to project water demand, including assumptions for population and business growth and how water conservation and efficiency programs affect projected water demand:

Population and peak day water use. Percentage of population served increases by 1% each year. Projected Total Per Capita Water Demand changed from 2016 to 2017 and remained consistent each year. Projected Average Daily demand increased from 2017 incrementally by 0.055, and projected Maximum Daily Demand is Projected Average Daily Demand multiplied by three.

E. Resource Sustainability

Monitoring – *Key DNR Benchmark*

Complete Table 8 by inserting information about source water quality and quantity monitoring efforts. The list should include all production wells, observation wells, and source water intakes or reservoirs. Groundwater level data for DNR's statewide network of observation wells are available online through the DNR's Cooperative Groundwater Monitoring (CGM) webpage.

Table 8. Information about source water quality and quantity monitoring

MN Unique Well # or Surface Water ID	Type of monitoring point	Monitoring program	Frequency of monitoring	Monitoring Method
Well #1 208448	☒ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☐ routine MDH sampling ☒ routine water utility sampling ☐ other	☐ continuous ☐ hourly ☒ daily ☐ monthly ☐ quarterly ☐ annually	☐ SCADA ☐ grab sampling ☒ steel tape ☐ stream gauge
Well #2 603085	☒ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☐ routine MDH sampling ☒ routine water utility sampling ☐ other	☐ continuous ☐ hourly ☒ daily ☐ monthly ☐ quarterly ☐ annually	☒ SCADA ☐ grab sampling ☐ steel tape ☐ stream gauge
Well #4	☒ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☐ routine MDH sampling ☒ routine water utility sampling ☐ other	☐ continuous ☐ hourly ☒ daily ☐ monthly ☐ quarterly ☐ annually	☒ SCADA ☐ grab sampling ☐ steel tape ☐ stream gauge
Add rows to the table as needed	☐ production well ☐ observation well ☐ source water intake ☐ source water reservoir	☐ routine MDH sampling ☐ routine water utility sampling ☐ other	☐ continuous ☐ hourly ☐ daily ☐ monthly ☐ quarterly ☐ annually	☐ SCADA ☐ grab sampling ☐ steel tape ☐ stream gauge

Complete Table 9 to summarize water level data for each well being monitored. Provide the name of the aquifer and a brief description of how much water levels vary over the season (the difference between the highest and lowest water levels measured during the year) and the long-term trends for each well. If water levels are not measured and recorded on a routine basis, then provide the static water level when each well was constructed and the most recent water level measured during the same season the well was constructed. Also include all water level data taken during any well and pump maintenance. Add rows to the table as needed.

Groundwater hydrographs illustrate the historical record of aquifer water levels measured within a well and can indicate water level trends over time. For each well in your system, provide a hydrograph for the life of the well, or for as many years as water levels have been measured. Include the hydrographs in **Appendix 3**. An example of a hydrograph can be found on the DNR's Groundwater Hydrograph webpage. Hydrographs for DNR Observation wells can be found in the CGM discussed above.

Table 9. Water level data

Unique Well Number or Well ID	Aquifer Name	Seasonal Variation (Feet)	Long-term Trend in water level data	Water level measured during well/pumping maintenance
Well #1 208448	Jordan Sandstone Mt. Simon		☐ Falling ☐ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____
Well #2 603085	Prairie du Chien Jordan		☐ Falling ☐ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____
Well #4 767874	Prairie du Chien Jordan		☐ Falling ☐ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____
			☐ Falling ☐ Stable ☐ Rising	MM/DD/YY:____ MM/DD/YY:____ MM/DD/YY:____

Potential Water Supply Issues & Natural Resource Impacts – *Key DNR & Metropolitan Council Benchmark*

Complete Table 10 by listing the types of natural resources that are or could potentially be impacted by permitted water withdrawals in the future. You do not need to identify every single water resource in your entire community. The goal is to help you triage the most important water resources and/or the water resources that may be impacted by your water supply system – perhaps during a drought or when the population has grown significantly in ten years. This is emerging science, so do the best you can with available data. For identified resources, provide the name of specific resources that may be impacted. Identify what the greatest risks to the resource are and how the risks are being assessed. Identify any resource protection thresholds – formal or informal – that have been established to identify when actions should be taken to mitigate impacts. Provide information about the potential mitigation actions that may be taken, if a resource protection threshold is crossed. Add additional rows to the table as needed. See the glossary at the end of the template for definitions.

Some of this baseline data should have been in your earlier water supply plans or county comprehensive water plans. When filling out this table, think of what are the water supply risks, identify the resources, determine the threshold and then determine what your community will do to mitigate the impacts.

Your DNR area hydrologist is available to assist with this table.

For communities in the seven-county Twin Cities metropolitan area, the Master Water Supply Plan *Appendix 1 (Water Supply Profiles)*, provides information about potential water supply issues and natural resource impacts for your community.

Steps for completing Table 10

1. ***Identify the potential for natural resource impacts/issues within the community***
   First, review available information to identify resources that may be impacted by the operation of your water supply system (such as pumping).
   Potential Sources of Information:
   - County Geologic Atlas
   - Local studies
   - Metropolitan Council System Statement (for metro communities)
   - Metropolitan Council Master Water Supply Plan (for metro communities)

   ACTION: Check the resource type(s) that may be impacted in the column "Resource Type"

2. ***Identify where your water supply system is most likely to impact those resources (and vice versa).***
   Potential Sources of Information:
   - Drinking Water Supply Management Areas
   - Geologic Atlas - Sensitivity
   - If no WHPA or other information exists, consider rivers, lakes, wetlands and significant within 1.5 miles of wells; and calcareous fens and trout streams within 5 miles of wells

   ACTION: Focus the rest of your work in these areas.

3. ***Within focus areas, identify specific features of value to the community***
   You know your community best. What resources are important to pay attention to? It may be useful to check in with your community's planning and zoning staff and others.

   Potential Sources of Information:
   - Park plans
   - Local studies
   - Natural resource inventories
   - Tourist attractions/recreational areas/valued community resource

   ACTION: Identify specific features that the community prioritizes in the "Resource Name" column (for example: North Lake, Long River, Brook Trout Stream, or Green Fen). If, based on a review of available information, no features are likely to be at risk, note "None".

4. ***Identify what impact(s) the resource is at risk for***
   Potential Sources of Information:
   - Wellhead Protection Plan
   - Water Appropriation Permit
   - County Geologic Atlas
   - MDH or PCA reports of the area
   - Metropolitan Council System Statement (for metro communities)
   - Metropolitan Council Master Water Supply Plan (for metro communities)

   ACTION: Check the risk type in the column "Risk". If, based on a review of available information, no risk is identified, note "None anticipated".

5. ***Describe how the risk was assessed***
   Potential Sources of Information:
   - Local studies
   - Monitoring data (community, WMO, DNR, etc.)
   - Aquifer testing
   - County Geologic Atlas or other hydrogeologic studies
   - Regional or state studies, such as DNR's report 'Definitions and Thresholds for Negative Impacts to Surface Waters'
   - Well boring logs

   ACTION: Identify the method(s) used to identify the risk to the resource in the "Risk Assessed Through" column

6. ***Describe protection threshold/goals***
   What is the goal, if any, for protecting these resources? For example, is there a lower limit on acceptable flow in a river or stream? Water quality outside of an accepted range? A lower limit on acceptable aquifer level decline at one or more monitoring wells? Withdrawals that exceed some percent of the total amount available from a source? Or a lower limit on acceptable changes to a protected habitat?

   Potential Sources of Information:
   - County Comprehensive Water Plans
   - Watershed Plans or One Watershed/One Plan
   - Groundwater or Aquifer Plans
   - Metropolitan Master Plans
   - DNR Thresholds study
   - Community parks, open space, and natural resource plans

   ACTION: Describe resource protection goals in the "Describe Resource Protection Threshold" column or reference an existing plan/document/webpage

7. ***If a goal/threshold should trigger action, describe the plan that will be implemented.***
   Identify specific action, mitigation measures or management plan that the water supplier will implement, or refer to a partner's plan that includes actions to be taken.

Potential Sources of Information:

- County Comprehensive Water Plans
- Watershed Plans or One Watershed/One Plan
- Groundwater or Aquifer Plans
- Metropolitan Master Plans
- Studies such as DNR Thresholds study

ACTION: Describe the mitigation measure or management plan in the "Mitigation Measure or Management Plan" column.

8. *Describe work to evaluate these risks going forward.*

For example, what is the plan to regularly check in to stay current on plans or new data?

Identify specific action that the water supplier will take to identify the creation of or change to goals/thresholds, or refer to a partner's plan that includes actions to be taken.

Potential Sources of Information:

- County Comprehensive Water Plans
- Watershed Plans or One Watershed/One Plan
- Groundwater or Aquifer Plans
- Metropolitan Master Plans
- Studies such as DNR Thresholds study

ACTION: Describe what will be done to evaluate risks going forward, including any changes to goals or protection thresholds in the "Describe how Changes to Goals are monitored" column.

Table 10. Natural resource impacts (*List specific resources in Appendix 12)

Resource Type	Resource Name	Risk	Risk Assessed Through*	Describe Resource Protection Threshold or Goal*	Mitigation Measures or Management Plan	Describe How Thresholds or Goals are Monitored
☐ River or stream		☒ None anticipated ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other: ______	☐ Geologic atlas or other mapping ☐ Modeling ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐ WRAPS or other watershed report ☐ Proximity (<1.5 miles) ☐ Other: ______	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: ______ ☐ No data available ☐ Other: ______	☐ Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☐ Other: ______	☐ Not applicable ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ______ ☐ Other: ______
☐ Calcareous fen		☒ None anticipated ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other: ______	☐ Geologic atlas or other mapping ☐ Modeling ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐ WRAPS or other watershed Report ☐ Proximity (<5 miles) ☐ Other: ______ ☐ Other: ____	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: ______ ☐ Other: ______	☐ Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☐ Other: ______	☐ Not applicable ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ______ ☐ Other: ______

Resource Type	Resource Name	Risk	Risk Assessed Through *	Describe Resource Protection Threshold or Goal *	Mitigation Measures or Management Plan	Describe How Thresholds or Goals are Monitored
☒ Lake	White Bear Lake	☐ None anticipated ☒ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other: ____________	☒ Geologic atlas or other mapping ☐ Modeling ☒ Modeling ☐ Monitoring ☐ Aquifer testing ☐ WRAPS or other watershed report ☐ Proximity (<1.5 miles) ☐ Other: ____________ ☐ Other: ___	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: ____________ ☐ Other: ____________	☐ Not applicable ☒ Change groundwater pumping ☐ Increase conservation ☐ Other: ____________	☐ Not applicable ☒ Newly collected data will be analyzed ☐ Regular check-in with these partners: ____________ ☐ Other: ____________
☐ Wetland		☒ None anticipated ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other: ____________	☐ Geologic atlas or other mapping ☐ Modeling ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐ WRAPS or other watershed report ☐ Proximity (<1.5 miles) ☐ Other: ____________	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: ____________ ☐ Other: ____________	☐ Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☐ Other: ____________	☐ Not applicable ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ____________ ☐ Other: ____________

Resource Type	Resource Name	Risk	Risk Assessed Through *	Describe Resource Protection Threshold or Goal *	Mitigation Measures or Management Plan	Describe How Thresholds or Goals are Monitored
☐ Trout stream		☒ None anticipated ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other: ________	☐ Geologic atlas or other mapping ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐WRAPS or other watershed report ☐Proximity (< 5 miles) ☐ Other: ________	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: ________ ☐ Other: ________	☐Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☐ Other: ________	☐Not applicable ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ________ ☐ Other: ________
☐ Aquifer		☒ None anticipated ☐ Flow/water level decline ☐ Degrading water quality trends ☐ Impacts on endangered, threatened, or special concern species habitat ☐ Other: ________	☐ Geologic atlas or other mapping ☐ Modeling ☐ Monitoring ☐ Aquifer testing ☐Proximity (obwell < 5 miles) ☐ Other: ________	☐ Not applicable ☐ Additional data is needed to establish ☐ See report: ________ ☐ Other: ________	☐Not applicable ☐ Change groundwater pumping ☐ Increase conservation ☐ Other: ________	☐Not applicable ☐ Newly collected data will be analyzed ☐ Regular check-in with these partners: ________ ☐ Other: ________

Wellhead Protection (WHP) and Source Water Protection (SWP) Plans

Complete Table 11 to provide status information about WHP and SWP plans.

The emergency procedures in this plan are intended to comply with the contingency plan provisions required in the Minnesota Department of Health's (MDH) Wellhead Protection (WHP) Plan and Surface Water Protection (SWP) Plan.

Table 11. Status of Wellhead Protection and Source Water Protection Plans

Plan Type	Status	Date Adopted	Date for Update
WHP	☒ In Process ☐ Completed ☐ Not Applicable		
SWP	☐ In Process ☐ Completed ☒ Not Applicable		

WHP – Wellhead Protection Plan **SWP** – Source Water Protection Plan

F. Capital Improvement Plan (CIP)

Please note that any wells that received approval under a ten-year permit, but that were not built, are now expired and must submit a water appropriations permit.

Adequacy of Water Supply System

Complete Table 12 with information about the adequacy of wells and/or intakes, storage facilities, treatment facilities, and distribution systems to sustain current and projected demands. List planned capital improvements for any system components, in chronological order. Communities in the seven-county Twin Cities metropolitan area should also include information about plans through 2040.

The assessment can be the general status by category; it is not necessary to identify every single well, storage facility, treatment facility, lift station, and mile of pipe.

Please attach your latest Capital Improvement Plan as **Appendix 4.**

Table 12. Adequacy of Water Supply System

System Component	Planned action	Anticipated Construction Year	Notes
Wells/Intakes Have 4 wells (3 active) 2 additional wells are in CIP	☐ No action planned - adequate ☐ Repair/replacement ☒ Expansion/addition		
Water Storage Facilities Have 2 2 additional are in CIP	☐ No action planned - adequate ☐ Repair/replacement ☒ Expansion/addition	2017 & 2025	
Water Treatment Facilities	☒ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		
Distribution Systems (Pipes, valves, etc.) Old Village Water and Sewer Upgrades Inwood Ave waterma	☐ No action planned - adequate ☒ Repair/replacement ☒ Expansion/addition	2017	
Pressure Zones Inwood Booster Station	☐ No action planned - adequate ☐ Repair/replacement ☒ Expansion/addition	2017	

System Component	Planned action	Anticipated Construction Year	Notes
Other:	☐ No action planned - adequate ☐ Repair/replacement ☐ Expansion/addition		

Proposed Future Water Sources

Complete Table 13 to identify new water source installation planned over the next ten years. Add rows to the table as needed.

Table 13. Proposed future installations/sources

Source	Installation Location (approximate)	Resource Name	Proposed Pumping Capacity (gpm)	Planned Installation Year	Planned Partnerships
Groundwater					
Surface Water					
Interconnection to another supplier					

Water Source Alternatives - *Key Metropolitan Council Benchmark*

Do you anticipate the need for alternative water sources in the next 10 years? Yes ☐ No ☒

For metro communities, will you need alternative water sources by the year 2040? Yes ☐ No ☒

If you answered yes for either question, then complete table 14. If no, insert NA.

Complete Table 14 by checking the box next to alternative approaches that your community is considering, including approximate locations (if known), the estimated amount of future demand that could be met through the approach, the estimated timeframe to implement the approach, potential partnerships, and the major benefits and challenges of the approach. Add rows to the table as needed.

For communities in the seven-county Twin Cities metropolitan area, these alternatives should include approaches the community is considering to meet projected 2040 water demand.

Table 14. Alternative water sources

Alternative Source Considered	Source and/or Installation Location (approximate)	Estimated Amount of Future Demand (%)	Timeframe to Implement (YYYY)	Potential Partners	Benefits	Challenges
☐ Groundwater						
☐ Surface Water						
☐ Reclaimed stormwater						
☐ Reclaimed wastewater						
☐ Interconnection to another supplier						

PART 2. EMERGENCY PREPAREDNESS PROCEDURES

The emergency preparedness procedures outlined in this plan are intended to comply with the contingency plan provisions required by MDH in the WHP and SWP. Water emergencies can occur as a result of vandalism, sabotage, accidental contamination, mechanical problems, power failings, drought, flooding, and other natural disasters. The purpose of emergency planning is to develop emergency response procedures and to identify actions needed to improve emergency preparedness. In the case of a municipality, these procedures should be in support of, and part of, an all-hazard emergency operations plan. Municipalities that already have written procedures dealing with water emergencies should review the following information and update existing procedures to address these water supply protection measures.

A. Emergency Response Plan

Section 1433(b) of the Safe Drinking Water Act, (Public Law 107-188, Title IV- Drinking Water Security and Safety) requires community water suppliers serving over 3,300 people to prepare an Emergency Response Plan. MDH recommends that Emergency Response Plans are updated annually.

Do you have an Emergency Response Plan? Yes ☐ No ☒

Have you updated the Emergency Response Plan in the last year? **Yes ☐ No ☒**

When did you last update your Emergency Response Plan? ____________________

Complete Table 15 by inserting the noted information regarding your completed Emergency Response Plan.

Table 15. Emergency Response Plan contact information

Emergency Response Plan Role	Contact Person	Contact Phone Number	Contact Email
Emergency Response Lead			
Alternate Emergency Response Lead			

B. Operational Contingency Plan

All utilities should have a written operational contingency plan that describes measures to be taken for water supply mainline breaks and other common system failures as well as routine maintenance.

Do you have a written operational contingency plan? Yes ☐ No ☒

At a minimum, a water supplier should prepare and maintain an emergency contact list of contractors and suppliers.

C. Emergency Response Procedures

Water suppliers must meet the requirements of MN Rules 4720.5280. Accordingly, the Minnesota Department of Natural Resources (DNR) requires public water suppliers serving more than 1,000 people to submit Emergency and Conservation Plans. Water emergency and conservation plans that have been approved by the DNR, under provisions of Minnesota Statute 186 and Minnesota Rules, part 6115.0770, will be considered equivalent to an approved WHP contingency plan.

Emergency Telephone List

Prepare and attach a list of emergency contacts, including the MN Duty Officer (1-800-422-0798), as **Appendix 5**. An Emergency Contact List template is available at the MnDNR Water Supply Plans webpage.

The list should include key utility and community personnel, contacts in adjacent water suppliers, and appropriate local, state and federal emergency contacts. Please be sure to verify and update the contacts on the emergency telephone list and date it. Thereafter, update on a regular basis (once a year is recommended). In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the Emergency Manager for that community. Responsibilities and services for each contact should be defined.

Current Water Sources and Service Area

Quick access to concise and detailed information on water sources, water treatment, and the distribution system may be needed in an emergency. System operation and maintenance records should be maintained in secured central and back-up locations so that the records are accessible for emergency purposes. A detailed map of the system showing the treatment plants, water sources, storage facilities, supply lines, interconnections, and other information that would be useful in an emergency should also be readily available. It is critical that public water supplier representatives and emergency response personnel communicate about the response procedures and be able to easily obtain this kind of information both in electronic and hard copy formats (in case of a power outage).

Do records and maps exist? Yes ☒ No ☐

Can staff access records and maps from a central secured location in the event of an emergency?

Yes ☒ No ☐

Does the appropriate staff know where the materials are located?

Yes ☒ No ☐

Procedure for Augmenting Water Supplies

Complete Tables 16 – 17 by listing all available sources of water that can be used to augment or replace existing sources in an emergency. Add rows to the tables as needed.

In the case of a municipality, this information should be contained in a notification and warning standard operating procedure maintained by the warning point for that community. Municipalities are encouraged to execute cooperative agreements for potential emergency water services and copies should be included in **Appendix 6**. Outstate Communities may consider using nearby high capacity wells (industry, golf course) as emergency water sources.

WSP should include information on any physical or chemical problems that may limit interconnections to other sources of water. Approvals from the MDH are required for interconnections or the reuse of water.

Table 16. Interconnections with other water supply systems to supply water in an emergency

Other Water Supply System Owner	Capacity (GPM & MGD)	Note Any Limitations On Use	List of services, equipment, supplies available to respond
City of Oakdale (Hudson Blvd)	1400 GPM		
City of Oakdale (Ideal Ave.)	607 GPM		

GPM – Gallons per minute MGD – million gallons per day

Table 17. Utilizing surface water as an alternative source

Surface Water Source Name	Capacity (GPM)	Capacity (MGD)	Treatment Needs	Note Any Limitations On Use
Insert name of surface water source here				
Add rows as needed				

If not covered above, describe additional emergency measures for providing water (obtaining bottled water, or steps to obtain National Guard services, etc.)

Allocation and Demand Reduction Procedures

Complete Table 18 by adding information about how decisions will be made to allocate water and reduce demand during an emergency. Provide information for each customer category, including its priority ranking, average day demand, and demand reduction potential for each customer category. Modify the customer categories as needed, and add additional lines if necessary.

Water use categories should be prioritized in a way that is consistent with Minnesota Statutes 103G.261 (#1 is highest priority) as follows:

1. Water use for human needs such as cooking, cleaning, drinking, washing and waste disposal; use for on-farm livestock watering; and use for power production that meets contingency requirements.
2. Water use involving consumption of less than 10,000 gallons per day (usually from private wells or surface water intakes)
3. Water use for agricultural irrigation and processing of agricultural products involving consumption of more than 10,000 gallons per day (usually from private high-capacity wells or surface water intakes)

4. Water use for power production above the use provided for in the contingency plan.
5. All other water use involving consumption of more than 10,000 gallons per day.
6. Nonessential uses – car washes, golf courses, etc.

Water used for human needs at hospitals, nursing homes and similar types of facilities should be designated as a high priority to be maintained in an emergency. Lower priority uses will need to address water used for human needs at other types of facilities such as hotels, office buildings, and manufacturing plants. The volume of water and other types of water uses at these facilities must be carefully considered. After reviewing the data, common sense should dictate local allocation priorities to protect domestic requirements over certain types of economic needs. Water use for lawn sprinkling, vehicle washing, golf courses, and recreation are legislatively considered non-essential.

Table 18. Water use priorities

Customer Category	Allocation Priority	Average Daily Demand (GDP)	Short-Term Emergency Demand Reduction Potential (GPD)
Residential	1	217,968	
Institutional	2	1,279	
Commercial	3	161,640	
Industrial	N/A	0	
Irrigation	4	32,074	32,074
Wholesale	5	0	
Non-Essential	6	0	
TOTAL	NA	NA	

GPD – Gallons per Day

Tip: Calculating Emergency Demand Reduction Potential
The emergency demand reduction potential for all uses will typically equal the difference between maximum use (summer demand) and base use (winter demand). In extreme emergency situations, lower priority water uses must be restricted or eliminated to protect priority domestic water requirements. Emergency demand reduction potential should be based on average day demands for customer categories within each priority class. Use the tables in Part 3 on water conservation to help you determine strategies.

Complete Table 19 by selecting the triggers and actions during water supply disruption conditions.

Table 19. Emergency demand reduction conditions, triggers and actions (Select all that may apply and describe)

Emergency Triggers	Short-term Actions	Long-term Actions
☒ Contamination ☒ Loss of production ☒ Infrastructure failure ☐ Executive order by Governor ☐ Other: ____________	☒ Supply augmentation through distribution valve configuration or City of Oakdale. ☒ Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☐ Water allocation through____ ☒ Meet with large water users to discuss their contingency plan.	☒ Supply augmentation through distribution valve configuration or City of Oakdale. ☒ Adopt (if not already) and enforce a critical water deficiency ordinance to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☐ Water allocation through____ ☒ Meet with large water users to discuss their contingency plan.

Notification Procedures

Complete Table 20 by selecting trigger for informing customers regarding conservation requests, water use restrictions, and suspensions; notification frequencies; and partners that may assist in the notification process. Add rows to the table as needed.

Table 20. Plan to inform customers regarding conservation requests, water use restrictions, and suspensions

Notification Trigger(s)	Methods (select all that apply)	Update Frequency	Partners
☒ Short-term demand reduction declared (< 1 year)	☒ Website ☐ Email list serve ☒ Social media (e.g. Twitter, Facebook) ☒ Direct customer mailing, ☒ Press release (TV, radio, newspaper), ☐ Meeting with large water users (> 10% of total city use) ☐ Other: ________	☒ Daily ☐ Weekly ☐ Monthly ☐ Annually	
☒ Long-term Ongoing demand reduction declared	☒ Website ☐ Email list serve ☒ Social media (e.g. Twitter, Facebook) ☒ Direct customer mailing, ☒ Press release (TV, radio, newspaper), ☐ Meeting with large water users (> 10% of total city use) ☐ Other: ________	☐ Daily ☐ Weekly ☒ Monthly ☐ Annually	
☐ Governor's critical water deficiency declared	☐ Website ☐ Email list serve ☐ Social media (e.g. Twitter, Facebook)	☐ Daily ☐ Weekly ☐ Monthly ☐ Annually	

Notification Trigger(s)	Methods (select all that apply)	Update Frequency	Partners
	☐ Direct customer mailing, ☐ Press release (TV, radio, newspaper), ☐ Meeting with large water users (> 10% of total city use) ☐ Other: ________		

Enforcement

Prior to a water emergency, municipal water suppliers must adopt regulations that restrict water use and outline the enforcement response plan. The enforcement response plan must outline how conditions will be monitored to know when enforcement actions are triggered, what enforcement tools will be used, who will be responsible for enforcement, and what timelines for corrective actions will be expected.

Affected operations, communications, and enforcement staff must then be trained to rapidly implement those provisions during emergency conditions.

> ***Important Note:***
>
> Disregard of critical water deficiency orders, even though total appropriation remains less than permitted, is adequate grounds for immediate modification of a public water supply authority's water use permit (2013 MN Statutes 103G.291)

Does the city have a critical water deficiency restriction/official control in place that includes provisions to restrict water use and enforce the restrictions? (This restriction may be an ordinance, rule, regulation, policy under a council directive, or other official control) Yes ☒ No ☐

If yes, attach the official control document to this WSP as **Appendix 7**.

If no, the municipality must adopt such an official control within 6 months of submitting this WSP and submit it to the DNR as an amendment to this WSP.

Irrespective of whether a critical water deficiency control is in place, does the public water supply utility, city manager, mayor, or emergency manager have standing authority to implement water restrictions? Yes ☒ No ☐

If yes, cite the regulatory authority reference: ________________________.

If no, who has authority to implement water use restrictions in an emergency?

PART 3. WATER CONSERVATION PLAN

Minnesotans have historically benefited from the state's abundant water supplies, reducing the need for conservation. There are however, limits to the available supplies of water and increasing threats to the quality of our drinking water. Causes of water supply limitation may include: population increases, economic trends, uneven statewide availability of groundwater, climatic changes, and degraded water quality. Examples of threats to drinking water quality include: the presence of contaminant plumes from past land use activities, exceedances of water quality standards from natural and human sources, contaminants of emerging concern, and increasing pollutant trends from nonpoint sources.

There are many incentives for conserving water; conservation:

- reduces the potential for pumping-induced transfer of contaminants into the deeper aquifers, which can add treatment costs
- reduces the need for capital projects to expand system capacity
- reduces the likelihood of water use conflicts, like well interference, aquatic habitat loss, and declining lake levels
- conserves energy, because less energy is needed to extract, treat and distribute water (and less energy production also conserves water since water is used to produce energy)
- maintains water supplies that can then be available during times of drought

It is therefore imperative that water suppliers implement water conservation plans. The first step in water conservation is identifying opportunities for behavioral or engineering changes that could be made to reduce water use by conducting a thorough analysis of:

- Water use by customer
- Extraction, treatment, distribution and irrigation system efficiencies
- Industrial processing system efficiencies
- Regulatory and barriers to conservation
- Cultural barriers to conservation
- Water reuse opportunities

Once accurate data is compiled, water suppliers can set achievable goals for reducing water use. A successful water conservation plan follows a logical sequence of events. The plan should address both conservation on the supply side (leak detection and repairs, metering), as well as on the demand side (reductions in usage). Implementation should be conducted in phases, starting with the most obvious and lowest-cost options. In some cases, one of the early steps will be reviewing regulatory constraints to water conservation, such as lawn irrigation requirements. Outside funding and grants may be available for implementation of projects. Engage water system operators and maintenance staff and customers in brainstorming opportunities to reduce water use. Ask the question: "How can I help save water?"

Progress since 2006

Is this your community's first Water Supply Plan? Yes ☒ No ☐

If yes, describe conservation practices that you are already implementing, such as: pricing, system improvements, education, regulation, appliance retrofitting, enforcement, etc.

Tiered billing.

If no, complete Table 21 to summarize conservation actions taken since the adoption of the 2006 water supply plan.

Table 21. Implementation of previous ten-year Conservation Plan

2006 Plan Commitments	Action Taken?
Change water rates structure to provide conservation pricing	☒ Yes ☐ No
Water supply system improvements (e.g. leak repairs, valve replacements, etc.)	☒ Yes ☐ No
Educational efforts	☐ Yes ☒ No
New water conservation ordinances	☒ Yes ☐ No
Rebate or retrofitting Program (e.g. for toilet, faucets, appliances, showerheads, dish washers, washing machines, irrigation systems, rain barrels, water softeners, etc.	☐ Yes ☒ No
Enforcement	☐ Yes ☐ No
Describe other	☐ Yes ☐ No

What are the results you have seen from the actions in Table 21 and how were results measured?

Results are unobtainable due to increased growth of city and expansion of the water system.

A. Triggers for Allocation and Demand Reduction Actions

Complete table 22 by checking each trigger below, as appropriate, and the actions to be taken at various levels or stages of severity. Add in additional rows to the table as needed.

Table 22. Short and long-term demand reduction conditions, triggers and actions

Objective	Triggers	Actions
Protect surface water flows	☐ Low stream flow conditions	☐ Increase promotion of conservation measures

Objective	Triggers	Actions
	☐ Reports of declining wetland and lake levels ☐ Other: ____________	☐ Other: ____________
Short-term demand reduction (less than 1 year	☐ Extremely high seasonal water demand (more than double winter demand) ☐ Loss of treatment capacity ☐ Lack of water in storage ☐ State drought plan ☐ Well interference ☐ Other: ____________	☐ Adopt (if not already) and enforce the critical water deficiency ordinance to restrict or prohibit lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☐ Supply augmentation through ____ ☐ Water allocation through____ ☐ Meet with large water users to discuss user's contingency plan.
Long-term demand reduction (>1 year)	☐ Per capita demand increasing ☐ Total demand increase (higher population or more industry). Water level in well(s) below elevation of _____ ☐ Other: ____________	☐ Develop a critical water deficiency ordinance that is or can be quickly adopted to penalize lawn watering, vehicle washing, golf course and park irrigation & other nonessential uses. ☐ Enact a water waste ordinance that targets overwatering (causing water to flow off the landscape into streets, parking lots, or similar), watering impervious surfaces (streets, driveways or other hardscape areas), and negligence of known leaks, breaks, or malfunctions. ☐ Meet with large water users to discuss user's contingency plan. ☐ Enhanced monitoring and reporting: audits, meters, billing, etc.
Governor's "Critical Water Deficiency Order" declared	☐ Describe	☐ Describe

B. Conservation Objectives and Strategies – *Key benchmark for DNR*

This section establishes water conservation objectives and strategies for eight major areas of water use.

Objective 1: Reduce Unaccounted (Non-Revenue) Water loss to Less than 10%

The Minnesota Rural Water Association, the Metropolitan Council and the Department of Natural Resources recommend that all water uses be metered. Metering can help identify high use locations and times, along with leaks within buildings that have multiple meters.

It is difficult to quantify specific unmetered water use such as that associated with firefighting and system flushing or system leaks. Typically, water suppliers subtract metered water use from total water pumped to calculate unaccounted or non-revenue water loss.

Is your five-year average (2005-2014) unaccounted Water Use in Table 2 higher than 10%?

Yes ☐ No ☒

What is your leak detection monitoring schedule? (e.g. Monitor 1/3rd of the city lines per year)

Do leak detection on areas of the city that are scheduled for street reconstruction 2 years prior to construction beginning. Create a plan to ¼ of the city every year.

Water Audits - are designed to help quantify and track water losses associated with water distribution systems and identify areas for improved efficiency and cost recovery. The American Water Works Association (AWWA) has a recommended water audit methodology which is presented in AWWA's M36 Manual of Water Supply Practices: Water Audits and Loss Control Programs. AWWA also provides a free spreadsheet-based water audit tool that water suppliers can use to conduct their own water audits. This free water audit tool can be found on AWWA's Water Loss Control webpage. Another resource for water audit and water loss control information is Minnesota Rural Water Association.

What is the date of your most recent water audit? N/A

Frequency of water audits: ☐ **yearly** ☐ **other (specify frequency) _______**
Leak detection and survey: ☒ **every year** ☐ **every other year** ☐ **periodic as needed**
Year last leak detection survey completed: 2017

If Table 2 shows annual water losses over 10% or an increasing trend over time, describe what actions will be taken to reach the <10% loss objective and within what timeframe

Metering -AWWA recommends that every water supplier install meters to account for all water taken into its system, along with all water distributed from its system at each customer's point of service. An effective metering program relies upon periodic performance testing, repair, maintenance or replacement of all meters. Drinking Water Revolving Loan Funds are available for purchase of new meters when new plants are built. AWWA also recommends that water suppliers conduct regular water audits to account for unmetered unbilled consumption, metered unbilled consumption and source water and customer metering inaccuracies. Some cities install separate meters for interior and exterior water use, but some research suggests that this may not result in water conservation.

Complete Table 23 by adding the requested information regarding the number, types, testing and maintenance of customer meters.

Table 23. Information about customer meters

Customer Category	Number of Customers	Number of Metered Connections	Number of Automated Meter Readers	Meter testing intervals (years)	Average age/meter replacement schedule (years
Residential	1610	1610	1610	When needed	20 years
Irrigation meters	24	24	24	When needed	20 years
Institutional	1	1	1	When needed	20 years
Commercial	112	112	112	When needed	20 years

Customer Category	Number of Customers	Number of Metered Connections	Number of Automated Meter Readers	Meter testing intervals (years)	Average age/meter replacement schedule (years
Industrial	0	0	0	NA	0
Public facilities	7	0	0	When needed	20 years
Other	0	0	0	NA	0
TOTALS	1754	1754	1754	NA	NA

For unmetered systems, describe any plans to install meters or replace current meters with advanced technology meters. Provide an estimate of the cost to implement the plan and the projected water savings from implementing the plan.

Table 24. Water source meters

	Number of Meters	Meter testing schedule (years)	Number of Automated Meter Readers	Average age/meter replacement schedule (years
Wells	3	10 years	3	___/___
Interconnects	2	unknown	2	___/___

Objective 2: Achieve Less than 75 Residential Gallons per Capita Demand (GPCD)

The 2002 average residential per capita demand in the Twin Cities Metropolitan area was 75 gallons per capita per day.

Is your average 2010-2015 residential per capita water demand in Table 2 more than 75? Yes ☐ No ☒

What was your 2010 – 2015 five-year average residential per capita water demand? 74 g/person/day

Describe the water use trend over that timeframe:

Varies, no consistent trend.

Complete Table 25 by checking which strategies you will use to continue reducing residential per capita demand and project a likely timeframe for completing each checked strategy (Select all that apply and add rows for additional strategies):

Table 25. Strategies and timeframe to reduce residential per capita demand

Strategy to reduce residential per capita demand	Timeframe for completing work
☒ Revise city ordinances/codes to encourage or require water efficient landscaping.	Continuous, No water credit will be given for new sod starting in 2018
☐ Revise city ordinance/codes to permit water reuse options, especially for non-potable purposes like irrigation,	

Strategy to reduce residential per capita demand	Timeframe for completing work
groundwater recharge, and industrial use. Check with plumbing authority to see if internal buildings reuse is permitted	
☒ Revise ordinances to limit irrigation. Describe the restricted irrigation plan:	Reviewed annually
☐ Revise outdoor irrigation installations codes to require high efficiency systems (e.g. those with soil moisture sensors or programmable watering areas) in new installations or system replacements.	
☒ Make water system infrastructure improvements	continuous
☐ Offer free or reduced cost water use audits) for residential customers.	
☐ Implement a notification system to inform customers when water availability conditions change.	
☐ Provide rebates or incentives for installing water efficient appliances and/or fixtures indoors (e.g., low flow toilets, high efficiency dish washers and washing machines, showerhead and faucet aerators, water softeners, etc.)	
☐ Provide rebates or incentives to reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.)	
☐ Identify supplemental Water Resources	
☐ Conduct audience-appropriate water conservation education and outreach.	
☐ Describe other plans	

Objective 3: Achieve at least 1.5% annual reduction in non-residential per capita water use (For each of the next ten years, or a 15% total reduction over ten years.) This includes commercial, institutional, industrial and agricultural water users.

Complete Table 26 by checking which strategies you will used to continue reducing non-residential customer use demand and project a likely timeframe for completing each checked strategy (add rows for additional strategies).

Where possible, substitute recycled water used in one process for reuse in another. (For example, spent rinse water can often be reused in a cooling tower.) Keep in mind the true cost of water is the amount on the water bill PLUS the expenses to heat, cool, treat, pump, and dispose of/discharge the water. Don't just calculate the initial investment. Many conservation retrofits that appear to be prohibitively expensive are actually very cost-effective when amortized over the life of the equipment. Often reducing water use also saves electrical and other utility costs. Note: as of 2015, water reuse, and is not allowed by the state plumbing code, M.R. 4715 (a variance is needed). However, several state agencies are addressing this issue.

Table 26. Strategies and timeframe to reduce institutional, commercial industrial, and agricultural and non-revenue use demand

Strategy to reduce total business, industry, agricultural demand	Timeframe for completing work
☐ Conduct a facility water use audit for both indoor and outdoor use, including system components	

Strategy to reduce total business, industry, agricultural demand	Timeframe for completing work
☒ Install enhanced meters capable of automated readings to detect spikes in consumption	In process, completion expected in 5 years
☐ Compare facility water use to related industry benchmarks, if available (e.g., meat processing, dairy, fruit and vegetable, beverage, textiles, paper/pulp, metals, technology, petroleum refining etc.)	
☐ Install water conservation fixtures and appliances or change processes to conserve water	
☒ Repair leaking system components (e.g., pipes, valves)	continuous
☐ Investigate the reuse of reclaimed water (e.g., stormwater, wastewater effluent, process wastewater, etc.)	
☒ Reduce outdoor water use (e.g., turf replacement/reduction, rain gardens, rain barrels, smart irrigation, outdoor water use meters, etc.)	continuous
☒ Train employees how to conserve water	continuous
☒ Implement a notification system to inform non-residential customers when water availability conditions change.	CodeRed call system
☐ Nonpotable rainwater catchment systems intended to supply uses such as water closets, urinals, trap primers for floor drains and floor sinks, industrial processes, water features, vehicle washing facilities, cooling tower makeup, and similar uses shall be approved by the commissioner. Plumbing code 4714.1702, Published October 31, 2016	
☐ Describe other plans:	

Objective 4: Achieve a Decreasing Trend in Total Per Capita Demand

Include as **Appendix 8** one graph showing total per capita water demand for each customer category (i.e., residential, institutional, commercial, industrial) from 2005-2014 and add the calculated/estimated linear trend for the next 10 years.

Describe the trend for each customer category; explain the reason(s) for the trends, and where trends are increasing.

Objective 5: Reduce Ratio of Maximum day (peak day) to the Average Day Demand to Less Than 2.6

Is the ratio of average 2005-2014 maximum day demand to average 2005-2014 average day demand reported in Table 2 more than 2.6? Yes ☐ No ☒

Calculate a ten-year average (2005 – 2014) of the ratio of maximum day demand to average day demand: 3:1

The position of the DNR has been that a peak day/average day ratio that is above 2.6 for in summer indicates that the water being used for irrigation by the residents in a community is too large and that efforts should be made to reduce the peak day use by the community.

It should be noted that by reducing the peak day use, communities can also reduce the amount of infrastructure that is required to meet the peak day use. This infrastructure includes new wells, new water towers which can be costly items.

Objective 6: Implement Demand Reduction Measures

Water Conservation Program

Municipal water suppliers serving over 1,000 people are required to adopt demand reduction measures that include a conservation rate structure, or a uniform rate structure with a conservation program that achieves demand reduction. These measures must achieve demand reduction in ways that reduce water demand, water losses, peak water demands, and nonessential water uses. These measures must be approved before a community may request well construction approval from the Department of Health or before requesting an increase in water appropriations permit volume (Minnesota Statutes, section 103G.291, subd. 3 and 4). Rates should be adjusted on a regular basis to ensure that revenue of the system is adequate under reduced demand scenarios. If a municipal water supplier intends to use a Uniform Rate Structure, a community-wide Water Conservation Program that will achieve demand reduction must be provided.

Current Water Rates

Include a copy of the actual rate structure in **Appendix 9** or list current water rates including base/service fees and volume charges below.

Volume included in base rate or service charge: __0___ gallons or ____ cubic feet ___ other

Frequency of billing: ☐ Monthly ☐ Bimonthly ☒ Quarterly ☐ Other: ________________

Water Rate Evaluation Frequency: ☒ every year ☐ every ___ years ☐ no schedule

Date of last rate change: 4/1/17

Table 27. Rate structures for each customer category (Select all that apply and add additional rows as needed)

Customer Category	Conservation Billing Strategies in Use *	Conservation Neutral Billing Strategies in Use **	Non-Conserving Billing Strategies in Use ***
Residential	☐ Monthly billing ☒ Increasing block rates (volume tiered rates) ☐ Seasonal rates ☐ Time of use rates ☒ Water bills reported in gallons ☐ Individualized goal rates ☐ Excess use rates	☐ Uniform ☒ Odd/even day watering	☐ Service charge based on water volume ☐ Declining block ☐ Flat ☐ Other (describe)

Customer Category	Conservation Billing Strategies in Use *	Conservation Neutral Billing Strategies in Use **	Non-Conserving Billing Strategies in Use ***
	☐ Drought surcharge ☐ Use water bill to provide comparisons ☒ Service charge not based on water volume ☐ Other (describe)		
Commercial/ Industrial/ Institutional	☐ Monthly billing ☒ Increasing block rates (volume tiered rates) ☐ Seasonal rates ☐ Time of use rates ☒ Water bills reported in gallons ☐ Individualized goal rates ☐ Excess use rates ☐ Drought surcharge ☐ Use water bill to provide comparisons ☒ Service charge not based on water volume ☐ Other (describe)	☐ Uniform	☐ Service charge based on water volume ☐ Declining block ☐ Flat ☐ Other (describe)
☐ Other			

*** Rate Structures components that may promote water conservation:**

- **Monthly billing:** is encouraged to help people see their water usage so they can consider changing behavior.
- **Increasing block rates (also known as a tiered residential rate structure):** Typically, these have at least three tiers: should have at least three tiers.
    - The first tier is for the winter average water use.
    - The second tier is the year-round average use, which is lower than typical summer use. This rate should be set to cover the full cost of service.
    - The third tier should be above the average annual use and should be priced high enough to encourage conservation, as should any higher tiers. For this to be effective, the difference in block rates should be significant.
- **Seasonal rate:** higher rates in summer to reduce peak demands
- **Time of Use rates:** lower rates for off peak water use
- **Bill water use in gallons:** this allows customers to compare their use to average rates
- **Individualized goal rates:** typically used for industry, business or other large water users to promote water conservation if they keep within agreed upon goals. **Excess Use rates:** if water use goes above an agreed upon amount this higher rate is charged
- **Drought surcharge:** an extra fee is charged for guaranteed water use during drought
- **Use water bill to provide comparisons**: simple graphics comparing individual use over time or compare individual use to others.
- **Service charge or base fee that does not include a water volume** – a base charge or fee to cover universal city expenses that are not customer dependent and/or to provide minimal water at a lower rate (e.g., an amount less than the average residential per capita demand for the water supplier for the last 5 years)
- **Emergency rates** -A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

Conservation Neutral

- **Uniform rate**: rate per unit used is the same regardless of the volume used
- **Odd/even day watering** –This approach reduces peak demand on a daily basis for system operation, but it does not reduce overall water use.

*** Non-Conserving ***

- **Service charge or base fee with water volume:** an amount of water larger than the average residential per capita demand for the water supplier for the last 5 years
- **Declining block rate:** the rate per unit used decreases as water use increases.
- **Flat rate:** one fee regardless of how much water is used (usually unmetered).

Provide justification for any conservation neutral or non-conserving rate structures. If intending to adopt a conservation rate structure, include the timeframe to do so:

Objective 7: Additional strategies to Reduce Water Use and Support Wellhead Protection Planning

Development and redevelopment projects can provide additional water conservation opportunities, such as the actions listed below. If a Uniform Rate Structure is in place, the water supplier must provide a Water Conservation Program that includes at least two of the actions listed below. Check those actions that you intent to implement within the next 10 years.

Table 28. Additional strategies to Reduce Water Use & Support Wellhead Protection

☒	Participate in the GreenStep Cities Program, including implementation of at least one of the 20 "Best Practices" for water
☒	Prepare a master plan for smart growth (compact urban growth that avoids sprawl)
☒	Prepare a comprehensive open space plan (areas for parks, green spaces, natural areas)
☒	Adopt a water use restriction ordinance (lawn irrigation, car washing, pools, etc.)
☒	Adopt an outdoor lawn irrigation ordinance
☐	Adopt a private well ordinance (private wells in a city must comply with water restrictions)
☒	Implement a stormwater management program
☐	Adopt non-zoning wetlands ordinance (can further protect wetlands beyond state/federal laws- for vernal pools, buffer areas, restrictions on filling or alterations)
☐	Adopt a water offset program (primarily for new development or expansion)
☐	Implement a water conservation outreach program
☐	Hire a water conservation coordinator (part-time)
☐	Implement a rebate program for water efficient appliances, fixtures, or outdoor water management
☐	Other

Objective 8: Tracking Success: How will you track or measure success through the next ten years?

Documentation. This will be difficult to achieve due to planned growth of the city and infrastructure.

Tip: The process to monitor demand reduction and/or a rate structure includes:

a) The DNR Hydrologist will call or visit the community the first 1-3 years after the water supply plan is completed.
b) They will discuss what activities the community is doing to conserve water and if they feel their actions are successful. The Water Supply Plan, Part 3 tables and responses will guide the discussion. For example, they will discuss efforts to reduce unaccounted for water loss if that is a problem, or go through Tables 33, 34 and 35 to discuss new initiatives.
c) The city representative and the hydrologist will discuss total per capita water use, residential per capita water use, and business/industry use. They will note trends.
d) They will also discuss options for improvement and/or collect case studies of success stories to share with other communities. One option may be to change the rate structure, but there are many other paths to successful water conservation.
e) If appropriate, they will cooperatively develop a simple work plan for the next few years, targeting a couple areas where the city might focus efforts.

C. Regulation

Complete Table 29 by selecting which regulations are used to reduce demand and improve water efficiencies. Add additional rows as needed.

Copies of adopted regulations or proposed restrictions or should be included in **Appendix 10** (a list with hyperlinks is acceptable).

Table 29. Regulations for short-term reductions in demand and long-term improvements in water efficiencies

Regulations Utilized	When is it applied (in effect)?
☒ Rainfall sensors required on landscape irrigation systems	☒ Ongoing ☐ Seasonal ☐ Only during declared Emergencies
☒ Water efficient plumbing fixtures required	☒ New development ☐ Replacement ☐ Rebate Programs
☐ Critical/Emergency Water Deficiency ordinance	☐ Only during declared Emergencies
☒ Watering restriction requirements (time of day, allowable days, etc.)	☒ Odd/even ☐ 2 days/week ☐ Only during declared Emergencies
☐ Water waste prohibited (for example, having a fine for irrigators spraying on the street)	☐ Ongoing ☐ Seasonal ☐ Only during declared Emergencies
☒ Limitations on turf areas (requiring lots to have 10% - 25% of the space in natural areas)	☒ New development ☒ Shoreland/zoning ☐ Other
☐ Soil preparation requirement s (after construction, requiring topsoil to be applied to promote good root growth)	☐ New Development ☐ Construction Projects ☐ Other
☒ Tree ratios (requiring a certain number of trees per square foot of lawn)	☒ New development ☒ Shoreland/zoning ☐ Other

Regulations Utilized	When is it applied (in effect)?
☐ Permit to fill swimming pool and/or requiring pools to be covered (to prevent evaporation)	☐ Ongoing ☐ Seasonal ☐ Only during declared Emergencies
☐ Ordinances that permit stormwater irrigation, reuse of water, or other alternative water use (Note: be sure to check current plumbing codes for updates)	☐ Describe

D. Retrofitting Programs

Education and incentive programs aimed at replacing inefficient plumbing fixtures and appliances can help reduce per capita water use, as well as energy costs. It is recommended that municipal water suppliers develop a long-term plan to retrofit public buildings with water efficient plumbing fixtures and appliances. Some water suppliers have developed partnerships with organizations having similar conservation goals, such as electric or gas suppliers, to develop cooperative rebate and retrofit programs.

A study by the AWWA Research Foundation (Residential End Uses of Water, 1999) found that the average indoor water use for a non-conserving home is 69.3 gallons per capita per day (gpcd). The average indoor water use in a conserving home is 45.2 gpcd and most of the decrease in water use is related to water efficient plumbing fixtures and appliances that can reduce water, sewer and energy costs. In Minnesota, certain electric and gas providers are required (Minnesota Statute 216B.241) to fund programs that will conserve energy resources and some utilities have distributed water efficient showerheads to customers to help reduce energy demands required to supply hot water.

Retrofitting Programs

Complete Table 30 by checking which water uses are targeted, the outreach methods used, the measures used to identify success, and any participating partners.

Table 30. Retrofitting programs (Select all that apply)

Water Use Targets	Outreach Methods	Partners
☐ Low flush toilets, ☐ Toilet leak tablets, ☐ Low flow showerheads, ☐ Faucet aerators;	☐ Education about ☐ Free distribution of ☐ Rebate for ☐ Other	☐ Gas company ☐ Electric company ☐ Watershed organization
☐ Water conserving washing machines, ☐ Dish washers, ☐ Water softeners;	☐ Education about ☐ Free distribution of ☐ Rebate for ☐ Other	☐ Gas company ☐ Electric company ☐ Watershed organization
☐ Rain gardens, ☐ Rain barrels, ☐ Native/drought tolerant landscaping, etc.	☐ Education about ☐ Free distribution of ☐ Rebate for ☐ Other	☐ Gas company ☐ Electric company ☐ Watershed organization

Briefly discuss measures of success from the above table (e.g. number of items distributed, dollar value of rebates, gallons of water conserved, etc.):

E. Education and Information Programs

Customer education should take place in three different circumstances. First, customers should be provided information on how to conserve water and improve water use efficiencies. Second, information should be provided at appropriate times to address peak demands. Third, emergency notices and educational materials about how to reduce water use should be available for quick distribution during an emergency.

Proposed Education Programs

Complete Table 31 by selecting which methods are used to provide water conservation and information, including the frequency of program components. Select all that apply and add additional lines as needed.

Table 31. Current and Proposed Education Programs

Education Methods	General summary of topics	#/Year	Frequency
Billing inserts or tips printed on the actual bill			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Consumer Confidence Reports		1	☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Press releases to traditional local news outlets (e.g., newspapers, radio and TV)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Social media distribution (e.g., emails, Facebook, Twitter)	Facebook is used to help spread time sensitive materials that have not reached the emergency level.		☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Paid advertisements (e.g., billboards, print media, TV, radio, web sites, etc.)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Presentations to community groups			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Staff training	MN Dept of Health Operator Certification Program for PW Staff		☒ Ongoing ☐ Seasonal ☐ Only during declared emergencies

Education Methods	General summary of topics	#/Year	Frequency
Facility tours			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Displays and exhibits			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Marketing rebate programs (e.g., indoor fixtures & appliances and outdoor practices)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Community news letters	Article related to water conservation will be included in bi-annual newsletters	2	☐ Ongoing ☒ Seasonal ☐ Only during declared emergencies
Direct mailings (water audit/retrofit kits, showerheads, brochures)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Information kiosk at utility and public buildings			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Public service announcements			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Cable TV Programs			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Demonstration projects (landscaping or plumbing)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
K-12 education programs (Project Wet, Drinking Water Institute, presentations)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Community events (children's water festivals, environmental fairs)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies

Education Methods	General summary of topics	#/Year	Frequency
Community education classes			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Water week promotions			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Website (include address:)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Targeted efforts (large volume users, users with large increases)			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Notices of ordinances			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Emergency conservation notices			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies
Other:			☐ Ongoing ☐ Seasonal ☐ Only during declared emergencies

Briefly discuss what future education and information activities your community is considering in the future:

Utilize new created Social Media pages, Weekly e-mail updates and Quarterly Newsletter

PART 4. ITEMS FOR METROPOLITAN AREA COMMUNITIES

Minnesota Statute 473.859 requires WSPs to be completed for all local units of government in the seven-county Metropolitan Area as part of the local comprehensive planning process.

Much of the information in Parts 1-3 addresses water demand for the next 10 years. However, additional information is needed to address water demand through 2040, which will make the WSP consistent with the Metropolitan Land Use Planning Act, upon which the local comprehensive plans are based.

This Part 4 provides guidance to complete the WSP in a way that addresses plans for water supply through 2040.

A. Water Demand Projections through 2040

Complete Table 7 in Part 1D by filling in information about long-term water demand projections through 2040. Total Community Population projections should be consistent with the community's system statement, which can be found on the Metropolitan Council's website and which was sent to the community in September 2015.

Projected Average Day, Maximum Day, and Annual Water Demands may either be calculated using the method outlined in *Appendix 2* of the *2015 Master Water Supply Plan* or by a method developed by the individual water supplier.

B. Potential Water Supply Issues

Complete Table 10 in Part 1E by providing information about the potential water supply issues in your community, including those that might occur due to 2040 projected water use.

The Master Water Supply Plan provides information about potential issues for your community in *Appendix 1 (Water Supply Profiles).* This resource may be useful in completing Table 10.

You may document results of local work done to evaluate impact of planned uses by attaching a feasibility assessment or providing a citation and link to where the plan is available electronically.

C. Proposed Alternative Approaches to Meet Extended Water Demand Projections

Complete Table 12 in Part 1F with information about potential water supply infrastructure impacts (such as replacements, expansions or additions to wells/intakes, water storage and treatment capacity, distribution systems, and emergency interconnections) of extended plans for development and redevelopment, in 10-year increments through 2040. It may be useful to refer to information in the community's local Land Use Plan, if available.

Complete Table 14 in Part 1F by checking each approach your community is considering to meet future demand. For each approach your community is considering, provide information about the amount of future water demand to be met using that approach, the timeframe to implement the approach, potential partners, and current understanding of the key benefits and challenges of the approach.

As challenges are being discussed, consider the need for: evaluation of geologic conditions (mapping, aquifer tests, modeling), identification of areas where domestic wells could be impacted, measurement and analysis of water levels & pumping rates, triggers & associated actions to protect water levels, etc.

D. Value-Added Water Supply Planning Efforts (Optional)

The following information is not required to be completed as part of the local water supply plan, but completing this can help strengthen source water protection throughout the region and help Metropolitan Council and partners in the region to better support local efforts.

Source Water Protection Strategies

Does a Drinking Water Supply Management Area for a neighboring public water supplier overlap your community? Yes ☒ No ☐

If you answered no, skip this section. If you answered yes, please complete Table 32 with information about new water demand or land use planning-related local controls that are being considered to provide additional protection in this area.

Table 32. Local controls and schedule to protect Drinking Water Supply Management Areas

Local Control	Schedule to Implement	Potential Partners
☐ None at this time		
☐ Comprehensive planning that guides development in vulnerable drinking water supply management areas		
☐ Zoning overlay		
☒ Other: 2018 Well Head Protection Plan	2018	Mn Rural Water

Technical assistance

From your community's perspective, what are the most important topics for the Metropolitan Council to address, guided by the region's Metropolitan Area Water Supply Advisory Committee and Technical Advisory Committee, as part of its ongoing water supply planning role?

☒ Coordination of state, regional and local water supply planning roles
☒ Regional water use goals
☐ Water use reporting standards
☐ Regional and sub-regional partnership opportunities
☐ Identifying and prioritizing data gaps and input for regional and sub-regional analyses
☐ Others: ______________________________

GLOSSARY

Agricultural/Irrigation Water Use - Water used for crop and non-crop irrigation, livestock watering, chemigation, golf course irrigation, landscape and athletic field irrigation.

Average Daily Demand - The total water pumped during the year divided by 365 days.

Calcareous Fen - Calcareous fens are rare and distinctive wetlands dependent on a constant supply of cold groundwater. Because they are dependent on groundwater and are one of the rarest natural communities in the United States, they are a protected resource in MN. Approximately 200 have been located in Minnesota. They may not be filled, drained or otherwise degraded.

Commercial/Institutional Water Use - Water used by motels, hotels, restaurants, office buildings, commercial facilities and institutions (both civilian and military). Consider maintaining separate institutional water use records for emergency planning and allocation purposes. Water used by multi-family dwellings, apartment buildings, senior housing complexes, and mobile home parks should be reported as Residential Water Use.

Commercial/Institutional/Industrial (C/I/I) Water Sold - The sum of water delivered for commercial/institutional or industrial purposes.

Conservation Rate Structure - A rate structure that encourages conservation and may include increasing block rates, seasonal rates, time of use rates, individualized goal rates, or excess use rates. If a conservation rate is applied to multifamily dwellings, the rate structure must consider each residential unit as an individual user. A community may have a separate conservation rate that only goes into effect when the community or governor declares a drought emergency. These higher rates can help to protect the city budgets during times of significantly less water usage.

Date of Maximum Daily Demand - The date of the maximum (highest) water demand. Typically this is a day in July or August.

Declining Rate Structure - Under a declining block rate structure, a consumer pays less per additional unit of water as usage increases. This rate structure does not promote water conservation.

Distribution System - Water distribution systems consist of an interconnected series of pipes, valves, storage facilities (water tanks, water towers, reservoirs), water purification facilities, pumping stations, flushing hydrants, and components that convey drinking water and meeting fire protection needs for cities, homes, schools, hospitals, businesses, industries and other facilities.

Flat Rate Structure - Flat fee rates do not vary by customer characteristics or water usage. This rate structure does not promote water conservation.

Industrial Water Use - Water used for thermonuclear power (electric utility generation) and other industrial use such as steel, chemical and allied products, paper and allied products, mining, and petroleum refining.

Low Flow Fixtures/Appliances - Plumbing fixtures and appliances that significantly reduce the amount of water released per use are labeled "low flow". These fixtures and appliances use just enough water to be effective, saving excess, clean drinking water that usually goes down the drain.

Maximum Daily Demand - The maximum (highest) amount of water used in one day.

Metered Residential Connections - The number of residential connections to the water system that have meters. For multifamily dwellings, report each residential unit as an individual user.

Percent Unmetered/Unaccounted For - Unaccounted for water use is the volume of water withdrawn from all sources minus the volume of water delivered. This value represents water "lost" by miscalculated water use due to inaccurate meters, water lost through leaks, or water that is used but unmetered or otherwise undocumented. Water used for public services such as hydrant flushing, ice skating rinks, and public swimming pools should be reported under the category "Water Supplier Services".

Population Served - The number of people who are served by the community's public water supply system. This includes the number of people in the community who are connected to the public water supply system, as well as people in neighboring communities who use water supplied by the community's public water supply system. It should not include residents in the community who have private wells or get their water from neighboring water supply.

Residential Connections - The total number of residential connections to the water system. For multifamily dwellings, report each residential unit as an individual user.

Residential Per Capita Demand - The total residential water delivered during the year divided by the population served divided by 365 days.

Residential Water Use - Water used for normal household purposes such as drinking, food preparation, bathing, washing clothes and dishes, flushing toilets, and watering lawns and gardens. Should include all water delivered to single family private residences, multi-family dwellings, apartment buildings, senior housing complexes, mobile home parks, etc.

Smart Meter - Smart meters can be used by municipalities or by individual homeowners. Smart metering generally indicates the presence of one or more of the following:

- Smart irrigation water meters are controllers that look at factors such as weather, soil, slope, etc. and adjust watering time up or down based on data. Smart controllers in a typical summer will reduce water use by 30%-50%. Just changing the spray nozzle to new efficient models can reduce water use by 40%.
- Smart Meters on customer premises that measure consumption during specific time periods and communicate it to the utility, often on a daily basis.
- A communication channel that permits the utility, at a minimum, to obtain meter reads on demand, to ascertain whether water has recently been flowing through the meter and onto the premises, and to issue commands to the meter to perform specific tasks such as disconnecting or restricting water flow.

Total Connections - The number of connections to the public water supply system.

Total Per Capita Demand - The total amount of water withdrawn from all water supply sources during the year divided by the population served divided by 365 days.

Total Water Pumped - The cumulative amount of water withdrawn from all water supply sources during the year.

Total Water Delivered - The sum of residential, commercial, industrial, institutional, water supplier services, wholesale and other water delivered.

Ultimate (Full Build-Out) - Time period representing the community's estimated total amount and location of potential development, or when the community is fully built out at the final planned density.

Unaccounted (Non-revenue) Loss - See definitions for "percent unmetered/unaccounted for loss".

Uniform Rate Structure - A uniform rate structure charges the same price-per-unit for water usage beyond the fixed customer charge, which covers some fixed costs. The rate sends a price signal to the customer because the water bill will vary by usage. Uniform rates by class charge the same price-per-unit for all customers within a customer class (e.g. residential or non-residential). This price structure is generally considered less effective in encouraging water conservation.

Water Supplier Services - Water used for public services such as hydrant flushing, ice skating rinks, public swimming pools, city park irrigation, back-flushing at water treatment facilities, and/or other uses.

Water Used for Nonessential Purposes - Water used for lawn irrigation, golf course and park irrigation, car washes, ornamental fountains, and other non-essential uses.

Wholesale Deliveries - The amount of water delivered in bulk to other public water suppliers.

Acronyms and Initialisms

AWWA – American Water Works Association
C/I/I – Commercial/Institutional/Industrial
CIP – Capital Improvement Plan
GIS – Geographic Information System
GPCD – Gallons per capita per day
GWMA – Groundwater Management Area – North and East Metro, Straight River, Bonanza,
MDH – Minnesota Department of Health
MGD – Million gallons per day
MG – Million gallons
MGL – Maximum Contaminant Level
MnTAP – Minnesota Technical Assistance Program (University of Minnesota)
MPARS – MN/DNR Permitting and Reporting System (new electronic permitting system)
MRWA – Minnesota Rural Waters Association
SWP – Source Water Protection
WHP – Wellhead Protection

APPENDICES TO BE SUBMITTED BY THE WATER SUPPLIER

Appendix 1: Well records and maintenance summaries
Go to Part 1C for information on what to include in appendix

Appendix 2: Water level monitoring plan
Go to Part 1E for information on what to include in appendix

Appendix 3: Water level graphs for each water supply well
Go to Part 1E for information on what to include in appendix

Appendix 4: Capital Improvement Plan
Go to Part 1E for information on what to include in appendix

Appendix 5: Emergency Telephone List
Go to Part 2C for information on what to include in appendix

Appendix 6: Cooperative Agreements for Emergency Services
Go to Part 2C for information on what to include in appendix

Appendix 7: Municipal Critical Water Deficiency Ordinance
Go to Part 2C for information on what to include in appendix

Appendix 8: Graph of Ten Years of Annual Per Capita Water Demand for Each Customer Category
Go to Objective 4 in Part 3B for information on what to include in appendix

Appendix 9: Water Rate Structure
Go to Objective 6 in Part 3B for information on what to include in appendix

Appendix 10: Ordinances or Regulations Related to Water Use
Go to Objective 7 in Part 3B for information on what to include in appendix

Appendix 11: Implementation Checklist
Provide a table that summarizes all the actions that the public water supplier is doing, or proposes to do, with estimated implementation dates.

Appendix 12: Sources of Information for Table 10
Provide links or references to the information used to complete Table 10. If the file size is reasonable, provide source information as attachments to the plan.

LAKE ELMO WELL # 1

JAN 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	19,809.7	47.7	72.75	0.25	4,286.6	1.8	P 1.5	2	9966
SUN	1									
MON	2									
TUE	3	20,025.0	215.3	71.50	1.25	4,294.9	8.3	LE 1.6	9	9975
WED	4	20,047.8	22.8	71.25	0.25	4,295.7	0.8	G 1.5	1	9976
THU	5	20,094.2	46.4	71.00	0.25	4,297.4	1.7	C 1.6	2	9978
FRI	6	20,156.5	62.3	71.00	0.00	4,299.8	2.4	P 1.3	3	9981
SAT	7									
SUN	8									
MON	9	20,297.1	140.6	70.25	0.75	4,305.1	5.3	LE 1.3	10	9991
TUE	10	20,340.8	43.7	70.00	0.25	4,306.8	1.7	C 1.4	3	9994
WED	11	20,382.0	41.2	70.00	0.00	4,308.4	1.6	F 1.0	3	9997
THU	12	20,439.2	57.2	69.75	0.25	4,310.5	2.1	B 0.9	5	10002
FRI	13	20,481.0	41.8	69.75	0.00	4,312.1	1.6	P 0.8	3	5
SAT	14									
SUN	15									
MON	16									
TUE	17	20,674.7	193.7	69.00	0.75	4,319.4	7.3	G 0.7	13	18
WED	18	20,760.8	86.1	69.00	0.00	4,322.6	3.2	LE 0.7	4	22
THU	19	20,800.0	39.2	69.00	0.00	4,324.1	1.5	C 0.5	4	26
FRI	20	20,850.9	50.9	68.75	0.25	4,326.0	1.9		4	30
SAT	21									
SUN	22									
MON	23									
TUE	24	21,042.6	191.7	67.50	1.25	4,333.2	7.2	P 1.3	16	46
WED	25	21,092.4	49.8	67.00	0.50	4,335.0	1.8	G 1.2	3	49
THU	26	21,135.0	42.6	66.75	0.25	4,336.6	1.6	LE 1.3	4	53
FRI	27	21,176.3	41.3	66.50	0.25	4,338.2	1.6	B 1.2	4	57
SAT	28									
SUN	29									
MON	30	21,314.3	138.0	65.50	1.00	4,343.3	5.1		11	68
TUE	31	21,365.5	51.2	65.25	0.25	4,345.3	2.0	P 1.5	4	72
		TOTAL FLOW	1,555.8		7.50		58.7		106	

LAKE ELMO WELL # 1

FEB 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	21,365.5	51.2	65.25	0.25	4,345.3	2.0	P 1.5	4	72
WED	1	21,403.5	38.0	65.00	0.25	4,346.7	1.4	F 1.4	4	76
THU	2	21,454.7	51.2	64.75	0.25	4,348.6	1.9	C 1.5	3	79
FRI	3	21,496.3	41.6	64.50	0.25	4,350.2	1.6	G 1.4	3	82
SAT	4									
SUN	5									
MON	6	21,700.0	203.7	64.00	0.50	4,357.9	7.7	P 0.7	14	96
TUE	7	21,727.1	27.1	63.75	0.25	4,358.8	0.9	B 1.5	4	100
WED	8	21,779.8	52.7	63.50	0.25	4,360.8	2.0	LE 1.8	3	103
THU	9	21,819.0	39.2	63.50	0.00	4,362.3	1.5	C 0.8	4	107
FRI	10	21,871.5	52.5	63.50	0.00	4,364.3	2.0	G 0.7	3	110
SAT	11									
SUN	12									
MON	13	22,009.1	137.6	63.00	0.50	4,369.4	5.1	P 0.9	11	121
TUE	14	22,045.4	36.3	63.00	0.00	4,370.8	1.4	C 0.7	4	125
WED	15	22,098.7	53.3	62.75	0.25	4,372.8	2.0	F 0.8	3	128
THU	16	22,147.9	49.2	62.75	0.00	4,374.6	1.8	LE 0.9	4	132
FRI	17	22,186.9	39.0	62.50	0.25	4,376.1	1.5	G 0.9	4	136
SAT	18									
SUN	19									
MON	20									
TUE	21									
WED	22	22,410.0	223.1	62.00	0.50	4,384.5	8.4	C 0.9	17	153
THU	23	22,461.5	51.5	61.75	0.25	4,386.4	1.9	G 0.8	3	156
FRI	24	22,502.0	40.5	61.75	0.00	4,387.9	1.5	P 0.9	3	159
SAT	25									
SUN	26									
MON	27	22,639.3	137.3	61.50	0.25	4,393.0	5.1	B 0.8	11	170
TUE	28	22,688.8	49.5	61.25	0.25	4,394.9	1.9	F 0.8	4	174
WED	29									
THU	1									
FRI	2									
		TOTAL FLOW	1,323.3		4.00		49.6		102	

LAKE ELMO WELL # 1

MAR 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	28	22,688.8	49.5	61.25	0.25	4,394.9	1.9	F 0.8	4	174
THU	1	22,771.6	82.8	61.00	0.25	4,398.0	3.1	P 0.9	6	180
FRI	2	22,813.5	41.9	61.00	0.00	4,399.6	1.6	G 0.7	4	184
SAT	3									
SUN	4									
MON	5	22,951.1	137.6	60.25	0.75	4,404.7	5.1	C 0.8	9	193
TUE	6	22,991.0	39.9	60.25	0.00	4,406.2	1.5	LE 0.9	4	197
WED	7	23,047.5	56.5	60.00	0.25	4,408.3	2.1	B 0.9	3	200
THU	8	23,090.4	42.9	60.00	0.00	4,410.0	1.7	G 1.0	3	203
FRI	9	23,131.3	40.9	60.00	0.00	4,411.6	1.6	LE 0.8	4	207
SAT	10									
SUN	11									
MON	12	23,265.8	134.5	59.75	0.25	4,416.5	4.9	P 0.8	12	219
TUE	13	23,319.3	53.5	59.75	0.00	4,418.4	1.9	B 0.6	1	220
WED	14	23,346.3	27.0	59.50	0.25	4,419.4	1.0		3	223
THU	15	23,370.3	24.0	59.50	0.00	4,420.3	0.9	C 0.6	2	225
FRI	16	23,419.3	49.0	59.25	0.25	4,422.1	1.8	G 0.6	4	229
SAT	17									
SUN	18									
MON	19	23,571.7	152.4	59.00	0.25	4,427.8	5.7		12	241
TUE	20	23,625.5	53.8	58.75	0.25	4,429.8	2.0	P 0.6	5	246
WED	21	23,669.0	43.5	58.50	0.25	4,431.4	1.6	F 1.1	5	251
THU	22	23,723.9	54.9	58.00	0.50	4,433.4	2.0	C 0.7	5	256
FRI	23	23,758.1	34.2	57.75	0.25	4,434.7	1.3	LE 1.7	3	259
SAT	24									
SUN	25									
MON	26	23,895.8	137.7	56.50	1.25	4,439.8	5.1		12	271
TUE	27	23,953.8	58.0	56.00	0.50	4,441.9	2.1	B 1.7	5	276
WED	28	23,988.9	35.1	55.75	0.25	4,443.2	1.3	F 1.7	3	279
THU	29	24,044.7	55.8	55.25	0.50	4,445.3	2.1	P 1.6	5	284
FRI	30	24,090.9	46.2	55.00	0.25	4,447.0	1.7	LE 1.5	4	288
SAT	31									
		TOTAL FLOW	1,402.1		6.25		52.1		114	

LAKE ELMO WELL # 1

APR 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	24,090.9	46.2	55.00	0.25	4,447.0	1.7	LE 1.5	4	288
SUN	1									
MON	2	24,242.6	151.7	55.00	0.00	4,452.6	5.6		13	301
TUE	3	24,288.2	45.6	54.25	0.75	4,454.3	1.7	C 1.3	4	305
WED	4	24,336.2	48.0	54.25	0.00	4,456.1	1.8	P 1.1	4	309
THU	5	24,393.7	57.5	54.00	0.25	4,458.2	2.1	G 1.2	5	314
FRI	6									
SAT	7									
SUN	8									
MON	9	24,602.7	209.0	53.00	1.00	4,466.0	7.8	B 1.2	8	332
TUE	10	24,660.3	57.6	52.50	0.50	4,468.1	2.1	F 1.4	5	337
WED	11	24,763.3	103.0	52.00	0.50	4,471.9	3.8	P 1.4	11	348
THU	12	24,822.2	58.9	51.75	0.25	4,474.1	2.2	G 1.3	5	353
FRI	13									
SAT	14									
SUN	15									
MON	16	24,973.4	151.2	51.00	0.75	4,479.7	5.6	LE 1.3	13	366
TUE	17	25,033.4	60.0	50.50	0.50	4,482.0	2.3		7	373
WED	18	25,079.3	45.9	50.25	0.25	4,483.7	1.7	C 1.4	4	377
THU	19	25,127.5	48.2	50.00	0.25	4,485.4	1.7		5	382
FRI	20	25,171.6	44.1	49.50	0.50	4,487.1	1.7	P 1.4	3	385
SAT	21									
SUN	22									
MON	23	25,321.8	150.2	49.00	0.50	4,492.6	5.5	B 1.4	13	398
TUE	24	25,387.1	65.3	48.75	0.25	4,495.0	2.4	C 1.4	5	403
WED	25	25,445.3	58.2	48.50	0.25	4,497.2	2.2	LE 1.4	5	408
THU	26	25,503.9	58.6	48.00	0.50	4,499.4	2.2	G 1.1	1	409
FRI	27	25,549.1	45.2	48.00	0.00	4,501.0	1.6	P 1.3	1	410
SAT	28									
SUN	29									
MON	30	25,710.5	161.4	47.25	0.75	4,507.0	6.0	F 1.3	21	431
TUE	1									
		TOTAL FLOW	1,619.6		7.75		60.0		133	

LAKE ELMO WELL # 1

MAY 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	25,710.5	161.4	47.25	0.75	4,507.0	6.0	F 1.3	21	431
TUE	1	25,774.6	64.1	47.00	0.25	4,509.4	2.4	G 1.1	6	437
WED	2	25,818.5	43.9	47.00	0.00	4,511.0	1.6	C 1.1	4	441
THU	3	25,872.7	54.2	46.50	0.50	4,513.1	2.1	B 1.2	4	445
FRI	4	25,922.2	49.5	46.25	0.25	4,515.0	1.9	P 1.0	5	450
SAT	5									
SUN	6									
MON	7	26,078.9	156.7	46.00	0.25	4,520.8	5.8	LE 1.0	13	463
TUE	8	26,136.5	57.6	45.75	0.25	4,522.9	2.1	G 1.0	5	468
WED	9	26,182.7	46.2	45.50	0.25	4,524.6	1.7	C 0.8	4	472
THU	10	26,251.2	68.5	45.00	0.50	4,527.1	2.5		6	478
FRI	11									
SAT	12									
SUN	13									
MON	14	26,489.7	238.5	44.00	1.00	4,536.0	8.9	P 1.0	20	498
TUE	15	26,562.7	73.0	44.00	0.00	4,538.7	2.7		2	500
WED	16	26,650.1	87.4	44.00	0.00	4,542.0	3.3	F 1.2	13	513
THU	17	26,737.3	87.2	44.00	0.00	4,545.2	3.2	C 0.7	5	518
FRI	18	26,810.9	73.6	43.75	0.25	4,548.0	2.8	LE 0.6	6	524
SAT	19									
SUN	20									
MON	21	27,050.6	239.7	42.00	1.75	4,556.9	8.9	C 1.1	20	544
TUE	22	27,097.4	46.8	41.50	0.50	4,558.7	1.8	F 1.7	4	548
WED	23	27,171.6	74.2	41.00	0.50	4,561.4	2.7	P 1.6	7	555
THU	24	27,237.0	65.4	40.25	0.75	4,563.9	2.5	G 1.7	6	561
FRI	25	27,287.4	50.4	40.00	0.25	4,565.7	1.8	C 1.5	4	565
SAT	26									
SUN	27									
MON	28									
TUE	29	27,510.9	223.5	39 / 100	1.00	4,574.1	8.4	F 1.1	21	586
WED	30	27,597.7	86.8	100.00	0.00	4,577.3	3.2	p 1.0	7	593
THU	31									
		TOTAL FLOW	1,887.2		8.25		70.3		162	

LAKE ELMO WELL # 1

JUN 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	27,597.7	86.8	100.00	0.00	4,577.3	3.2	P 1.0	7	593
FRI	1	27,733.6	135.9	99.50	0.50	4,582.4	5.1	C 1.1	11	604
SAT	2									
SUN	3									
MON	4	28,027.0	293.4	98.50	1.00	4,593.5	11.1	B 1.1	22	626
TUE	5	28,160.1	133.1	98.00	0.50	4,598.5	5.0	C 1.1	10	636
WED	6	28,238.2	78.1	97.50	0.50	4,601.4	2.9	P 0.8	6	692
THU	7	28,328.9	90.7	97.00	0.50	4,604.8	3.4	F 0.7	7	649
FRI	8	28,422.0	93.1	97.00	0.00	4,608.4	3.6	G 0.8	8	657
SAT	9									
SUN	10									
MON	11	28,830.9	408.9	96.00	1.00	4,624.0	15.6	LE 0.7	29	686
TUE	12	28,905.3	74.4	96.00	0.00	4,626.8	2.8	B 0.7	6	692
WED	13	28,999.1	93.8	95.50	0.50	4,630.4	3.6	P 1.0	7	699
THU	14	29,101.1	102.0	95.00	0.50	4,634.3	3.9	F 1.2	8	707
FRI	15									
SAT	16									
SUN	17									
MON	18	29,370.7	269.6	93.50	1.50	4,644.5	10.2	LE 1.3	23	730
TUE	19	29,413.4	42.7	93.25	0.25	4,646.1	1.6	C 1.1	4	734
WED	20	29,498.3	84.9	93.00	0.25	4,649.3	3.2	B 1.3	7	741
THU	21	29,544.1	45.8	92.50	0.50	4,651.1	1.8	P 1.4	5	746
FRI	22	29,625.5	81.4	92.00	0.50	4,654.1	3.0	F 1.0	6	752
SAT	23									
SUN	24									
MON	25	29,870.5	245.0	91.00	1.00	4,663.4	9.3	G 1.1	20	772
TUE	26	29,971.5	101.0	90.50	0.50	4,667.3	3.9	P 1.2	9	781
WED	27	30,139.1	167.6	90.00	0.50	4,673.6	6.3	LE 1.1	11	792
THU	28	30,260.0	120.9	89.00	1.00	4,678.3	4.7		9	801
FRI	29	30,384.9	124.9	88.50	0.50	4,683.1	4.8	C 1.2	8	809
SAT	30									
SUN	1									
		TOTAL FLOW	2,787.2		11.50		105.8		216	

LAKE ELMO WELL # 1

JUL 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	30,384.9	124.9	88.50	0.50	4,683.1	4.8	C 1.2	8	809
SUN	1									
MON	2	30,852.0	467.1	86.00	2.50	4,701.0	17.9	LE 1.5	31	840
TUE	3	31,039.6	187.6	85.00	1.00	4,708.3	7.3	F 1.4	13	853
WED	4									
THU	5	31,294.7	255.1	83.50	1.50	4,718.3	10.0	B 1.2	17	870
FRI	6	31,423.3	128.6	83.00	0.50	4,723.2	4.9	P 0.8	9	879
SAT	7									
SUN	8									
MON	9	31,839.2	415.9	81.00	2.00	4,739.4	16.2	F 1.1	29	908 / 9:1
TUE	10	31,984.6	145.4	80.00	1.00	4,745.0	5.6	F 1.1	9	918 / 8:1
WED	11	32,166.4	181.8	79.00	1.00	4,752.1	7.1	LE 1.2	12	930 / 10:
THU	12	32,383.9	217.5	78.00	1.00	4,760.6	8.5		12	942 / 11:
FRI	13	32,497.5	113.6	77.00	1.00	4,765.1	4.5	P 1.3	8	950 / 8:0
SAT	14									
SUN	15									
MON	16	32,777.1	279.6	75.50	1.50	4,775.9	10.8	B 1.4	22	972 / 8:5
TUE	17	32,920.6	143.5	75.00	0.50	4,781.5	5.6		10	982 / 9:1
WED	18	33,068.9	148.3	74.00	1.00	4,787.3	5.8	G 1.4	10	992 / 11:
THU	19	33,139.7	70.8	73.50	0.50	4,790.0	2.7	LE 1.4	6	998 / 9:2
FRI	20	33,231.4	91.7	73.00	0.50	4,793.6	3.6	F 1.5	7	1005 / 8:
SAT	21									
SUN	22									
MON	23	33,463.5	232.1	71.00	2.00	4,802.6	9.0	P 1.4	19	1024 / 8:
TUE	24	33,540.5	77.0	71.00	0.00	4,805.5	2.9	C 1.5	6	1030 / 8:
WED	25	33,598.6	58.1	70.50	0.50	4,807.8	2.3	P 1.4	5	1035 / 8:
THU	26	33,683.7	85.1	70.00	0.50	4,811.1	3.3	LE 1.3	7	1042 / 10
FRI	27	33,771.0	87.3	70.00	0.00	4,814.5	3.4	C 1.2	7	1049 / 11
SAT	28									
SUN	29									
MON	30	33,989.0	218.0	69.00	1.00	4,823.0	8.5	G 1.4	19	1068 / 9:
TUE	31	34,061.8	72.8	68.00	1.00	4,825.8	2.8	c 1.4	5	1073 / 9:
		TOTAL FLOW	3,676.9		20.50		142.7		263	

LAKE ELMO WELL # 1

AUG 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	34,061.8	72.8	68.00	1.00	4,825.8	2.8	C 1.4	5	1073 / 9:50
WED	1	34,157.1	95.3	67.50	0.50	4,829.5	3.7	B 1.6	7	1080 / 10:00
THU	2	34,236.8	79.7	67.00	0.50	4,832.6	3.1	F 1.5	5	1085 / 8:40
FRI	3	34,340.0	103.2	66.50	0.50	4,836.6	4.0	P 1.2	7	1092 / 8:30
SAT	4									
SUN	5									
MON	6	34,566.7	226.7	66.00	0.50	4,845.4	8.8	P 0.8	16	1108 / 8:00
TUE	7	34,671.1	104.4	66.00	0.00	4,849.5	4.1	LE 0.7	6	1114 / 11:00
WED	8	34,748.8	77.7	65.50	0.50	4,852.5	3.0		5	1119 / 8:00
THU	9	34,838.8	90.0	65.00	0.50	4,856.0	3.5	G 1.3	6	1125 / 9:20
FRI	10	34,914.1	75.3	65.00	0.00	4,858.9	2.9	B 1.1	5	1130 / 9:30
SAT	11									
SUN	12									
MON	13	35,207.2	293.1	63.50	1.50	4,870.3	11.4	P 1.4	18	1148 / 9:00
TUE	14	35,324.8	117.6	63.00	0.50	4,874.9	4.6	C 1.2	7	155 / 9:45
WED	15	35,421.9	97.1	62.50	0.50	4,878.7	3.8	F 1.2	6	161 / 8:25
THU	16	35,499.6	77.7	62.00	0.50	4,881.7	3.0	LE 1.1	5	166 / 8:30
FRI	17	35,577.9	78.3	62.00	0.00	4,884.8	3.1	B 1.2	5	171 / 8:45
SAT	18									
SUN	19									
MON	20	35,889.3	311.4	60.00	2.00	4,896.9	12.1	F 1.3	19	190 / 8:40
TUE	21	35,988.9	99.6	60.00	0.00	4,900.8	3.9	P 1.1	6	196 / 8:50
WED	22	36,094.4	105.5	59.50	0.50	4,904.9	4.1	C 1.1	7	203 / 8:55
THU	23	36,179.5	85.1	59.00	0.50	4,908.2	3.3	LE 1.2	5	208 / 9:10
FRI	24	36,259.9	80.4	59.00	0.00	4,911.4	3.2	B 1.1	4	214 / 8:40
SAT	25									
SUN	26									
MON	27	36,580.0	320.1	57.50	1.50	4,924.0	12.6	P 1.1	19	233 / 8:40
TUE	28	36,701.0	121.0	57.00	0.50	4,928.8	4.8		7	240 / 8:20
WED	29	36,829.9	128.9	56.00	1.00	4,933.8	5.0	F 1.2	8	248 / 10:40
THU	30	37,001.7	171.8	55.50	0.50	4,940.6	6.8	C 1.0	8	256 / 8:40
FRI	31	37,127.6	125.9	55.00	0.50	4,945.6	5.0		8	264 / 9:20
		TOTAL FLOW	3,065.8		13.00		119.8		189	

LAKE ELMO WELL # 1

SEP 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	37,127.6	125.9	55.00	0.50	4,945.6	5.0		8	264 / 9:20
SAT	1									
SUN	2									
MON	3									
TUE	4	37,726.4	598.8	53.00	2.00	4,969.3	23.7	C 1.1	31	295 / 8:40
WED	5	37,853.1	126.7	52.00	1.00	4,974.3	5.0	LE 1.1	7	302 / 9:20
THU	6	37,993.9	140.8	51.00	1.00	4,979.8	5.5	G 1.2	8	310 / 9:30
FRI	7	38,093.4	99.5	50.00	1.00	4,983.8	4.0	C 1.5	6	316 / 9:20
SAT	8									
SUN	9									
MON	10	38,511.2	417.8	48.00	2.00	5,000.3	16.5	G 1.2	23	339 / 2:30
TUE	11	38,603.2	92.0	47.5 / 100	0.50	5,003.9	3.6	F 1.1	5	344 / 8:30
WED	12									
THU	13	38,827.7	224.5	98.00	2.00	5,012.8	8.9	P 1.1	13	357 / 8:00
FRI	14	38,944.2	116.5	98.00	0.00	5,017.4	4.6	G 0.8	7	364 / 1:20
SAT	15									
SUN	16									
MON	17	39,284.6	340.4	96.00	2.00	5,031.0	13.6	F 1.1	15	383 / 8:30
TUE	18	39,364.1	79.5	96.00	0.00	5,034.1	3.1	P 1.0	5	388 / 8:30
WED	19	39,463.4	99.3	95.50	0.50	5,038.1	4.0	F 1.0	6	394 / 9:00
THU	20	39,546.5	83.1	95.00	0.50	5,041.3	3.2	G 1.0	5	399 / 8:30
FRI	21	39,644.6	98.1	95.00	0.00	5,045.2	3.9	LE 1.1	6	405 / 9:00
SAT	22									
SUN	23									
MON	24	39,899.3	254.7	94.00	1.00	5,055.2	10.0	G 1.0	16	421 / 9:00
TUE	25	39,984.4	85.1	93.50	0.50	5,058.6	3.4	F 1.0	5	426 / 8:30
WED	26									
THU	27	40,189.5	205.1	92.00	1.50	5,066.9	8.3	P 1.0	12	438 / 8:30
FRI	28	40,321.7	132.2	92.00	0.00	5,071.5	4.6	G 1.0	7	4:45 / 8:00
SAT	29									
SUN	30									
MON	1									
		TOTAL FLOW	3,194.1		15.50		125.9		177	

LAKE ELMO WELL # 1

OCT 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	28	40,321.7	132.2	92.00	0.00	5,071.5	4.6	G 1.0	7	445 / 8:00
MON	1	40,754.8	433.1	89.00	3.00	5,089.1	17.6	C 1.3	23	468 / 11:35
TUE	2	40,844.9	90.1	88.00	1.00	5,092.6	3.5	P 1.7	6	474 / 8:30
WED	3	40,944.0	99.1	87.50	0.50	5,096.5	3.9		5	479 / 9:30
THU	4	41,074.2	130.2	87.00	0.50	5,101.7	5.2	B 1.6	8	487 / 3:00
FRI	5	41,121.4	47.2	87.00	0.00	5,103.5	1.8	F 1.1	3	490 / 8:45
SAT	6									
SUN	7									
MON	8									
TUE	9	41,456.9	335.5	86.50	0.50	5,116.7	13.2	B 1.0	21	511 / 9:00
WED	10	41,516.6	59.7	86.25	0.25	5,119.1	2.4	LE 0.6	4	515 / 8:40
THU	11	41,577.1	60.5	86.00	0.25	5,121.4	2.3	C 0.6	4	519 / 9:25
FRI	12	41,642.3	65.2	86.00	0.00	5,124.0	2.6	F 0.7	5	524 / 8:40
SAT	13									
SUN	14									
MON	15	41,833.7	191.4	85.00	1.00	5,131.6	7.6	P 1.2	12	536 / 9:15
TUE	16	41,917.4	83.7	84.75	0.25	5,134.8	3.2	G 1.2	6	542 / 11:15
WED	17	41,981.3	63.9	84.50	0.25	5,137.3	2.5	F 1.5	4	546 / 9:45
THU	18	42,052.8	71.5	84.00	0.50	5,140.1	2.8	C 1.3	5	551 / 9:00
FRI	19	42,110.0	57.2	84.00	0.00	5,142.3	2.2	B 1.3	3	554 / 9:50
SAT	20									
SUN	21									
MON	22	42,287.2	177.2	83.00	1.00	5,149.2	6.9	F 1.3	12	566 / 9:00
TUE	23	42,347.5	60.3	82.50	0.50	5,151.6	2.4	LE 1.3	4	570 / 9:00
WED	24	42,405.3	57.8	82.00	0.50	5,153.8	2.2	G 1.5	4	574 / 9:40
THU	25	42,463.9	58.6	82.00	0.00	5,156.1	2.3	P 1.5	4	578 / 9:00
FRI	26	42,507.2	43.3	81.50	0.50	5,157.8	1.7	B 1.5	3	581 / 8:40
SAT	27									
SUN	28									
MON	29	42,667.7	160.5	81.00	0.50	5,164.0	6.2	C 1.5	11	592 / 8:45
TUE	30	42,726.0	58.3	80.50	0.50	5,166.3	2.3	LE 1.5	4	596 8:45
WED	31	42,784.4	58.4	80.00	0.50	5,168.5	2.2		4	600 / 11:00
		TOTAL FLOW	2,462.7		12.00		97.0		155	

LAKE ELMO WELL # 1

NOV 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	42,784.4	58.4	80.00	0.50	5,168.5	2.2		4	600 / 11:00
THU	1	42,842.0	57.6	79.75	0.25	5,170.7	2.2	C 1.5	4	604 / 2:20
FRI	2	42,869.5	27.5	79.75	0.00	5,171.8	1.1	F 1.1	2	606 / 9:00
SAT	3									
SUN	4									
MON	5	43,025.5	156.0	79.00	0.75	5,177.8	6.0	P 1.1	11	617 / 9:22
TUE	6	43,074.2	48.7	79.00	0.00	5,179.7	1.9	LE 1.1	3	620 / 9:00
WED	7	43,118.2	44.0	79.00	0.00	5,181.3	1.6	B 1.1	3	623 / 8:15
THU	8	43,160.1	41.9	78.75	0.25	5,183.0	1.7	G 0.9	3	626 / 8:20
FRI	9	43,218.4	58.3	78.50	0.25	5,185.2	2.2	F 1.0	4	630 / 9:45
SAT	10									
SUN	11									
MON	12									
TUE	13	43,403.3	184.9	78.25	0.25	5,192.3	7.1	C 0.9	13	643 / 8:40
WED	14	43,447.8	44.5	78.00	0.25	5,194.0	1.7	P 0.9	3	646 / 10:30
THU	15	43,504.1	56.3	78.00	0.00	5,196.1	2.1	LE 0.7	4	650 / 11:00
FRI	16	43,547.0	42.9	78.00	0.00	5,197.8	1.7	B 0.7	3	653 / 11:00
SAT	17									
SUN	18									
MON	19	43,678.5	131.5	77.50	0.50	5,202.8	5.0	F 1.0	9	662 / 10:30
TUE	20	43,730.9	52.4	77.25	0.25	5,204.8	2.0		4	666 / 9:30
WED	21	43,779.6	48.7	77.00	0.25	5,206.7	1.9	P 1.0	3	669 / 8:20
THU	22									
FRI	23									
SAT	24									
SUN	25									
MON	26	44,010.2	230.6	76.50	0.50	5,215.5	8.8	P 0.9	16	685 / 8:40
TUE	27	44,058.8	48.6	76.00	0.50	5,217.4	1.9	F 1.0	4	689 / 10:10
WED	28	44,116.0	57.2	76.00	0.00	5,219.5	2.1	B 0.8	4	693 / 10:00
THU	29	44,158.0	42.0	76.00	0.00	5,221.2	1.7	C 0.8	3	696 / 9:30
FRI	30	44,202.8	44.8	75.75	0.25	5,222.9	1.7		3	699 / 11:00
SAT	1									
		TOTAL FLOW	1,418.4		4.25		54.4		99	

LAKE ELMO WELL # 1

DEC 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	44,202.8	44.8	75.75	0.25	5,222.9	1.7		3	699 / 11:00
SAT	1									
SUN	2									
MON	3	44,346.0	143.2	75.25	0.50	5,228.3	5.4	G 0.7	10	709 / 11:40
TUE	4	44,390.3	44.3	75.25	0.00	5,230.1	1.8	C 0.8	3	712 / 10:00
WED	5	44,445.9	55.6	75.00	0.25	5,232.2	2.1	P 0.8	4	716 / 11:30
THU	6	44,490.0	44.1	75.00	0.00	5,233.9	1.7		3	719 / 9:20
FRI	7	44,530.0	40.0	75.00	0.00	5,235.5	1.6	B 0.8	3	722 / 9:00
SAT	8									
SUN	9									
MON	10									
TUE	11	44,732.0	202.0	74.00	1.00	5,243.1	7.6	LE 1.2	14	736 / 11:10
WED	12	44,790.4	58.4	73.75	0.25	5,245.4	2.3	P 1.4	4	740 / 2:40
THU	13	44,846.3	55.9	73.50	0.25	5,247.5	2.1		4	744 / 2:10
FRI	14	44,874.3	28.0	73.50	0.00	5,248.6	1.1	F 1.3	2	746 / 8:45
SAT	15									
SUN	16									
MON	17	45,032.1	157.8	73.00	0.50	5,254.6	6.0	F 1.1	11	757 / 10:30
TUE	18	45,088.1	56.0	72.50	0.50	5,256.7	2.1	G 1.2	4	761 / 9:30
WED	19	45,131.7	43.6	72.00	0.50	5,258.3	1.6	P 1.3	3	764 / 8:30
THU	20									
FRI	21									
SAT	22									
SUN	23									
MON	24									
TUE	25									
WED	26	45,496.0	364.3	71.00	1.00	5,272.2	13.9	G 1.2	26	790 / 8:30
THU	27	45,568.4	72.4	70.50	0.50	5,275.0	2.8	P 1.3	4	794 / 2:08
FRI	28									
SAT	29									
SUN	30									
MON	31	45,724.3	155.9	70.00	0.50	5,280.9	5.9	G 1.1	7	801 / 8:30
		TOTAL FLOW	1,521.5		5.75		58.0		102	

LAKE ELMO WELL # 1

JAN 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	45,724.3	155.9	70.00	0.50	5,280.9	5.9	G 1.1	7	801 / 8:30
TUE	1									
WED	2									
THU	3									
FRI	4									
SAT	5									
SUN	6									
MON	7									
TUE	8									
WED	9									
THU	10									
FRI	11									
SAT	12									
SUN	13									
MON	14									
TUE	15									
WED	16									
THU	17									
FRI	18									
SAT	19									
SUN	20									
MON	21									
TUE	22									
WED	23									
THU	24									
FRI	25									
SAT	26									
SUN	27									
MON	28									
TUE	29									
WED	30									
THU	31									
		TOTAL FLOW	0.0		0.00		0.0		0	

LAKE ELMO WELL # 2

JAN 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	589,431	149	FREE CHLORINE		10,572.0	3.8		2	3898
SUN	1									
MON	2									
TUE	3	590,041	610	W 1.0		10,587.2	15.2		8	3906
WED	4	590,109	68			10,589.0	1.8		1	3907
THU	5	590,262	153		V 0.8	10,592.8	3.8		2	3909
FRI	6	590,390	128			10,596.1	3.3		3	3912
SAT	7									
SUN	8									
MON	9	590,800	410	W 0.8		10,606.4	10.3		5	3917
TUE	10	590,941	141	V 0.5	FFE .3	10,610.0	3.6		2	3919
WED	11	591,088	147			10,613.6	3.6		2	3921
THU	12	591,188	100	W 0.9		10,616.1	2.5		2	3923
FRI	13	591,330	142		TOW .3	10,619.7	3.6		2	3925
SAT	14									
SUN	15									
MON	16									
TUE	17	591,905	575	W 0.4		10,634.3	14.6		8	3933
WED	18	592,059	154			10,638.1	3.8		2	3935
THU	19	592,149	90		F 0.0	10,640.3	2.2		2	3937
FRI	20	592,360	211			10,645.7	5.4		1	3938
SAT	21									
SUN	22									
MON	23									
TUE	24	593,038	678	W 0.7		10,663.2	17.5		5	3943
WED	25	593,218	180			10,667.9	4.7		1	3944
THU	26	593,328	110		V 0.3	10,670.9	3.0		2	3946
FRI	27	593,453	125		TOW .5	10,674.2	3.3		2	3948
SAT	28									
SUN	29									
MON	30	594,001	548			10,688.3	14.1		4	3952
TUE	31	594,138	137	W 0.2	W 0.9	10,691.7	3.4		1	3953
		TOTAL FLOW	4,707		0.0		119.7		55	

LAKE ELMO WELL # 2

FEB 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	594,138	137	FREE CHLORINE		10,691.7	3.4		1	3953
WED	1	594,428	290	W 0.6		10,699.2	7.5		4	3957
THU	2	594,550	122		V 0.5	10,702.4	3.2		1	3958
FRI	3	594,690	140		TOW .5	10,706.0	3.6		1	3959
SAT	4									
SUN	5									
MON	6									
TUE	7	595,471	781	W 1.1		10,726.1	20.1		6	3965
WED	8	595,633	162		F 0.5	10,730.3	4.2		1	3966
THU	9	595,867	234			10,736.3	6.0		2	3968
FRI	10	596,006	139			10,739.8	3.5		1	3969
SAT	11									
SUN	12									
MON	13	596,588	582		TOW .5	10,754.8	15.0		4	3973
TUE	14	596,714	126	W 1.0		10,758.1	3.3		1	3974
WED	15	596,943	229	F 0.4	P 0.3	10,764.6	6.5		8	3982
THU	16	597,116	173		FFE 0.3	10,769.5	4.9		1	3983
FRI	17	597,271	155		P 0.2	10,774.0	4.5		1	3984
SAT	18									
SUN	19									
MON	20									
TUE	21									
WED	22	598,110	839	W 0.6		10,797.7	23.7		7	3991
THU	23	598,386	276			10,805.6	7.9		2	3993
FRI	24	598,514	128			10,809.3	3.7		1	3994
SAT	25									
SUN	26									
MON	27	599,071	557		TOW .5	10,825.1	15.8		4	3998
TUE	28	599,214	143			10,829.1	4.0		1	3999
WED	29									
THU	1									
FRI	2									
		TOTAL FLOW	5,076		0.0		137.4		46	

LAKE ELMO WELL # 2

MAR 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST	#1 CHL USED	#2 CHL USED
PREVIOUS	28	599,214	143			10,829.1	4.0		1	3999					
THU	1	599,573	359			10,839.3	10.2		3	4002					
FRI	2	599,763	190	TURNED OFF CHLORINE PUMP		10,844.6	5.3		1	4003					
SAT	3														
SUN	4														
MON	5	600,157	394	TOW 0.3	CHLORINE	10,855.9	11.3		3	4006					
TUE	6	600,286	129			10,859.6	3.7		1	4007					
WED	7	600,416	130			10,863.3	3.7		1	4008					
THU	8	600,550	134	82.5		10,867.1	3.8		1	4009					
FRI	9	600,686	136	82.0	0.5	10,870.8	3.7	W 1.8	2	4011					
SAT	10														
SUN	11														
MON	12	601,071	385	79.0	3.0	10,881.8	11.0	V 0.2	3	4014					
TUE	13	601,198	127	79.0	0.0	10,885.5	3.7	W 0.8	1	4015 / 2:30					
WED	14	601,316	118	78.0	1.0	10,888.9	3.4		1	4016 / 9:40					
THU	15	601,499	183	77.0	1.0	10,893.8	4.9	FFE 0.8	2	4018 / 9:10					
FRI	16	601,618	119	76.0	1.0	10,897.2	3.4	P 0.1	1	4019 / 9:00					
SAT	17														
SUN	18									STARTED CHLORINATING W/GAS 3/19/12					
MON	19	602,103	485	74.0	2.0	10,911.7	14.5	W 1.1	3	4022 / 7:30					
TUE	20	602,159	56	74.0	0.0	10,864.3		W 1.3		4011 / 7:30	150	150	W 0.9		
WED	21	602,360	201	74.0	0.0	10,869.5	5.2	V 1.2		4014 / 10:15	149.4	149.3	W 0.8	0.6	0.7
THU	22	602,419	59	73.0	1.0	10,871.1	1.6	P 0.2	0	4014 / 8:50	149.4	149		0	0.3
FRI	23	602,628	209	72.0	1.0	10,876.5	5.4	F 1.2	4	4018 / 9:30	149.1	148.9	W .9 F .0	0.3	0.1
SAT	24										149.1	148.9		0	0
SUN	25										149.1	148.9		0	0
MON	26	603,043	415	70.0	2.0	10,887.1	10.6		3	4021 / 9:30	149.1	148.9		0	0
TUE	27	603,233	190	69.0	1.0	10,892.1	5.0	TOW 0.4	1	4022 / 2:20	148.9	145.7		0.2	3.2
WED	28	603,236	3	69.0	0.0	10,892.2	0.1	V 1.2	0	4022	149	145.7		-0.1	0
THU	29	603,387	151	68.0	1.0	10,896.0	3.8	W 0.9	1	4023	149	145	W 0.4	0	0.7
FRI	30	603,545	158	67.0	1.0	10,900.0	4.0	V 0.9	1	4024 / 9:30	149	144.2		0	0.8
SAT	31														
		TOTAL FLOW	4,331		15.5		118.3		33					1	5.8
					3/19/12 TPC WORKED ON CONTROLS AND LOST SOME TIME AND STARTS										
		average gpd. per day	144.366667	30 days								TOTAL POUNDS CHLORINE		6.8	

LAKE ELMO WELL # 2

APR 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	603,545	158	67.0	1.0	10,900.0	4.0	V 0.9	1	4024 / 9:30	149.5	144.2	
SUN	1												
MON	2	603,942	397	65.0	2.0	10,910.1	10.1	W 1.1	5	4029 / 11:40	148.9	143.1	
TUE	3	604,019	77	65.0	0.0	10,914.0	14.0	FFE 1.5	5	4030 / 10:20	148.9	143.1	W .1 FFE .3
WED	4	604,224	205	64.0	1.0	10,917.5	3.5	P 0.2	4	4034 / 11:00	149.9	142.7	W 0.8
THU	5	604,469	245	63.0	1.0	10,923.8	6.3	V 0.8	2	4036 / 12:40	149.9	142.0	W 1.2
FRI	6												
SAT	7												
SUN	8												
MON	9	605,065	596	60.0	3.0	10,939.1	15.3	W 1.2	4	4040 / 8:40		138.5	W 1.2
TUE	10	605,249	184	59.0	1.0	10,943.9	4.8	F 1.2	1	4041 / 10:00		137.5	W 1.0 F 0.0
WED	11	605,400	151	59.0	0.0	10,947.7	3.8		1	4042 / 9:50		149.9	
THU	12	605,600	200	58.0	1.0	10,953.0	5.3	FFE 1.3	2	4044 / 8:45		135.5	FFE 0.3
FRI	13	605,751	151	57.0	1.0	10,956.8	3.8	TOW 1.2	1	4045 / 9:00		134.5	TOW 0.3
SAT	14												
SUN	15												
MON	16	606,365	614	54.0	3.0	10,972.1	15.3	P 0.2	4	4049 / 10:00		132.2	W 0.5
TUE	17	606,556	191	53.0	1.0	10,976.9	4.8		1	4050 / 1:50		130.9	
WED	18	606,556	0	53.0	0.0	10,976.9	0.0	V 1.3	0	**4050 / 8:30**		**130.9**	W .7 V .3
THU	19	606,784	228	52.0	1.0	10,982.6	5.7		1	**4051 / 2:20**		129.6	P 0.2
FRI	20	606,939	155	52.0	0.0	10,986.6	4.0	W 1.1	1	4052		128.6	W 1.0
SAT	21												
SUN	22												
MON	23	607,472	533	49.0	3.0	11,000.2	13.6	TOW 1.2	4	4056 / 9:20		125.2	W .6 TOW .3
TUE	24	607,610	138	48.0	1.0	11,003.8	3.6	P 1.1	2	4058 / 8:15		124.4	P 0.4
WED	25	607,892	282	47.0	1.0	11,011.0	7.2	F 1.3	2	4060 / 10:00		122.7	F 0.3
THU	26	608,038	146	47.0	0.0	11,014.7	3.7	V 1.3	1	4061 / 10:30		121.8	
FRI	27	608,177	139	46.0	1.0	11,018.3	3.6	P 1.1	0	4061 / 8:30		121.1	
SAT	28												
SUN	29												
MON	30	608,718	541	44.0	2.0	11,032.1	13.8		5	4066 / 9:50	149.5	117.9	
TUE	1												
		TOTAL FLOW	5,173		23.0		142.2		46		0.0	26.3	

LAKE ELMO WELL # 2

MAY 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	608,718	541	44.0	2.0	11,032.1	13.8	V 0.9	5	4066 / 9:50	149.5	117.9	
TUE	1	608,907	189	42	2.0	11,038.9	6.8	P 1.0	2	4068 / 2:20		116.3	
WED	2	609,021	114	42.0	0.0	11,039.9	1.0	V 1.1	1	4069 / 7:40		116.2	V 0.6
THU	3	609,257	236	41.0	1.0	11,046.0	6.1	TOW 1.2	2	4071 / 10:15		114.1	TOW 0.3
FRI	4	609,396	139	40.0	1.0	11,049.4	3.4	FFE 1.3	1	4072 / 9:30		113.4	FFE 0.5
SAT	5												
SUN	6												
MON	7	609,915	519	38.0	2.0	11,062.9	13.5	W 1.3	4	4076 / 9:40		110.5	W 1.1
TUE	8	610,054	139	37.0	1.0	11,066.4	3.5	TOW 1.2	1	4077 / 10;42		109.8	TOW 0.5
WED	9	610,186	132	36.0	1.0	11,069.8	3.4	P 1.1	2	4079 / 9:30		109.1	
THU	10	610,450	264	35.0	1.0	11,076.5	6.7		2	4081 / 9:50		107.6	W 0.9
FRI	11												
SAT	12												
SUN	13												
MON	14	611,302	852	31.0	4.0			V 1.1				103.1	
TUE	15	611,653	351	30.0	1.0	11,106.5	30.0		8	4089 / 9:30		101.2	
WED	16	612,040	387	28.0	2.0	11,116.1	9.6	P 1.1	2	4091 / 11:00		99.2	
THU	17	612,428	388	25.0	3.0	11,125.5	9.4	W 1.0	1	4095 / 11:00		97.2	W 1.0
FRI	18	612,715	287	24.0	1.0	11,132.5	7.0	TOW 1.2	2	4097 / 9:20		96.2	TOW 0.5
SAT	19												
SUN	20												
MON	21	614,077	1,362	18.0	6.0	11,165.3	32.8	F 0.6	6	4103 / 2:40		89.4	F 0.1
TUE	22	614,346	269	31.0	1.0	11,171.8	6.5	FFE 1.1	2	4105 / 9:25		88.1	FFE 0.3
WED	23	614,770	424	30.0	1.0	11,182.3	10.5	TOW 1.1	3	4108 / 9:50		86.0	TOW 0.5
THU	24	614,957	187	28.0	2.0	11,186.8	4.5	WELL 1.2	1	4109 / 10:10		85.1	WELL 1.1
FRI	25	615,228	271	27.0	1.0	11,193.5	6.7	P 1.1	2	4111 / 8:15		83.7	P 0.0
SAT	26												
SUN	27												
MON	28												
TUE	29	616,178	950	22.0	5.0	11,217.3	23.8	F 1.2	8	4119 / 8:10	149.0	78.8	F 0.3
WED	30	616,531	353	99.0	1.0	11,226.3	9.0	V 1.1	2	4121 / 2:50		77.1	V 0.5
THU	31												
		TOTAL FLOW	7,813		37.0		194.2		52		0.5	40.8	

LAKE ELMO WELL # 2

JUN 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	616,531	353	99.0	1.0	11,226.3	9.0	V 1.1	2	4121 / 2:50	149.0	77.1	V 0.5
FRI	1	617,087	556	96	3.0	11,240.3	14.0	W 1.0		4125 / 10:30	149.0	74.5	W 1.0
SAT	2												
SUN	3												
MON	4	618,582	1,495	89.0	7.0	11,275.6	35.3	FFE 1.2	6	4131 / 11:00		68.0	FFE 0.3
TUE	5	619,124	542	86.0	3.0	11,284.3	8.7	P 1.2	1	4132		65.2	P 0.2
WED	6	619,643	519	84.0	2.0	11,300.5	16.2	V 1.1	3	4135 / 8:10		62.9	V 0.3
THU	7	620,323	680	80.0	4.0	11,316.4	15.9	TOW 1.2	2	4137 / 9:00	148.9	59.6	TOW 0.3
FRI	8	620,967	644	77.0	3.0	11,331.2	14.8	C 1.1	2	4139 / 8:50		56.6	W 0.5
SAT	9												
SUN	10												
MON	11	623,364	2,397	66.0	11.0	11,387.2	56.0	TOW 1.3	5	4144/2:20	148.7	45.3	TOW 0.5
TUE	12	623,725	361	64.0	2.0	11,395.8	8.6	CTC 1.2	3	4147/8:20		43.7	CTC 0.3
WED	13	624,325	600	61.0	3.0	11,409.7	13.9	P 1.0	2	4149/8:40		40.9	P 0.0
THU	14	624,931	606	59.0	2.0	11,424.2	14.5	C 1.2	2	4151/9:15		38.0	C 0.5
FRI	15												
SAT	16												
SUN	17												
MON	18	626,474	1,543	51.0	8.0	11,462.0	37.8	W 1.3	8	4159/2:30		30.4	W 0.5
TUE	19	626,711	237	50.0	1.0	11,468.0	6.0	V 1.2	3	4162/9:20		29.3	V 0.3
WED	20	627,120	409	49.0	1.0	11,478.4	10.4	FFE 1.1	3	4165/3:00	148.4	27.2	FFE 0.4
THU	21	627,296	176	48.0	1.0	11,482.9	4.5	TOW 1.3	2	4167/9:05		26.4	TOW 0.3
FRI	22	627,607	311	46.0	2.0	11,490.8	7.9	P 1.2	2	4169/ 8:40		24.9	P 0.3
SAT	23												
SUN	24												
MON	25	628,944	1,337	41.0	5.0	11,523.0	32.2	FFE 1.1	6	4175/10:00		18.6	W 0.8
TUE	26	629,519	575	38.0	3.0	11,536.4	13.4	F 1.1	2	4177/9:00		16.1	F 0.1
WED	27	630,210	691	35.0	3.0	11,552.5	16.1	V 1.1	2	4179/11:00		12.9	V 0.5
THU	28	630,945	735	31.0	4.0	11,569.4	16.9		2	4181/10:00		9.8	
FRI	29	631,710	765	28.0	3.0	11,587.4	18.0	TOW 1.2	1	4182/9:30	148.3	6.4	TOW 0.2
SAT	30												
SUN	1												
		TOTAL FLOW	15,179		71.0		361.1		57		0.7	70.7	

LAKE ELMO WELL # 2

JUL 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	631,710	765	28.0	3.0	11,587.4	18.0	TOW 1.2	1	4182/9:30	148.3	6.4	TOW 0.2
SUN	1												
MON	2	634,368	2,658	15\30	13.0	11,648.6	61.2	W 1.3	3	4185 / 9:30	147.2	1.5	W 0.2
TUE	3	635,383	1,015	25.0	5.0	11,670.0	21.4	P 1.2	1	4186 / 11:30	143.0		P 0
WED	4												
THU	5	636,920	1,537	18.0	7.0	11,705.2	35.2	F 1.2	4	4190 / 11:00	136.3		F 0.0
FRI	6	637,687	767	14\100	4.0	11,719.1	13.9	FFE 1.1	1	419 / 7:00	132.9	150.0	FFE 0.3
SAT	7												
SUN	8												
MON	9	640,161	2,474	89.0	11.0	11,771.4	52.3	V 1.0	5	4196 / 10:10	123.1		V 0.3
TUE	10	640,896	735	85.0	4.0	11,785.8	14.4	V 1.2	1	4197 / 8:30	120.3		V 0.3
WED	11	641,868	972	81.0	4.0	11,804.9	19.1	W 0.9	2	4199 / 10:30	116.5	149.2	W 0.9
THU	12	642,921	1,053	76.0	5.0	11,825.6	20.7	TOW 1.0	2	4201 / 2:20	112.3		TOW 0.5
FRI	13	643,326	405	75.0	1.0	11,833.5	7.9		2	4203 / 7:50	110.8		
SAT	14												
SUN	15												
MON	16	644,897	1,571	67.0	8.0	11,864.2	30.7	FFE 1.1	7	4210 / 9:30	104.6		FFE 0.1
TUE	17	645,510	613	65.0	2.0	11,876.1	11.9		2	4212 / 8:50	102.3		
WED	18	646,352	842	61.0	4.0	11,892.3	16.2	F 1.1	2	**4214 / 11:00**	**99.2**	**149.0**	F 0.3
THU	19	646,675	323	59.0	2.0	11,898.8	6.5	V 1.2	2	**4216 / 10:00**	98.0		V 0.5
FRI	20	647,069	394	57.0	2.0	11,906.4	7.6	P 1.0	2	4218 / 8:30	96.5		P 0.1
SAT	21												
SUN	22												
MON	23	648,478	1,409	51.0	6.0	11,933.2	26.8	TOW 1.2	6	4224 / 9:25	91.2		TOW 0.3
TUE	24	648,979	501	49.0	2.0	11,943.1	9.9	W 0.9	2	4226 / 10:00	89.3		W 0.6
WED	25	649,312	333	48.0	1.0	11,949.9	6.8	FFE 1.1	2	4228 / 10:40	88.1		FFE 0.3
THU	26	649,680	368	46.0	2.0	11,957.2	7.3	F 1.1	2	4230 / 10:45	86.8		F 0.0
FRI	27	650,117	437	44.0	2.0	11,965.7	8.5		2	4232 / 11:55	85.2		
SAT	28												
SUN	29												
MON	30	651,284	1,167	39.0	5.0	11,989.3	23.6	W 1.3	8	4240 / 10:10	81.0	148.7	W 0.5
TUE	31	651,686	402	37.0	2.0	11,997.2	7.9	TOW 1.1	2	4242 / 10:50	79.5	148.7	TOW 0.3
		TOTAL FLOW	19,976		92.0		409.8		60		68.8	6.2	

LAKE ELMO WELL # 2

AUG 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	651,686	402	37.0	2.0	11,997.2	7.9	TOW 1.1	2	4242 / 10:50	79.5	148.7	TOW 148.7
WED	1	652,202	516	35	2.0	12,007.2	10.0	V 1.2	2	4244 / 11:10	77.7		V 0.3
THU	2	652,687	485	33.0	2.0	12,016.6	9.4	F 1.2	2	4246 / 9:20	76.0		F 0.3
FRI	3	653,285	598	30.0	3.0	12,028.1	11.5	P 1.2	2	4248 / 8:55	74.0		P 0.0
SAT	4												
SUN	5												
MON	6	654,665	1,380	23 / 100	7.0	12,055.4	27.3	TOW 1.2	6	4254 / 7:20	69.3		TOW 0.3
TUE	7	655,422	757	97.0	3.0	12,070.0	14.6	V 1.2	2	4256 / 10:30	66.6		V 0.5
WED	8	655,871	449	95.0	2.0	12,078.8	8.8	F 1.2	2	4258 / 8:25	65.1		F 0.3
THU	9	656,434	563	92.0	3.0	12,090.0	11.2	W 1.2	2	4260 / 10:00	63.2		W 0.7
FRI	10	656,962	528	89.0	3.0	12,100.0	10.0	FFE 1.2	2	4262 / 9:10	61.4		FFE 0.2
SAT	11												
SUN	12												
MON	13	658,830	1,868	81.0	8.0	12,136.4	36.4	TOW 1.1	6	4268 / 9:40	55.1		TOW 0.3
TUE	14	659,537	707	77.0	4.0	12,150.0	13.6	V 1.2	2	4270 / 10:30	51.0	148.7	F 0.2
WED	15	660,061	524	75.0	2.0	12,160.3	10.3	F 1.3	2	4272 / 8:50	51.0		F 0.2
THU	16	660,556	495	73.0	2.0	12,170.0	9.7	W 1.1	2	4274 / 9:00	49.3		W 0.3
FRI	17	661,081	525	70.0	3.0	12,180.4	10.4	P 1.2	2	4276 / 9:15	47.2		P 0.0
SAT	18												
SUN	19												
MON	20	663,067	1,986	61.0	9.0	12,219.0	38.6	FFE 1.2	6	4282 / 9:25	39.2		FFE 0.0
TUE	21	663,778	711	58.0	3.0	12,232.8	13.8	V 1.2	2	4284 / 9:50	36.3		V 0.3
WED	22	664,512	734	55.0	3.0	12,246.9	14.1	TOW 1.2	2	4286 / 9:10	33.4		TOW 0.3
THU	23	665,145	633	52.0	3.0	12,259.6	12.7	W 1.4	2	4288 / 10:10	30.8		W 0.5
FRI	24	665,665	520	49.0	3.0	12,269.7	10.1	F 1.2	2	4290 / 9:10	28.5		F 0.0
SAT	25												
SUN	26												
MON	27	667,618	1,953	40.0	9.0	12,307.8	38.1	W 1.5	6	4296 / 945	20.2	148.7	W 0.4
TUE	28	668,473	855	37.0	3.0	12,324.4	16.6		2	4298 / 11:25	16.3		
WED	29	669,249	776	33.0	4.0	12,339.6	15.2	V 1.3	2	4300 / 11:30	12.9		V 0.3
THU	30	670,077	828	29.0	4.0	12,355.4	15.8	P 1.2	2	4302 / 10:10	9.3		P 0.0
FRI	31	670,887	810	25.0	4.0	12,371.4	16.0		2	4304 / 10:10	5.7	148.7	
		TOTAL FLOW	19,201		89.0		374.2		62		73.8	0.0	

LAKE ELMO WELL # 2

SEP 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	670,887	810	25.0	4.0	12,371.4	16.0		2	4304 / 10:10	5.7	148.7	
SAT	1												
SUN	2												
MON	3												
TUE	4	674,370	3,483	10/24	15.0	12,438.4	67.0	TOW 1.2	7	4311 / 9:15	1.0	148.7	TOW 0.3
WED	5	675,297	927	20.0	4.0	12,456.7	18.3	F 1.3	2	4313 / 11:30	1.0	144.5	F 0.3
THU	6	676,066	769	16.0	4.0	12,471.7	15.0	FFE 1.1	2	4315 / 11:00		140.6	FFE 0.3
FRI	7	676,764	698	13.0	3.0	12,485.7	14.0	W 1.4	2	4317 / 10:20	1.0	137.1	W 0.6
SAT	8												
SUN	9												
MON	10	679,135	2,371	10.0	3.0	12,532.1	46.4	P 1.2	6	4323 / 3:00	1.6	125.2	
TUE	11	679,657	522	10 / 100	0.0	12,542.0	9.9	F 1.2	3	4326 / 9:20		122.9	
WED	12	680,549	892	97.0	3.0	12,559.2	17.2		1	4327 / 9:15		118.9	
THU	13	681,201	652	93.0	4.0	12,574.7	15.5	V 1.2	2	4329 / 9:35		114.8	
FRI	14	681,867	666	90.0	3.0	12,588.8	14.1	P 1.2	2	4331 / 11:30		111.1	
SAT	15												
SUN	16												
MON	17	684,173	2,306	79.0	11.0	12,638.5	49.7	V 1.2	5	4336 / 9:30		99.0	
TUE	18	684,687	514	77.0	2.0	12,647.9	9.4	F 1.2	2	**4338 / 9:00**		**96.0**	W 0.6
WED	19	685,342	655	74.0	3.0	12,664.0	16.1	P 1.2	2	**4340 / 9:30**		92.6	
THU	20	685,946	604	71.0	3.0	12,677.3	13.3	V 1.1	2	4342 / 9:30		89.2	
FRI	21	686,563	617	68.0	3.0	12,690.6	13.3	F 1.2	2	4344 / 9:30		86.1	
SAT	22												
SUN	23												
MON	24	688,406	1,843	60.0	8.0	12,731.3	40.7	P 1.1	6	4350 / 10:00		76.1	
TUE	25	689,128	722	57.0	3.0	12,747.2	15.9	V 1.1	2	4352 / 10:30		72.4	
WED	26												
THU	27	690,473	1,345	50.0	7.0	12,776.6	29.4	F 1.2	4	4350 / 10:00		68.2	
FRI	28	691,201	728	47.0	3.0	12,792.0	15.4	P 1.0	2	4358 / 9:30	1.9	61.5	
SAT	29												
SUN	30												
MON	1												
		TOTAL FLOW	20,314		82.0		420.6		54		3.8	87.2	

LAKE ELMO WELL # 2

OCT 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	28	691,201	728	47.0	3.0	12,792.0	15.4	P 1.0	2	4358 / 9:30	1.9	61.5	
MON	1	693,615	2,414	37	10.0	12,844.4	52.4	W 1.2	5	4363 / 10:50	1.9	49.0	W 0.6
TUE	2	694,240	625	34.0	3.0	12,858.1	13.7	FFE 1.3	2	4365 / 9:00	150.0	45.7	FFE 0.3
WED	3	694,998	758	30.0	4.0	12,874.6	16.5		2	4367 / 9 ;30		41.4	
THU	4	695,709	711	27	3.0	12,890.4	15.8	V 1.2	2	4369 / 10:30		37.8	V 0.5
FRI	5	696,205	496	25.0	2.0	12,901.5	11.1	F 1.1	2	4371 / 9:10		35.1	F 0.3
SAT	6												
SUN	7												
MON	8												
TUE	9	698,628	2,423	14 / 27	11.0	12,955.2	53.7	TOW 1.3	8	4379 / 10:05		22.5	TOW 0.5
WED	10	699,114	486	25.0	2.0	12,966.1	10.9	W 1.3	2	4381 / 9:40		19.9	W 0.9
THU	11	699,629	515	23.0	2.0	12,979.4	13.3	FFE 1.3	2	4383 / 10:10		16.7	FFE 0.3
FRI	12	700,022	393	21.0	2.0	12,989.7	10.3	P 1.1	2	4385 / 9:20		14.3	P 0.0
SAT	13												
SUN	14												
MON	15	701,392	1,370	15.0	6.0	13,025.1	35.4	W 1.2	5	4390 / 11:00	150.0	5.8	W 0.6
TUE	16	701,815	423	13.0	2.0	13,036.0	10.9	V 1.3	2	4392 / 10:50		3.2	V 0.3
WED	17	702,167	352	11.0	2.0	13,045.4	9.4	P 1.2	2	4394 / 10:05		1.1	P 0.3
THU	18	702,547	380	10 / 100	1.0	13,055.5	10.1	TOW 1.3	1	4395 / 9:15	149.7	0 / 150	TOW 0.3
FRI	19	703,003	456	99.0	1.0	13,067.5	12.0	F 1.3	2	4397 / 10:20	147.2	0.0	F 0.0
SAT	20												
SUN	21												
MON	22	704,015	1,012	94.0	5.0	13,094.1	26.6	V 1.3	5	4402 / 9:35	141.5	150.0	V 0.5
TUE	23	704,304	289	92.0	2.0	13,101.9	7.8	TOW 1.3	1	4403 / 10:00	139.8		TOW 0.5
WED	24	704,713	409	90.0	2.0	13,112.8	10.9	FFE 1.3	2	4405 / 10:10	137.3		FFE 0.3
THU	25	704,974	261	90.0	0.0	13,119.7	6.9	W 1.4	2	4407 / 9:30	135.9		W 0.6
FRI	26	705,297	323	88.0	2.0	13,128.5	8.8	F 1.2	1	4408 / 9:20	133.9		F 0.3
SAT	27												
SUN	28												
MON	29	706,356	1,059	83.0	5.0	13,156.6	28.1	W 1.5	5	4413 / 2:50	127.4		W 0.6
TUE	30	706,588	232	82.0	1.0	13,162.7	6.1	V 1.4	2	4415 / 9:10	126.1	150.0	V 0.1
WED	31	706,956	368	80.0	2.0	13,172.6	9.9	P 1.2	1	4416 / 10:45	123.9	150.0	P 0.0
		TOTAL FLOW	15,755		70.0		380.6		58		26.1	61.5	

LAKE ELMO WELL # 2														
NOV 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	706,956	368	80.0	2.0	13,172.6	909.0	P 1.2	1	4416 / 10:45	123.9	150.0	P 0.0
THU	1	707,383	427	78	2.0	13,183.9	11.3		2	4418 / 1:55	121.4	150.0	
FRI	2	707,576	193	77.0	1.0	13,189.1	5.2	TOW 1.4	1	4419 / 9:30	120.3		TOW 0.3
SAT	3												
SUN	4												
MON	5	708,591	1,015	73.0	4.0	13,216.2	27.1	W 1.2	5	4424 / 9:55	114.2	150.0	W 1.0
TUE	6	708,994	403	70.0	3.0	13,227.0	10.8	FFE 1.3	2	4426 / 9:20	111.7		FFE 0.3
WED	7	709,407	413	69.0	1.0	13,238.0	11.0	F 1.4	2	4428 / 2:30	109.3		F 0.0
THU	8	709,594	187	68.0	1.0	13,242.9	4.9	V 1.4	1	4429 / 9:45	108.3		V 1.0
FRI	9	709,994	400	66.0	2.0	13,253.6	10.7	TOW 1.4	2	4431 / 10:00	105.8		TOW 0.5
SAT	10												
SUN	11												
MON	12												
TUE	13	711,257	1,263	60.0	6.0	13,287.2	33.6	FFE 1.4	6	4437 / 9:35	98.6		FFE 0.3
WED	14	711,676	419	58.0	2.0	13,298.4	11.2	W 1.3	2	4439 / 10:05	96.0		W 0.5
THU	15	712,090	414	56.0	2.0	13,309.4	11.0	F 1.4	2	4441 / 2:00	93.6	149.9	F 0.1
FRI	16	712,280	190	55.0	1.0	13,314.6	5.2	TOW 1.4	1	4442 / 9:25	92.6		TOW 0.3
SAT	17												
SUN	18												
MON	19	713,332	1,052	50.0	5.0	13,342.6	28.0	V 1.3	5	4447 / 11:00	86.4		V 0.3
TUE	20	713,765	433	49.0	1.0	13,354.1	11.5		2	4449 / 3:35	83.9		
WED	21	714,023	258	47.0	2.0	13,361.0	6.9	W 1.7	2	4451 / 10:20	82.4		W 0.7
THU	22												
FRI	23												
SAT	24												
SUN	25												
MON	26	715,951	1,928	39.0	8.0	13,412.3	51.3	F 1.3	8	4459 / 2:30	71.5		F 0.4
TUE	27	716,195	244	37.0	2.0	13,418.8	6.5	V 1.3	3	4462 / 10:50	70.1		V 0.5
WED	28	716,565	370	36.0	1.0	13,428.8	10.0	TOW 1.4	1	4463 / 10:15	67.9	149.9	TOW 0.3
THU	29	716,970	405	34.0	2.0	13,439.6	10.8	W 1.3	2	4465 / 10:05	65.6		W 0.4
FRI	30	717,261	291	33.0	1.0	13,447.4	7.8		2	4467 / 11:15	64.0	149.9	
SAT	1												
		TOTAL FLOW	10,305		47.0		274.8		51		59.9	0.1	

LAKE ELMO WELL # 2

DEC 12		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	717,261	291	33.0	1.0	13,447.4	7.8		2	4467 / 11:15	64.0	149.9	
SAT	1												
SUN	2												
MON	3	718,376	1,115	28.0	5.0	13,477.1	29.7	P 1.4	5	4472 / 10:50	57.6		P 0.0
TUE	4	718,716	340	26	2.0	13,486.4	9.3	FFE 1.3	1	4473 /10:20	55.9		FFE 0.3
WED	5	719,149	433	24.0	2.0	13,498.0	11.6	W 1.1	2	4475 / 10:15	53.1		W 1.0
THU	6	719,591	442	22.0	2.0	13,509.8	11.8		2	4477 / 2:10	50.6		
FRI	7	719,790	199	21.0	1.0	13,515.2	5.4	TOW 1.0	1	4478 / 10:10	49.6		TOW 0.5
SAT	8												
SUN	9												
MON	10												
TUE	11	721,339	1,549	14.0	7.0	13,556.6	41.4	F 1.4	8	4486 / 3:00	40.9		F 0.3
WED	12	721,749	410	12.0	2.0	13,567.5	10.9	TOW 1.4	1	4487 / 2:30	38.6		TOW 0.3
THU	13	722,142	393	10.0	2.0	13,578.0	10.5		2	4489 / 2:40	36.4		
FRI	14	722,368	226	9 / 100	1.0	13,584.2	6.2	FFE 1.3	1	4490 / 9:20	35.2	150.0	FFE 0.3
SAT	15												
SUN	16												
MON	17	723,488	1,120	96.0	4.0	13,614.0	29.8	V 1.4	5	4495 / 10:50	29.2		V 0.3
TUE	18	723,922	434	94.0	2.0	13,625.6	11.6	W 1.3	2	4497 / 10:00	26.7		W 0.6
WED	19	724,237	315	92.0	2.0	13,634.1	8.5	TOW 1.5	2	4499 / 11:00	25.0		TOW 0.3
THU	20												
FRI	21												
SAT	22												
SUN	23												
MON	24												
TUE	25												
WED	26	726,872	2,635	81.0	11.0	13,704.4	70.3	W 1.3	12	4511 / 9:15	10.5		W 0.3
THU	27	727,248	376	79.0	2.0	13,714.8	10.4	PW 1.4	5	4516 / 1:47	8.1		PW 0.2
FRI	28												
SAT	29												
SUN	30												
MON	31	728,668	1,420	72.0	7.0	13,749.5	34.7	P 1.3	13	4529 / 9:00	1.8	150.0	
		TOTAL FLOW	11,407		52.0		302.1		62		62.2	0.0	

LAKE ELMO WELL # 1

JAN 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	45,724.3	155.9	70.00	0.50	5,280.9	5.9	G 1.1	7	801 / 8:30
TUE	1									
WED	2	45,833.8	109.5	69.00	1.00	5,285.1	4.2	C 1.2	5	806 / 8:50
THU	3									
FRI	4	45,966.0	132.2	69.00	0.00	5,290.2	5.1	C 1.3	6	812 / 9:30
SAT	5									
SUN	6									
MON	7	46,118.0	152.0	68.00	1.00	5,296.0	5.8	P 0.9	7	819 / 10:30
TUE	8	46,158.2	40.2	68.00	0.00	5,297.5	1.5		2	821 / 11:10
WED	9	46,200.5	42.3	68.00	0.00	5,299.1	1.6	B 1.3	2	823 / 8:50
THU	10	46,264.2	63.7	67.75	0.25	5,301.5	2.4	LE 1.0	3	826 / 9:30
FRI	11	46,290.2	26.0	67.75	0.00	5,302.5	1.0	P 1.2	1	827 / 9:00
SAT	12									
SUN	13									
MON	14	46,507.4	217.2	67.00	0.75	5,310.9	8.4	F 1.0	9	836 / 9:00
TUE	15	46,557.6	50.2	67.00	0.00	5,312.8	1.9	C 1.0	3	839 / 8:30
WED	16	46,627.5	69.9	66.50	0.50	5,315.4	2.6		3	842 / 4:40
THU	17	46,650.4	22.9	66.50	0.00	5,316.3	0.9	B 0.9	1	843 / 8:40
FRI	18	46,696.5	46.1	65.50	1.00	5,318.1	1.8	P 0.8	2	845 / 8:10
SAT	19									
SUN	20									
MON	21									
TUE	22	46,876.8	180.3	65.00	0.50	5,325.0	6.9	F 1.7	8	853 / 8:30
WED	23	46,942.0	65.2	64.50	0.50	5,327.5	2.5	G 1.7	3	856 / 11:00
THU	24	46,986.3	44.3	64.00	0.50	5,329.1	1.6	P 1.5	2	858 / 9:40
FRI	25	47,029.5	43.2	64.00	0.00	5,330.8	1.7	B 1.8	2	860 / 9:10
SAT	26									
SUN	27									
MON	28	47,250.5	221.0	64.00	0.00	5,339.3	8.5		10	870 / 1:00
TUE	29	47,300.1	49.6	64.00	0.00	5,341.2	1.9	P 0.8	2	872 / 11:00
WED	30	47,324.0	23.9	64.00	0.00	5,342.1	0.9		2	874 / 9:10
THU	31	47,389.2	65.2	64.00	0.00	5,344.6	2.5	C 0.6	3	877 / 10:25
		TOTAL FLOW	1,664.9		6.00		63.7		76	

LAKE ELMO WELL # 1

FEB 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	47,389.2	65.2	64.00	0.00	5,344.6	2.5	C 0.6	3	877 / 10:25
FRI	1	47,427.9	38.7	63.50	0.50	5,346.1	1.5		3	880 / 10:40
SAT	2									
SUN	3									
MON	4	47,568.0	140.1	63.00	0.50	5,351.4	5.3	LE 1.1	6	886 / 1:45
TUE	5	47,607.6	39.6	63.00	0.00	5,352.9	1.5	B 1.1	2	888 / 10:40
WED	6	47,651.4	43.8	62.75	0.25	5,354.6	1.7	C 0.9	3	891 / 8:50
THU	7	47,712.1	60.7	62.50	0.25	5,356.9	2.3	LE 1.2	3	894 / 11:15
FRI	8	47,752.9	40.8	62.50	0.00	5,358.5	1.6	C 1.1	2	896 / 8:00
SAT	9									
SUN	10									
MON	11	47,894.4	141.5	62.00	0.50	5,363.8	5.3		8	904 / 12:00
TUE	12	47,935.2	40.8	61.75	0.25	5,365.4	1.6	B 1.0	2	906 / 8:30
WED	13	47,974.0	38.8	61.50	0.25	5,366.9	1.5	F 1.0	2	908 / 10:15
THU	14	48,038.8	64.8	61.00	0.50	5,369.4	2.5		3	911 / 2:00
FRI	15	48,083.0	44.2	61.00	0.00	5,371.0	1.6	P 1.1	2	913 / 9:20
SAT	16									
SUN	17									
MON	18									
TUE	19	48,253.0	170.0	60.50	0.50	5,377.5	6.5	G 1.1	8	921 / 8:30
WED	20	48,293.0	40.0	60.50	0.00	5,379.1	1.6		2	923 / 8:10
THU	21	48,356.4	63.4	60.25	0.25	5,381.5	2.4	LE 1.1	3	926 / 9:30
FRI	22									
SAT	23									
SUN	24									
MON	25	48,537.3	180.9	59.75	0.50	5,388.3	6.8	F 0.9	9	935 / 10:30
TUE	26	48,581.4	44.1	59.50	0.25	5,390.0	1.7	P 0.8	2	937 / 9:30
WED	27	48,625.0	43.6	100.00	0.00	5,391.7	1.7	B 0.9	2	939 / 10:00
THU	28	48,669.7	44.7	100.00	0.00	5,393.4	1.7	C 0.8	2	941 / 9:30
FRI	1									
SAT	2									
SUN	3									
		TOTAL FLOW	1,280.5		4.50		48.8		64	

LAKE ELMO WELL # 1

MAR 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	48,669.7	44.7	100.00	0.00	5,393.4	1.7	C 0.8	2	941 / 9:30
FRI	1	48,715.0	45.3	99.50	0.50	5,395.1	1.7	P 1.2	2	943 / 8:10
SAT	2									
SUN	3									
MON	4	48,881.8	166.8	99.00	0.50	5,401.5	6.4	G 0.9	7	950 / 8:20
TUE	5									
WED	6	48,975.0	93.2	98.50	0.50	5,405.1	3.6	P 1.0	4	954 / 9:45
THU	7	49,014.0	39.0	98.50	0.00	5,406.6	1.5	LE 1.1	2	956 / 9:40
FRI	8	49,056.0	42.0	98.00	0.50	5,408.2	1.6		2	958 / 10:00
SAT	9									
SUN	10									
MON	11	49,188.1	132.1	98.00	0.00	5,413.2	5.0	B 1.0	5	963 / 8:30
TUE	12	49,211.6	23.5	98.00	0.00	5,414.1	0.9	C 1.0	1	964 / 8:30
WED	13	49,256.5	44.9	97.50	0.50	5,415.8	1.7	P 1.2	2	966 / 11:00
THU	14	49,303.8	47.3	97.50	0.00	5,417.6	1.8		2	968 / 1:40
FRI	15									
SAT	16									
SUN	17									
MON	18									
TUE	19	49,517.9	214.1	97.00	0.50	5,425.8	8.2	C 0.9	10	978 / 2:00
WED	20	49,556.0	38.1	97.00	0.00	5,427.3	1.5	F 0.9	1	979 / 8:35
THU	21	49,600.0	44.0	97.00	0.00	5,429.0	1.7	LE 0.9	2	981 / 10:20
FRI	22	49,653.3	53.3	96.50	0.50	5,431.0	2.0	B 0.9	3	984 / 9:00
SAT	23									
SUN	24									
MON	25	49,773.3	120.0	95.50	1.00	5,435.7	4.7	G 1.5	5	989 / 8:40
TUE	26	49,820.8	47.5	95.00	0.50	5,437.5	1.8	P 1.6	2	991 / 8:45
WED	27	49,868.7	47.9	95.00	0.00	5,439.3	1.8	C 1.6	2	993 / 8:40
THU	28	49,917.6	48.9	95.00	0.00	5,441.2	1.9	LE 1.4	3	996 / 9:40
FRI	29	49,982.0	64.4	94.50	0.50	5,443.7	2.5	P 1.3	2	998 / 8:40
SAT	30									
SUN	31									
		TOTAL FLOW	1,312.3		5.50		50.3		57	

LAKE ELMO WELL # 1

APR 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	28	49,982.0	64.4	94.50	0.50	5,443.7	2.5	P 1.3	2	998 / 8:40
MON	1	50,119.2	137.2	94.00	0.50	5,448.9	5.2	C 1.2	6	004 / 9:00
TUE	2	50,175.2	56.0	94.00	0.00	5,451.1	2.2	C 1.1	2	6 / 9:00
WED	3	50,206.8	31.6	94.00	0.00	5,452.3	1.2	B 1.2	1	7 /9:40
THU	4	50,278.5	71.7	93.50	0.50	5,455.0	2.7	P 1.3	3	10 / 11:30
FRI	5	50,302.2	23.7	93.00	0.50	5,455.9	0.9	LE 1.1	1	11 / 9:15
SAT	6									
SUN	7									
MON	8	50,466.4	164.2	92.50	0.50	5,462.2	6.3	F 1.2	7	18 / 2:15
TUE	9	50,489.7	23.3	92.50	0.00	5,463.1	0.9	C 1.0	1	19 / 10:20
WED	10	50,542.3	52.6	92.50	0.00	5,465.1	2.0	B 1.1	4	23 / 9:15
THU	11	50,604.8	62.5	92.00	0.50	5,467.4	2.3		6	29 / 3:00
FRI	12									
SAT	13									
SUN	14									
MON	15	50,772.9	168.1	91.50	0.50	5,473.8	6.4	F 1.1	10	39 / 8:40
TUE	16	50,822.9	50.0	91.00	0.50	5,475.7	1.9	B 1.1	3	42 / 2:30
WED	17	50,873.7	50.8	91.00	0.00	5,477.6	1.9	LE 1.1	3	45 / 9:35
THU	18	50,904.8	31.1	91.00	0.00	5,478.8	1.2	C 1.0	2	47 / 9:35
FRI	19									
SAT	20									
SUN	21									
MON	22	51,085.8	181.0	90.00	1.00	5,485.6	6.8	P 1.1	11	58 / 10:30
TUE	23	51,154.5	68.7	90.00	0.00	5,488.2	2.6	C 1.2	4	62 / 1:00
WED	24									
THU	25	51,239.1	84.6	90.00	0.00	5,491.4	3.2	C 0.9	1	68 / 1:50
FRI	26	51,271.1	32.0	89.00	1.00	5,492.6	1.2	P 1.1	1	70 / 8:00
SAT	27									
SUN	28									
MON	29	51,434.1	163.0	89.00	0.00	5,498.8	6.2	P 0.9	10	80 / 10:15
TUE	30	51,481.8	47.7	89.00	0.00	5,500.6	1.8	G 0.7	3	83 / 11:15
WED	1									
		TOTAL FLOW	1,499.8		5.50		56.9		79	

LAKE ELMO WELL # 1

MAY 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	51,481.8	47.7	89.00	0.00	5,500.6	1.8	G 0.7	3	83 /11:15
WED	1	51,529.2	47.4	88.00	1.00	5,502.4	1.8		1	84 / 2:00
THU	2	51,562.3	33.1	88.00	0.00	5,503.7	1.3	C 0.8	4	88 / 9:30
FRI	3	51,612.7	50.4	88.00	0.00	5,505.6	1.9		3	91 / 12:30
SAT	4									
SUN	5									
MON	6	51,766.4	153.7	88.00	0.00	5,511.4	5.8	P 0.6	10	101 / 10:30
TUE	7	51,816.2	49.8	88.00	0.00	5,513.3	1.9	C 0.6	3	104 / 10:00
WED	8	51,865.3	49.1	88.00	0.00	5,515.1	1.8	LE 0.7	3	107 / 10:20
THU	9	51,915.8	50.5	87.50	0.50	5,517.0	1.9	B 0.7	3	110 / 9:45
FRI	10	51,983.0	67.2	87.50	0.00	5,519.6	2.6	P 1.2	4	114 / 9:10
SAT	11									
SUN	12									
MON	13	52,136.1	153.1	87.00	0.50	5,525.4	5.8	F 1.3	9	123 / 8:40
TUE	14	52,221.4	85.3	86.00	1.00	5,528.6	3.2	C 1.1	5	128 / 2:30
WED	15	52,290.0	68.6	85.50	0.50	5,531.2	2.6	G 1.4	4	132 / 2:00
THU	16	52,345.0	55.0	85.00	0.50	5,533.4	2.2	LE 1.4	4	136 / 2:10
FRI	17	52,377.5	32.5	85.00	0.00	5,534.6	1.2	C 1.6	2	138 / 8:40
SAT	18									
SUN	19									
MON	20	52,526.0	148.5	84.00	1.00	5,540.3	5.7	P 1.2	9	147 / 8:30
TUE	21	52,576.6	50.6	84.00	0.00	5,542.2	1.9	P 0.9	4	151 / 8:30
WED	22	52,630.0	53.4	84.00	0.00	5,544.6	2.4	C 1.2	3	154 /9:35
THU	23	52,670.0	40.0	84.00	0.00	5,545.7	1.1	B 1.1	2	156 / 8:15
FRI	24									
SAT	25									
SUN	26									
MON	27									
TUE	28	52,952.0	282.0	83.00	1.00	5,556.4	10.7	LE 1.1	17	173 / 9:00
WED	29	53,002.2	50.2	83.00	0.00	5,558.3	1.9	F 1.0	3	176 / 8:30
THU	30	53,053.0	50.8	82.50	0.50	5,560.3	2.0	P 1.3	3	179 / 10:50
FRI	31	53,100.5	47.5	82.50	0.00	5,562.1	1.8	C 1.0	3	182 / 9:00
		TOTAL FLOW	1,618.7		6.50		61.5		99	

LAKE ELMO WELL # 1

JUN 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	53,100.5	47.5	82.50	0.00	5,562.1	1.8	C 1.0	3	182 / 9:00
SAT	1									
SUN	2									
MON	3	53,264.5	164.0	82.00	0.50	5,568.3	6.2		10	192 / 8:00
TUE	4	53,332.1	67.6	81.50	0.50	5,570.9	2.6		4	196 / 8:30
WED	5	53,399.6	67.5	81.00	0.50	5,573.4	2.5	C 1.0	4	200 / 8:30
THU	6									
FRI	7									
SAT	8									
SUN	9									
MON	10	53,677.7	278.1	80.00	1.00	5,584.0	10.6	F 1.3	17	217 / 2:20
TUE	11	53,727.7	50.0	80.00	0.00	5,585.9	1.9	B 1.2	3	220 / 2:00
WED	12	53,767.3	39.6	79.50	0.50	5,587.4	1.5	LE 1.3	3	223 / 9:00
THU	13	53,825.3	58.0	79.00	0.50	5,589.6	2.2	G 1.2	3	226 / 10:00
FRI	14	53,868.6	43.3	79.00	0.00	5,591.2	1.6	P 1.4	3	229 / 8:30
SAT	15									
SUN	16									
MON	17	54,020.0	151.4	79.00	0.00	5,596.9	5.7	C 1.2	9	238 / 8:45
TUE	18	54,067.6	47.6	78.00	1.00	5,598.8	1.9	F 1.2	3	241 / 9:00
WED	19	54,117.1	49.5	78.00	0.00	5,600.6	1.8	B 1.2	4	245 / 9:00
THU	20	54,182.7	65.6	77.50	0.50	5,603.1	2.5	LE 1.1	3	248 / 9:15
FRI	21	54,234.0	51.3	77.00	0.50	5,605.7	2.6		3	251 / 7:30
SAT	22									
SUN	23									
MON	24	54,360.6	126.6	77.00	0.00	5,609.9	4.2	P 1.5	10	261 / 3:30
TUE	25									
WED	26									
THU	27	54,504.1	143.5	76.00	1.00	5,615.3	5.4	C 1.6	9	270 / 11:15
FRI	28									
SAT	29									
SUN	30									
MON	1									
		TOTAL FLOW	1,403.6		6.50		53.2		88	

LAKE ELMO WELL # 1

JUL 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	27	54,504.1	143.5	76.00	1.00	5,615.3	5.4	C 1.6	9	270 / 11:15
MON	1	54,736.6	232.5	74.50	1.50	5,624.1	8.8	LE 1.3	14	284 / 8:45
TUE	2									
WED	3	54,900.9	164.3	73.50	1.00	5,630.4	6.3		10	294 / 2:20
THU	4									
FRI	5									
SAT	6									
SUN	7									
MON	8	55,289.0	388.1	71.00	2.50	5,645.3	14.9	C 1.4	23	317 / 8:40
TUE	9	55,410.8	121.8	70.50	0.50	5,650.0	4.7		6	323 /9:00
WED	10									
THU	11									
FRI	12	55,652.7	241.9	69.00	1.50	5,659.3	9.3	P 1.5	14	337 / 8:45
SAT	13									
SUN	14									
MON	15	55,916.0	263.3	67.00	2.00	5,669.4	10.1	C 1.5	15	352 / 10:00
TUE	16	56,031.0	115.0	66.50	0.50	5,673.8	4.4	B 1.6	6	358 / 9:15
WED	17	56,210.0	179.0	65.50	1.00	5,680.8	7.0		9	367 / 3:30
THU	18	56,314.8	104.8	65.00	0.50	5,684.8	4.0	LE 1.4	5	372 / 10:00
FRI	19	56,452.0	137.2	64.00	1.00	5,690.2	5.4	P 1.2	7	379 / 9:30
SAT	20									
SUN	21									
MON	22	56,785.0	333.0	63.00	1.00	5,703.1	12.9		17	396 / 9:00
TUE	23									
WED	24	57,019.6	234.6	62.00	1.00	5,712.2	9.1	F 1.0	12	408 / 8:45
THU	25	57,150.9	131.3	62.00	0.00	5,717.3	5.1		7	415 / 2:30
FRI	26									
SAT	27									
SUN	28									
MON	29	57,484.0	333.1	61.00	1.00	5,730.2	12.9	LE 1.1	18	433 / 10:45
TUE	30	57,599.9	115.9	60.00	1.00	5,734.7	4.5	P 0.8	6	439 / 10:00
WED	31	57,679.0	79.1	60.00	0.00	5,737.8	3.1	G 0.9	5	444 / 10:20
		TOTAL FLOW	3,174.9		16.00		122.5		174	

LAKE ELMO WELL # 1

AUG 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	57,679.0	79.1	60.00	0.00	5,737.8	3.1	G 0.9	5	444 / 10:20
THU	1	57,813.0	134.0	60.00	0.00	5,743.1	5.3	C 0.5	7	451 / 2:15
FRI	2	57,914.6	101.6	60.00	0.00	5,747.1	4.0	B 0.5	5	456 / 7:50
SAT	3									
SUN	4									
MON	5	58,316.5	401.9	59.50	0.50	5,762.8	15.7	C 0.6	20	476 / 1:45
TUE	6	58,367.8	51.3	59.00	0.50	5,764.8	2.0	P 0.6	3	479 / 8:40
WED	7	58,437.2	69.4	59.00	0.00	5,767.5	2.7	LE 0.6	4	483 / 8:20
THU	8	58,545.4	108.2	58.50	0.50	5,771.7	4.2	B 0.6	6	489 / 10:00
FRI	9									
SAT	10									
SUN	11									
MON	12	58,971.7	426.3	54.5/100	4.00	5,788.3	16.6	P 1.7	22	511 / 7:40
TUE	13	59,135.0	163.3	99.50	0.50	5,794.7	6.4	LE 1.4	8	519 / 1:40
WED	14	59,256.5	121.5	99.00	0.50	5,799.5	4.8	C 1.7	6	525 / 10:10
THU	15									
FRI	16									
SAT	17									
SUN	18									
MON	19	59,989.6	733.1	97.50	1.50	5,828.3	28.8	G 0.4	29	559
TUE	20	60,133.5	143.9	97.00	0.50	5,834.0	5.7	F 0.3	6	565
WED	21	60,262.5	129.0	96.50	0.50	5,839.3	5.3	C 0.4	6	571
THU	22									
FRI	23									
SAT	24									
SUN	25									
MON	26	61,028.7	766.2	96.50	0.00	5,869.6	30.3		36	607 / 8:30
TUE	27	61,228.2	199.5	96.00	0.50	5,877.6	8.0	F 0.5	8	615 / 9:30
WED	28	61,384.5	156.3	95.50	0.50	5,883.8	6.2	P 1.1	7	622 / 8:30
THU	29	61,530.5	146.0	94.50	1.00	5,889.6	5.8	C 1.0	7	629 / 8:00
FRI	30	61,670.0	139.5	94.00	0.50	5,895.2	5.6	LE 1.1	7	636 / 8:30
SAT	31									
		TOTAL FLOW	3,991.0		11.50		157.4		187	

LAKE ELMO WELL # 1

SEP 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	61,670.0	139.5	94.00	0.50	5,895.2	5.6	LE 1.1	7	636 / 8:30
SUN	1									
MON	2									
TUE	3	62,267.6	597.6	92.00	2.00	5,919.0	23.8	F 0.7	28	664 / 3:00
WED	4	62,362.4	94.8	92.00	0.00	5,922.8	3.8	C 0.7	5	669 / 9:00
THU	5	62,509.0	146.6	91.00	1.00	5,928.7	5.9	B 0.5	6	675 / 9:30
FRI	6	62,666.0	157.0	90.00	1.00	5,934.9	6.2	LE 1.6	7	682 / 9:30
SAT	7									
SUN	8									
MON	9	63,154.8	488.8	86.00	4.00	5,954.7	19.8	P 1.6	22	704 / 9:45
TUE	10	63,328.9	174.1	85.00	1.00	5,961.6	6.9	P 0.7	8	712 / 1:30
WED	11	63,445.0	116.1	85.00	0.00	5,966.3	4.7	P 0.9	5	717 / 11:00
THU	12	63,581.7	136.7	84.50	0.50	5,971.7	5.4	C 0.9	6	723 / 9:00
FRI	13	63,712.2	130.5	84.00	0.50	5,977.0	5.3	LE 1.2	6	729 / 8:45
SAT	14									
SUN	15									
MON	16	64,062.1	349.9	83.00	1.00	5,990.9	13.9	F 0.8	18	747
TUE	17	64,180.0	117.9	83.00	0.00	5,995.6	4.7	C 0.8	5	752
WED	18	64,256.1	76.1	83.00	0.00	5,998.7	3.1	F 0.7	4	756 / 9:35
THU	19	64,325.4	69.3	82.50	0.50	6,001.4	2.7	B 0.8	4	760 / 1:30
FRI	20									
SAT	21									
SUN	22									
MON	23	64,628.3	302.9	80.00	2.50	6,013.3	11.9	F 1.6	17	777 / 1:30
TUE	24	64,705.9	77.6	79.50	0.50	6,016.4	3.1	P 1.6	4	781 / 9:15
WED	25	64,786.2	80.3	79.00	0.50	6,019.6	3.2	LE 1.8	5	786 / 9:40
THU	26	64,920.4	134.2	78.00	1.00	6,024.9	5.3	C 1.5	9	793 / 2:30
FRI	27	64,975.0	54.6	78.00	0.00	6,027.1	2.2	B 1.5	3	796 / 10:15
SAT	28									
SUN	29									
MON	30	65,189.0	214.0	76.00	2.00	6,035.5	8.4	P 1.6	12	808 / 9:00
TUE	1									
		TOTAL FLOW	3,519.0		18.00		140.3		174	

LAKE ELMO WELL # 1

OCT 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	65,189.0	214.0	76.00	2.00	6,035.5	8.4	P 1.6	12	808 / 9:00
TUE	1	65,269.4	80.4	75.50	0.50	6,038.6	3.1	C 1.6	5	813 / 8:10
WED	2	65,351.5	82.1	75.00	0.50	6,041.9	3.3	LE 1.5	4	817 / 9:40
THU	3									
FRI	4	65,488.5	137.0	74.00	1.00	6,047.3	5.4		8	825 / 12:15
SAT	5									
SUN	6									
MON	7	65,642.0	153.5	74.00	0.00	6,053.4	6.1	F 1.0	9	834 / 9:30
TUE	8	65,710.0	68.0	74.00	0.00	6,056.1	2.7	B 1.0	4	10:30 / 10:30
WED	9	65,762.8	52.8	73.50	0.50	6,058.1	2.0	P 1.3	3	841 / 10:00
THU	10	65,829.9	67.1	73.00	0.50	6,060.7	2.6	LE 1.4	4	845 / 9:15
FRI	11	65,897.3	67.4	72.50	0.50	6,063.3	2.6	F 1.6	4	849 / 8:20
SAT	12									
SUN	13									
MON	14	66,084.0	186.7	71.50	1.00	6,070.6	7.3	B 1.5	11	860 / 10:00
TUE	15									
WED	16	66,237.0	153.0	71.00	0.50	6,076.6	6.0	C 1.2	8	868 / 9:30
THU	17	66,474.0	237.0	69.50	1.50	6,085.9	9.3	F 1.5	1	869 / 11:00
FRI	18	66,536.0	62.0	69.00	0.50	6,088.4	2.5		4	873 / 10:30
SAT	19									
SUN	20									
MON	21	66,675.2	139.2	69.00	0.00	6,093.8	5.4	F 1.1	8	881 / 8:45
TUE	22	66,777.2	102.0	68.50	0.50	6,095.8	2.0	P 1.0	3	884 / 9:30
WED	23	66,780.0	2.8	68.00	0.50	6,097.8	2.0	C 1.2	3	887 / 9:40
THU	24	66,851.5	71.5	68.00	0.00	6,100.6	2.8	LE 1.1	5	892 / 8:40
FRI	25									
SAT	26									
SUN	27									
MON	28	67,052.5	201.0	67.50	0.50	6,108.4	7.8	C 1.0	12	904 / 9:00
TUE	29	67,101.4	48.9	67.00	0.50	6,110.3	1.9		3	907 / 9:00
WED	30									
THU	31									
		TOTAL FLOW	1,912.4		9.00		74.8		99	

LAKE ELMO WELL # 1

NOV 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	67,101.4	48.9	67.00	0.50	6,110.3	1.9	P 1.6	3	907 / 9:00
FRI	1									
SAT	2									
SUN	3									
MON	4	67,434.1	332.7	67.00	0.00	6,123.2	12.9		20	927 / 9:30
TUE	5	67,497.1	63.0	67.00	0.00	6,125.6	2.4	F 0.4	4	931 / 10:15
WED	6	67,548.5	51.4	67.00	0.00	6,127.6	2.0	C 0.5	3	934 / 10:45
THU	7									
FRI	8									
SAT	9									
SUN	10									
MON	11									
TUE	12	67,881.7	333.2	64.00	3.00	6,140.5	12.9	LE 1.5	20	954 / 10:10
WED	13	67,933.0	51.3	100.00	0.00	6,142.4	1.9	P 1.7	3	961 / 10:45
THU	14	68,002.3	69.3	99.50	0.50	6,145.1	2.7	C 1.8	4	961 / 11:10
FRI	15									
SAT	16									
SUN	17									
MON	18									
TUE	19	68,275.2	272.9	98.00	1.50	6,155.7	10.6	C 1.6	16	977 / 9:00
WED	20	68,332.6	57.4	97.50	0.50	6,157.9	2.2	LE 1.6	4	981 / 9:00
THU	21	68,408.0	75.4	97.00	0.50	6,160.8	2.9	B 1.5	4	985 / 8:30
FRI	22	68,470.0	62.0	96.50	0.50	6,163.2	2.4	P 1.5	4	989 / 8:00
SAT	23									
SUN	24									
MON	25	68,635.2	165.2	95.00	1.50	6,169.6	6.4	G 1.5	10	999 / 10:230
TUE	26	68,718.1	82.9	94.50	0.50	6,172.7	3.1	F 1.5	5	13004 / 1:30
WED	27	68,756.1	38.0	94.00	0.50	6,174.2	1.5	C 1.6	3	007 / 8:00
THU	28									
FRI	29									
SAT	30									
SUN	1									
		TOTAL FLOW	1,654.7		9.00		63.9		100	

LAKE ELMO WELL # 1

DEC 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	27	68,756.1	38.0	94.00	0.50	6,174.2	1.5	C 1.6	3	007 / 8:00
SUN	1									
MON	2	69,010.7	254.6	93.00	1.00	6,184.0	9.8	F 1.1	15	022 / 10:45
TUE	3	69,057.9	47.2	93.00	0.00	6,185.8	1.8	C 1.1	3	025 / 8:15
WED	4									
THU	5	69,194.3	136.4	92.50	0.50	6,191.0	5.2		9	034 / 11:45
FRI	6	69,254.3	60.0	92.50	0.00	6,193.2	2.2	B 1.1	2	036 / 6:25
SAT	7									
SUN	8									
MON	9	69,450.6	196.3	91.50	1.00	6,200.7	7.5	P 0.9	11	047 / 11:10
TUE	10	69,509.9	59.3	91.00	0.50	6,202.9	2.2	F 1.0	3	050 / 10:15
WED	11	69,563.2	53.3	91.00	0.00	6,204.9	2.0	C 0.8	3	053 / 9:30
THU	12	69,615.8	52.6	91.00	0.00	6,206.9	2.0	P 1.0	3	056 / 10:30
FRI	13	69,670.2	54.4	91.00	0.00	6,209.0	2.1	LE 1.0	3	059 / 9:20
SAT	14									
SUN	15									
MON	16	69,844.0	173.8	90.50	0.50	6,215.6	6.6	C 0.9	10	69 / 9:15
TUE	17	69,892.1	48.1	90.00	0.50	6,217.4	1.8		3	072 / 9:45
WED	18	69,939.5	47.4	90.00	0.00	6,219.2	1.8	F 0.7	3	075 / 8:45
THU	19	70,044.0	104.5	89.50	0.50	6,223.1	3.9		6	081 / 8:45
FRI	20									
SAT	21									
SUN	22									
MON	23	70,266.4	222.4	88.50	1.00	6,231.6	8.5	LE 1.3	12	093 / 1:40
TUE	24									
WED	25									
THU	26	70,381.5	115.1	87.00	1.50	6,235.9	4.3	F 1.4	6	099 / 9:00
FRI	27									
SAT	28									
SUN	29									
MON	30	70,597.6	216.1	86.50	0.50	6,244.1	8.2	P 1.5	11	110 / 8:30
TUE	31	70,653.9	56.3	86.00	0.50	6,246.2	2.1	C 1.4	3	113 / 9:15
		TOTAL FLOW	1,897.8		8.00		72.0		106	

WELL #1 FLOW

JAN	2013	1664.9	
FEB	2013	1280.5	
MAR	2013	1312.3	4257.7
APR	2013	1499.8	
MAY	2013	1618.7	
JUN	2013	1403.6	4522.1
JUL	2013	3174.9	
AUG	2013	3991	
SEP	2013	3519	10684.9
OCT	2013	1912.4	
NOV	2013	1654.7	
DEC	2013	1897.8	5464.9
		24929.6	24929.6

TOTAL GALLONS	2,492,960

LAKE ELMO WELL # 2

JAN 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	728,668	1,420	72.0	7.0	13,749.5	34.7	P 1.3	13	4529 /9:00	1.8	150.0	
TUE	1												
WED	2	729,434	766	69.0	3.0	13,768.9	19.4	TOW 1.3	8	4537 / 9:20	1.6	146.1	TOW 0.5
THU	3												
FRI	4	730,226	792	65	4.0	13,788.8	19.9	P 1.4	7	4544 / 10:30	0.0	142.0	P 0.0
SAT	5												
SUN	6												
MON	7	731,350	1,124	61.0	4.0	13,817.1	28.3	v 1.2	11	4555 / 10:00	0.0	136.5	v 0.3
TUE	8	731,722	372	59.0	2.0	13,826.4	9.3		3	4558 / 9:10		134.5	
WED	9	732,084	362	58.0	1.0	13,835.6	9.2	F 1.4	4	4562 / 9:20		132.6	F 0.3
THU	10	732,466	382	56.0	2.0	13,845.3	9.7	TOW 1.4	3	4565 / 9:50		130.6	TOW 0.3
FRI	11	732,824	358	54.0	2.0	13,854.5	9.2	P 1.3	4	4569 / 10:15		128.8	P 0.0
SAT	12												
SUN	13												
MON	14	733,994	1,170	50.0	4.0	13,883.7	29.2	W 1.4	11	4580 / 9:40		123.1	W 0.1
TUE	15	734,383	389	48.0	2.0	13,893.5	9.8	FFE 1.3	3	4583 / 8:50		121.2	FFE 0.3
WED	16	734,725	342	46.0	2.0	13,902.0	8.5		4	4587 / 8:20		121.1	
THU	17	735,137	412	45.0	1.0	13,912.4	10.4	V 1.3	4	4591 / 9:00		119.6	V 0.3
FRI	18	735,444	307	44.0	1.0	13,920.2	7.8	W 1.2	4	**4598 / 8:40**		**119.0**	W 0.8
SAT	19												
SUN	20												
MON	21												
TUE	22	735,961	517	41.0	3.0	13,933.2	13.0	FFE 1.3	11	4606 / 7:00		116.6	FFE 0.3
WED	23	736,227	266	40.0	1.0	13,939.8	6.6	TOW 1.6	3	4609 / 3:15		115.2	TOW 0.3
THU	24	736,292	65	40.0	0.0	13,941.5	1.7	P 1.4	1	4610 / 8:15		115.2	P 0.1
FRI	25	736,433	141	39.0	1.0	13,945.1	3.6	W 1.3	3	4613 / 9:30		113.3	W 0.9
SAT	26												
SUN	27												
MON	28												
TUE	29	736,994	561	37.0	2.0	13,959.3	14.2	V 1.3	8	4621 / 11:40		110.2	V 0.3
WED	30	737,129	135	37.0	0.0	13,962.7	3.4	TOW 1.3	2	4623 / 9:50		109.6	TOW 0.3
THU	31	737,264	135	36.0	1.0	13,966.2	3.5	W 1.2	2	4625 / 10:45	0.0	108.8	W 0.5
		TOTAL FLOW	8,596		36.0		216.7		96		1.8	41.2	

LAKE ELMO WELL # 2

FEB 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	737,264	135	36.0	1.0	13,966.2	3.5	W 1.2	2	4625 / 10:45	0.0	108.8	W 0.5
FRI	1												
SAT	2												
SUN	3												
MON	4	737,894	630	33	3.0	13,982.0	15.8	P 1.4	9	4634 / 2:15	0.0	105.1	P 0.0
TUE	5	737,974	80	33.0	0.0	13,984.1	2.1	V 1.3	2	4636 / 11:00		104.7	V 0.5
WED	6	738,094	120	32.0	1.0	13,987.0	2.9	F 1.3	3	4639 / 8:20		104.0	F 0.7
THU	7	738,396	302	31.0	1.0	13,994.0	7.0	W 1.4	3	4642 / 10:45		102.3	W 0.9
FRI	8	738,396	0	31.0	0.0	13,994.0	0.0	FFE 1.3	0	4642 / 8:45		102.3	FFE 0.3
SAT	9												
SUN	10												
MON	11	738,855	459	29.0	2.0	14,004.4	10.4		7	4649 / 12:30		99.9	
TUE	12	738,972	117	29.0	0.0	14,007.0	2.6	P 1.2	2	4651 / 9:10		99.4	P 0.3
WED	13	739,081	109	28.0	1.0	14,009.9	2.9	V 1.3	3	4654 / 9:35		98.7	V 0.5
THU	14	739,284	203	28.0	0.0	14,014.9	5.0		3	4657 / 2:30		97.6	
FRI	15	739,350	66	27.0	1.0	14,016.6	1.7	FFE 1.2	1	4658 / 9:45		97.2	FFE 0.5
SAT	16												
SUN	17												
MON	18												
TUE	19	739,902	552	25.0	2.0	14,030.2	13.6	W 1.4	8	4666 / 10:00		94.1	W 0.8
WED	20	740,030	128	24.0	1.0	14,033.5	3.3	F 1.3	2	4668 / 8:30		93.4	F 0.5
THU	21	740,169	139	24.0	0.0	14,036.8	3.3	TOW 1.6	3	4671 / 9:50		92.5	TOW 0.5
FRI	22												
SAT	23												
SUN	24												
MON	25	740,801	632	21.0	3.0	14,052.3	15.5	P 1.3	9	4680 / 10:55		88.9	P 0.3
TUE	26	740,882	81	20.0	1.0	14,054.4	2.1	V 1.3	1	4681 / 10:00	150.0	88.9	V 0.5
WED	27	741,010	128	99.0	1.0	14,057.7	3.3	FFE 1.3	2	4683 / 10:30		88.4	FFE 0.5
THU	28	741,151	141	99.0	0.0	14,061.0	3.3	W 1.1	2	4685 / 10:00		87.6	W 0.4
FRI	1												
SAT	2												
SUN	3												
		TOTAL FLOW	3,887		17.0		94.8		60		0.0	21.2	

LAKE ELMO WELL # 2

MAR 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	741,151	141	99.0	0.0	14,061.0	3.3	W 1.1	2	4685 / 10:00	150.0	87.6	W 0.4
FRI	1	741,285	134	98	1.0	14,064.3	3.3	F 1.2	2	4687 / 8:50		86.9	F 0.3
SAT	2												
SUN	3												
MON	4	741,699	414	97	1.0	14,074.6	10.3	TOW 1.5	6	4693 / 8:45	150.0	84.5	TOW 0.3
TUE	5												
WED	6	741,976	277	95.0	2.0	14,081.0	6.4	FFE 1.4	4	4697 / 9:00		83.0	FFE 0.5
THU	7	742,112	136	95.0	0.0	14,084.7	3.7	V 1.1	2	4699 / 10:30		82.2	V 0.3
FRI	8	742,247	135	94.0	1.0	14,088.1	3.4		2	4701 / 10:10		81.4	
SAT	9												
SUN	10												
MON	11	742,660	413	92.0	2.0	14,098.3	10.2	W 1.5	6	4707 / 9:00		79.1	W 0.9
TUE	12	742,804	144	92.0	0.0	14,101.8	3.5	P 1.3	2	4709 / 9:00		78.3	P 0.0
WED	13	742,923	119	91.0	1.0	14,104.8	3.0	TOW 1.5	2	4711 / 9:55		77.7	TOW 0.5
THU	14	743,088	165	90.0	1.0	14,108.9	4.1		2	4713 / 2:00		76.6	
FRI	15												
SAT	16												
SUN	17												
MON	18												
TUE	19	743,711	623	87.0	3.0	14,124.0	15.1	V 1.3	9	4722 / 11:05	150.0	73.2	V 0.3
WED	20	743,848	137	87.0	0.0	14,127.6	3.6	F 1.2	2	4724 / 8:55		72.5	F 0.3
THU	21	744,031	183	86.0	1.0	14,132.1	4.5	W 1.1	3	4727 / 11:45		71.4	W 0.8
FRI	22	744,120	89	85.0	1.0	14,134.3	2.2	P 1.5	1	4728 / 9:15		70.9	P 0.0
SAT	23												
SUN	24												
MON	25	744,548	428	84.0	1.0	14,144.8	10.5	TOW 1.3	6	4734 / 9:00	150.0	68.6	TOW 0.3
TUE	26	744,688	140	83.0	1.0	14,148.3	3.5	FFE 1.3	2	4736 / 9:10		67.8	FFE 0.5
WED	27	744,823	135	83.0	0.0	14,151.6	3.3	V 1.3	2	4738 / 9:40	150.0	67.0	V 0.5
THU	28	744,957	134	82.0	1.0	14,155.0	3.4	F 1.5	2	4740 / 10:00		66.2	F 0.0
FRI	29	745,092	135	82.0	0.0	14,158.3	3.3	TOW 1.4	2	4742 / 9:15	150.0	65.5	TOW 0.3
SAT	30												
SUN	31												
		TOTAL FLOW	3,941		17.0		97.3		57		0.0	22.1	

LAKE ELMO WELL # 2

APR 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	29	745,092	135	82.0	0.0	14,158.3	3.3	TOW 1.4	2	4742 / 9:15	150.0	65.5	TOW 0.3
MON	1	745,544	452	80	2.0	14,169.4	11.1	W 1.0	7	4749 / 11:00	150.0	63.0	W 0.6
TUE	2	745,677	133	79.0	1.0	14,172.7	3.3	V 1.2	1	4750 / 10:00		62.2	V 0.5
WED	3	745,816	139	78.0	1.0	14,176.2	3.5	FFE 1.2	2	4752 / 9:00		61.3	FFE 0.5
THU	4	745,955	139	78	0.0	14,179.6	3.4	P 1.5	2	4754 / 11:00		60.4	P 0.1
FRI	5	746,095	140	77.0	1.0	14,183.0	3.4	F 1.3	2	4756 / 10:00		59.6	F 0.3
SAT	6												
SUN	7												
MON	8	746,527	432	76.0	1.0	14,193.7	10.7	W 1.2	6	4762 / 2:00		56.9	W 0.9
TUE	9	746,684	157	75.0	1.0	14,197.6	3.9	FFE 1.2	2	4764 / 10:45		56.0	FFE 0.5
WED	10	746,919	235	74.0	1.0	14,203.5	5.9	V 1.2	1	4765 / 9:40		54.5	V 0.5
THU	11	747,300	381	73.0	1.0	14,213.4	9.9		2	4767 / 3:10		52.0	
FRI	12												
SAT	13												
SUN	14												
MON	15	747,882	582	70.0	3.0	14,228.9	15.5	FFE 1.1	3	4770 / 9:10		48.3	FFE 0.5
TUE	16	747,923	41	70.0	0.0	14,230.0	1.1	P 1.3	0	4770 / 3:15		48.1	P 0.0
WED	17	748,272	349	69.0	1.0	14,239.3	9.3	TOW 1.2	2	4772 / 10:00		45.7	TOW 0.3
THU	18	748,272	0	69.0	0.0	14,239.3	0.0	F 1.2	0	4772 / 8:30	150.0	45.8	F 0.3
FRI	19												
SAT	20												
SUN	21												
MON	22	748,924	652	65.0	4.0	14,257.0	17.7	W 1.4	4	4776 / 2:20	150.0	41.4	W 1.3
TUE	23	749,083	159	65.0	0.0	14,261.2	4.2	P 1.5	2	4778 / 11:40		40.4	P 0.2
WED	24												
THU	25	749,368	285	64.0	1.0	14,269.1	7.9	P 1.2	2	4780 / 2:30		38.4	P 0.1
FRI	26	749,509	141	64.0	0.0	14,273.0	3.9	FFE 1.0	1	4781 / 8:45		37.5	FFE 0.5
SAT	27												
SUN	28												
MON	29	749,997	488	62.0	2.0	14,286.1	13.1	P 1.1	4	4785 / 9:50		34.2	P .1
TUE	30	750,157	160	62.0	0.0	14,290.3	4.2	V 1.0	1	4186 / 3:10	150.0	33.1	V 0.5
WED	1												
		TOTAL FLOW	5,065		20.0		132.0		44		0.0	32.4	

LAKE ELMO WELL # 2

MAY 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	750,157	160	62.0	0.0	14,290.3	4.2	V 1.0	1	4186 / 3:10	150.0	33.1	V 0.5
WED	1	750,319	162	61	1.0	14,294.7	4.4		2	4788 / 8:00	150.0	32.1	
THU	2	750,319	0	61.0	0.0	14,294.7	0.0	V 1.0	0	4788 / 10:00		32.1	V 0.6
FRI	3	750,328	9	61.0	0.0	14,295.0	0.3		1	4789 / 12:00	150.0	32.1	
SAT	4												
SUN	5												
MON	6	750,907	579	58.5	2.5	14,304.1	9.1	V 1.0	3	4792 / 8:00		29.4	V 1.1
TUE	7	751,270	363	57.0	1.5	14,311.7	7.6	W 1.2	3	4795 / 2:40		27.5	W 1.2
WED	8	751,498	228	57.0	0.0	14,316.6	4.9	W 1.1	4	4799 / 11:00		27.3	W 0.8
THU	9	751,543	45	57.0	0.0	14,317.9	1.3	V 1.0	2	4801 / 10:15		27.2	V 0.3
FRI	10	751,700	157	56.0	1.0	14,322.0	4.1	TOW 1.0	1	4802 / 9:45		26.6	TOW 0.5
SAT	11												
SUN	12												
MON	13	752,240	540	54.0	2.0	14,335.9	13.9	F 1.0	3	4805 / 10:20		25.4	F 0.3
TUE	14	752,500	260	53.0	1.0	14,342.9	7.0	P 1.1	2	4807 / 3:00		24.4	P 0.3
WED	15	752,755	255	52.0	1.0	14,349.3	6.4	FFE 1.2	1	4808 / 2:45		23.4	FFE 0.3
THU	16	753,112	357	50.0	2.0	14,353.6	4.3	V 1.1	3	4811 / 3:00		22.3	V 0.3
FRI	17	753,302	190	49.0	1.0	14,363.4	9.8	TOW 1.1	1	4812 / 9:10		21.6	TOW 0.5
SAT	18												
SUN	19												
MON	20	753,801	499	47.0	2.0	14,376.5	13.1	W 1.0	3	4815 / 9:20	150.0	19.9	W 0.5
TUE	21	753,964	163	47.0	0.0	14,380.8	4.3	F 1.1	2	4817 / 9:00		19.3	F 0.5
WED	22	754,223	259	46.0	1.0	14,387.5	6.7	TOW 1.1	2	4819 / 10:00		18.3	TOW 0.5
THU	23	754,382	159	45.0	1.0	14,391.7	4.2	P 1.1	1	4820 / 8:45		17.8	P 0.0
FRI	24												
SAT	25												
SUN	26												
MON	27												
TUE	28	755,438	1,056	41.0	4.0	14,419.0	27.3	W 1.4	6	4826 / 9:30		14.7	W 1.0
WED	29	755,660	222	40.0	1.0	14,424.8	5.8	F 1.1	1	4827 / 10:00		13.9	F 0.3
THU	30	755,844	184	39.0	1.0	14,429.6	4.8	TOW 1.1	1	4828 / 11:20		13.4	TOW 0.3
FRI	31	755,987	143	39.0	0.0	14,433.2	3.6	P 1.1	1	4829 / 9:30	150.0	12.8	p 0.0
		TOTAL FLOW	5,830		23.0		142.9		43			20.3	

LAKE ELMO WELL # 2

JUN 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	755,987	143	39.0	0.0	14,433.2	3.6	P 1.1	1	4829 / 9:30	150.0	12.8	P 0.0
SAT	1												
SUN	2												
MON	3	756,603	616	36.0	3.0	14,449.1	15.9			4833 / 9:00		10.8	
TUE	4	756,851	248	35	1.0	14,461.4	12.3	W 1.2	2	4835 / 10:40		9.3	W 0.5
WED	5	757,033	182	34.0	1.0	14,466.0	4.6	V 1.3	1	4836 / 9:00		8.7	V 0.3
THU	6												
FRI	7												
SAT	8												
SUN	9												
MON	10	758,021	988	30.0	4.0	14,491.7	25.7	FFE 1.1	6	4842 / 3:00		5.2	FFE 0.3
TUE	11	758,201	180	29.0	1.0	14,496.3	4.6	W 1.1	1	4843 / 3:10	149.6	4.6	W 0.5
WED	12	758,360	159	29.0	0.0	14,500.5	4.2	F 1.2	1	4844 / 10:00		4.1	F 0.3
THU	13	758,543	183	28.0	1.0	14,505.2	4.7	V 1.1	1	4845 / 3:00		3.4	V 0.5
FRI	14	758,710	167	28.0	0.0	14,509.6	4.4	P 1.2	1	4846 / 9:00		2.8	P 0.1
SAT	15												
SUN	16												
MON	17	759,359	649	25.0	3.0	14,526.4	16.8	V 1.1	4	4850 / 11:20	147.9	2.3	V 0.3
TUE	18	759,560	201	24.0	1.0	14,531.5	5.1	FFE 1.3	1	**4851 / 8:40**	**147.2**	**0.0**	FFE 0.1
WED	19	759,747	187	24.0	0.0	14,536.3	4.8	W 1.4	1	**4852 / 9:30**	147.0		W 0.7
THU	20	760,151	404	22.0	2.0	14,546.3	10.0	TOW 1.2	2	4854 / 10:20	145.3		TOW 0.4
FRI	21	760,349	198	21.0	1.0	14,551.2	4.9		1	4855 / 8:00	144.5		
SAT	22												
SUN	23												
MON	24	761,053	704	18 / 32	3.0	14,569.9	18.7	TOW 1.1	3	4858 / 3:00	141.6		TOW 0.3
TUE	25												
WED	26												
THU	27	761,726	673	29.0	3.0	14,589.4	19.5	P 1.2	4	4862 / 2:40	138.9		
FRI	28												
SAT	29												
SUN	30												
MON	1												
		TOTAL FLOW	5,739		24.0		156.2		29		11.1	12.8	

LAKE ELMO WELL # 2

JUL 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	27	761,726	673	29.0	3.0	14,589.4	19.5	P 1.2	4	4862 / 2:40	138.9	150.0	
MON	1	762,617	891	26	3.0	14,610.4	21.0	W 1.0	7	4869 / 10:10	135.7		W 0.7
TUE	2												
WED	3	763,228	611	23 /100	3.0	14,626.1	15.7		4	4873 / 10:00	133.4		
THU	4												
FRI	5												
SAT	6												
SUN	7												
MON	8	766,042	2,814	88.0	12.0	14,693.9	67.8	W 1.1	8	4881 / 10:00	122.7		W 0.4
TUE	9	766,700	658	85.0	3.0	14,710.3	16.4		2	4883 / 2:40	119.7		
WED	10												
THU	11												
FRI	12	768,209	1,509	79.0	6.0	14,746.1	35.8	W 1.2	4	4887 / 9:15	113.2	150.0	W 0.5
SAT	13												
SUN	14												
MON	15	769,620	1,411	73.0	6.0	14,779.9	33.8	V 1.1	5	4892 / 9:20	105.6		V 0.9
TUE	16	770,373	753	70.0	3.0	14,797.4	17.5	P 1.1	1	4893 / 8:40	100.9		P 0.0
WED	17	771,337	964	66.0	4.0	14,820.0	22.6		1	4894 / 2:30	95.8		
THU	18	771,988	651	63.0	3.0	14,834.7	14.7	FFE 1.0	1	**4895 / 10:40**	**92.5**		FFE 0.3
FRI	19	772,720	732	60.0	3.0	14,851.8	17.1	F 1.2	1	**4896 / 9:50**	88.8		F 0.0
SAT	20												
SUN	21												
MON	22	774,684	1,964	51.0	9.0	14,897.8	46.0	W 1.1	5	4901 / 8:30	78.8		W 1.1
TUE	23												
WED	24	776,233	1,549	45.0	6.0	14,933.0	35.2	F 1.2	2	4903 / 9:20	70.5		F 0.5
THU	25	777,047	814	41.0	4.0	14,952.2	19.2		2	4905 / 2:15	65.9		
FRI	26												
SAT	27												
SUN	28												
MON	29	779,255	2,208	33.0	8.0	15,002.8	50.6	W 1.0	5	4910 / 10:15	53.9		W 0.5
TUE	30	780,057	802	29.0	4.0	15,021.6	18.8	P 1.1	1	4911 / 11:30	49.4		P 0.0
WED	31	780,397	340	28.0	1.0	15,029.8	8.2	V 1.1	3	4914 / 9:50	47.5	148.8	V 0.5
		TOTAL FLOW	18,671		78.0		440.4		52		91.4	1.2	

LAKE ELMO WELL # 2

AUG 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	780,397	340	28.0	1.0	15,029.8	8.2	V 1.1	3	4914 / 9:50	47.5	148.8	V 0.5
THU	1	781,102	705	25	3.0	15,046.4	16.6	W 1.1	1	4915 / 10:00	43.5		W 0.5
FRI	2	781,823	721	22.0	3.0	15,062.5	16.1	TOW 1.2	1	4916 / 8:30	39.7		TOW 0.5
SAT	3												
SUN	4												
MON	5	784,127	2,304	13.0	9.0	15,116.1	53.6	F 1.1	4	4920 / 2:40	27.0		F 0.5
TUE	6	784,508	381	11.0	2.0	15,125.1	9.0	P 1.2	2	4922 / 9:40	24.9	148.1	P 0.1
WED	7	785,000	492	24.0	2.0	15,136.9	11.8	FFE 1.0	1	4923 / 10:00	22.0	148.1	FFE 0.3
THU	8	785,447	447	22.0	2.0	15,147.3	10.4	F 1.1	2	4925 / 10:40	19.6		F 0.1
FRI	9												
SAT	10												
SUN	11			13.0									
MON	12	787,957	2,510	100.0	9.0	15,206.3	59.0	V 1.0	6	4931 / 8:00	5.6	147.7	V 1.0
TUE	13	788,821	864	97.0	3.0	15,226.3	20.0	W 1.2	2	4933 / 2:15	1.8	146.1	W 0.7
WED	14	789,457	636	94.0	3.0	15,240.9	14.6	TOW 1.2	1	4934 / 9:45	1.8	143.3	TOW 0.3
THU	15												
FRI	16												
SAT	17												
SUN	18												
MON	19	793,517	4,060	77.0	17.0	15,333.2	92.3	P 1.1	6	**4940 / 9:20**		126.5	P 0.0
TUE	20	794,548	1,031	74.0	3.0	15,355.4	22.2	F 1.0	1	4941 / 11:25		119.5	P 0.0
WED	21	795,253	705	71.0	3.0	15,370.5	15.1	P 0.6	2	4943 / 8:30		115.9	
THU	22												
FRI	23												
SAT	24												
SUN	25												
MON	26	799,914	4,661	52.0	19.0	15,468.8	98.3	F 0.7	6	4949 / 9:20		89.6	F 0.3
TUE	27	800,826	912	48.0	4.0	15,487.9	19.1	V 0.9	1	4950 / 8:45		83.8	V 1.0
WED	28	801,921	1,095	43.0	5.0	15,511.0	23.1	P 1.1	1	4951 / 10 :00		77.3	W 0.7
THU	29	802,674	753	40.0	3.0	15,527.3	16.3	TOW 1.0	2	4953 / 9:45		72.8	TOW 0.3
FRI	30	803,565	891	36.0	4.0	15,546.0	18.7	FFE 1.1	1	4954 / 9:00	0.0	66.9	FFE 0.5
SAT	31												
		TOTAL FLOW	23,168		94.0		516.2		40		47.5	81.9	

LAKE ELMO WELL # 2

SEP 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	803,565	891	36.0	4.0	15,546.0	18.7	FFE 1.1	1	4954 / 9:00	0.0	66.9	FFE 0.5
SUN	1												
MON	2												
TUE	3	806,682	3,117	24.0	12.0	15,612.8	66.8	P 1.2	6	4960 / 8:30	0.0	48.7	P 0.3
WED	4	807,631	949	20	4.0	15,633.3	20.5	TOW 1.0	1	4961 / 9:30		42.2	TOW 1.0
THU	5	808,555	924	16.0	4.0	15,653.2	19.9	V 0.8	1	4962 / 8:50		36.8	V 1.0
FRI	6	809,337	782	13.0	3.0	15,669.7	16.5	W 0.9	2	4964 / 9:00		31.7	W 1.0
SAT	7												
SUN	8			28.0									
MON	9	812,060	2,723	19.0	9.0	15,727.7	58.0	FFE 1.1	3	4967 / 10:10	150.0	11.2	FFE 0.3
TUE	10	812,976	916	95.0	5.0	15,747.7	20.0	F 1.2	2	4969 / 1:50	150.0	7.6	F 0.3
WED	11	813,682	706	91.0	4.0	15,763.0	15.3	P 1.0	1	4970 / 11:50		3.4	P 0.3
THU	12	814,275	593	89.0	2.0	15,775.7	12.7	TOW 1.0	2	4972 / 9:50	149.3	2.1	TOW 0.5
FRI	13	815,000	725	86.0	3.0	15,791.6	15.9	FFE 1.0	2	4974 / 9:40	145.0	1.8	FFE 0.5
SAT	14												
SUN	15												
MON	16	816,464	1,464	80.5	5.5	15,823.9	32.3	V 1.0	5	4979 / 9:00	136.1	1.6	V 0.5
TUE	17	817,032	568	79.0	1.5	15,836.5	12.6	F 0.8	1	4980 / 1:45	132.5	0.0	F 0.0
WED	18	817,478	446	77.0	2.0	15,846.5	10.0	TOW 1.0	2	**4982 / 10:20**	**129.7**		TOW 0.5
THU	19	817,748	270	76.0	1.0	15,852.6	6.1	P 1.1	1	**4983 / 1:40**	128.1		P 0.3
FRI	20												
SAT	21												
SUN	22												
MON	23	819,132	1,384	71.0	5.0	15,883.8	31.2	F 0.8	6	4989 / 11:00	119.4		F 0.0
TUE	24	819,470	338	70.0	3.0	15,891.0	7.2	W 0.7	2	4991 / 10:00	117.3		W 1.0
WED	25	819,970	500	68.0	2.0	15,902.2	11.2	V 0.9	2	4993 / 10:45	114.1		V 1.0
THU	26	820,431	461	66.0	2.0	15,912.6	10.4	P 1.0	2	4995 / 2:00	111.3	0.0	P 0.3
FRI	27												
SAT	28												
SUN	29												
MON	30	821,693	1,262	62.0	4.0	15,941.1	28.5	FFE 0.9	6	5001 / 10:00	103.6	0.0	FFE 0.5
TUE	1												
		TOTAL FLOW	18,128		72.0		395.1		47		46.4	66.9	

LAKE ELMO WELL # 2

OCT 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	821,693	1,262	62.0	4.0	15,941.1	28.5	FFE 0.9	6	5001 / 10:00	103.6	0.0	FFE 0.5
TUE	1	822,015	322	60.5	1.5	15,948.0	6.9	P 1.0	3	5004 / 8:30	101.4		P 0.3
WED	2	822,853	838	58.0	2.5	15,964.9	16.9	W 1.1	1	5005 / 8:50	96.8		W 1.0
THU	3												
FRI	4	823,480	627	55	3.0	15,977.8	12.9		3	5008 / 12:35	93.0		
SAT	5												
SUN	6												
MON	7	824,162	682	53.0	2.0	15,992.9	15.1	W 0.9	4	5012 / 10:20	88.2		W 1.0
TUE	8	824,665	503	51.0	2.0	16,003.4	10.5	TOW 0.9	2	5014 / 2:30	85.0	0.0	TOW 1.0
WED	9	824,698	33	51.0	0.0	16,004.4	1.0	P 1.0	0	5014 / 10:40	84.8		P 0.0
THU	10	824,908	210	50.0	1.0	16,009.0	4.6	F 0.8	2	5016 / 8:40	83.4		F 0.3
FRI	11	825,139	231	50.0	0.0	16,014.1	5.1	FFE 0.8	1	5017 / 10:00	82.0		FFE 0.5
SAT	12												
SUN	13												
MON	14	825,861	722	47.0	3.0	16,029.8	15.7	W 1.0	4	5021 / 10:00	77.4		W 1.0
TUE	15												
WED	16	826,601	740	45.0	2.0	16,046.1	16.3	V 1.0	2	5023 / 10:15	73.0		V 1.0
THU	17	826,785	184	44.0	1.0	16,050.2	4.1	P 1.1	2	5025 / 11:30	71.8		P 0.1
FRI	18	826,966	181	43.0	1.0	16,054.2	4.0		1	**5026 / 9:00**	**70.7**		
SAT	19												
SUN	20												
MON	21	827,567	601	41.0	2.0	16,065.8	11.6	P 1.1	3	5029 / 11:20	67.6		P 0.1
TUE	22	827,666	99	40.0	1.0	16,068.0	2.2	TOW 1.2	2	5031 / 10:00	67.1		TOW 0.5
WED	23	827,870	204	40.0	0.0	16,072.6	4.6	W 1.0	1	5032 / 2:00	65.8		W 0.8
THU	24	827,872	2	40.0	0.0	16,072.6	0.0	F 1.0	0	5032 / 11:00	65.8		F 0.3
FRI	25												
SAT	26												
SUN	27												
MON	28	828,487	615	38.0	2.0	16,086.7	14.1	FFE 1.1	4	5036 / 9:40	62.6		FFE 0.3
TUE	29	828,640	153	37.0	1.0	16,090.2	3.5	V 1.2	1	5037 / 8:30	61.8	0.0	V 0.5
WED	30												
THU	31												
		TOTAL FLOW	6,947		25.0		149.1		36		41.8	0.0	

LAKE ELMO WELL # 2

NOV 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	29	828,640	153	37.0	1.0	16,090.2	3.5	V 1.2	1	5037 / 8:30	61.8	0.0	V 0.5
FRI	1												
SAT	2												
SUN	3												
MON	4	829,409	769	34	3.0	16,107.6	17.4		5	5042 / 8:45	57.7		
TUE	5	829,554	145	33.0	1.0	16,110.9	3.3	FFE 1.1	1	5043 / 10:00	57.0		FFE 0.5
WED	6	829,699	145	33.0	0.0	16,114.3	3.4	P 1.1	1	5044 / 11:10	56.3		P 0.0
THU	7												
FRI	8												
SAT	9												
SUN	10												
MON	11												
TUE	12	830,462	763	30.0	3.0	16,131.6	17.3	V 1.1	5	5049 / 9:15	52.3		V 1.0
WED	13	830,608	146	99.0	1.0	16,135.0	3.4	W 0.8	1	5050 / 10:15	51.0	150.0	W 0.9
THU	14												
FRI	15												
SAT	16												
SUN	17												
MON	18												
TUE	19	831,459	851	95.0	4.0	16,154.4	19.4	F 0.9	5	**5056 / 8:00**	46.7	150.0	F 0.3
WED	20	831,600	141	94.5	0.5	16,157.7	3.3	TOW 1.1	1	5057 / 8:15	45.8	150.0	TOW 0.5
THU	21	831,764	164	94.0	0.5	16,161.4	3.7	W 0.9	1	5058 / 9:10	45.0		W 0.6
FRI	22	831,810	46	94.0	0.0	16,162.4	1.0	P 1.0	1	5059 / 8:30	45.0		P 0.1
SAT	23												
SUN	24												
MON	25	832,229	419	93.0	1.0	16,171.9	9.5		2	5061 / 11:15	42.9	150.0	
TUE	26	832,380	151	92.0	1.0	16,175.4	3.5	F 0.9	1	5062 / 11:30	42.3		F 0.3
WED	27	832,537	157	91.0	1.0	16,179.0	3.6	P 1.0	1	5063 / 2:00	41.4	150.0	
THU	28												
FRI	29												
SAT	30												
SUN	1												
		TOTAL FLOW	3,897		16.0		88.8		25		20.4	0.0	

LAKE ELMO WELL # 2

DEC 13		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	27	832,537	157	91.0	1.0	16,179.0	3.6	P 1.0	1	5063 / 2:00	41.4	150.0	
SUN	1												
MON	2	833,284	747	88.0	3.0	16,196.0	17.0	F 0.9	5	5068 / 11:00	37.4	150.0	F 0.3
TUE	3	833,426	142	88.0	0.0	16,199.2	3.2	FFE 0.9	0	5068 / 8:45	36.6		FFE 0.5
WED	4												
THU	5	833,426	0	88.0	0.0	16,199.2	0.0		0	5068 / 2:00	36.6		
FRI	6	833,534	108	88.0	0.0	16,201.5	2.3	P 1.0	3	5071 / 10:00	36.6		P 0.1
SAT	7												
SUN	8												
MON	9	833,967	433	86.0	2.0	16,210.6	9.1	TOW 1.1	6	5077 / 1:45	34.6		TOW 0.3
TUE	10	834,036	69	85.0	1.0	16,212.0	1.4	P 1.1	1	5078 / 11:15	34.2	150.0	P 0.3
WED	11	834,169	133	85.0	0.0	16,214.8	2.8	F 1.0	2	5080 / 8:30	33.7		F 0.3
THU	12	834,303	134	84.0	1.0	16,217.6	2.8	V 0.9	2	5082 / 11:00	32.8		V 0.5
FRI	13	834,436	133	84.0	0.0	16,220.5	2.9	W 1.0	2	5084 / 9:40	32.1		W 0.7
SAT	14												
SUN	15												
MON	16	834,851	415	82.0	2.0	16,229.1	8.6		6	5090 / 9:45	30.3		
TUE	17	834,986	135	81.5	0.5	16,232.0	2.9		2	5092 / 8:30	29.5		
WED	18	835,116	130	81.0	0.5	16,234.7	2.7	F 0.9	2	**5094 / 8:00**	**28.9**	**150.0**	F 0.3
THU	19	835,315	199	81.0	0.0	16,238.8	4.1		3	**5097 / 1:40**	27.9		
FRI	20												
SAT	21												
SUN	22												
MON	23	835,865	550	79.0	2.0	16,250.4	11.6	TOW 1.2	9	5106 / 2:10	25.5		TOW 0.3
TUE	24												
WED	25												
THU	26	836,221	356	77.0	2.0	16,257.9	7.5	F 1.0	5	5111 / 8:00	23.8	150.0	F 0.3
FRI	27												
SAT	28												
SUN	29												
MON	30	836,767	546	75.0	2.0	16,269.4	11.5	P 1.1	8	5119 / 9:00	21.5		P 0.0
TUE	31	836,900	133	74.0	1.0	16,272.2	2.8	F 1.0	2	5121 / 8:45	20.9	150.0	F 0.3
		TOTAL FLOW	4,363		17.0		93.2		58		20.5	0.0	

WELL # 2 FLOW

			WELL #2	WELL #1
JAN	2013	8,596		
FEB	2013	3,887		
MAR	2013	3,941	16,424	4257.7
APR	2013	5,065		
MAY	2013	5,830		
JUN	2013	5,739	16,634	4522.1
JUL	2013	18,671		
AUG	2013	23,168		
SEP	2013	18,128	59,967	10684.9
OCT	2013	6,947		
NOV	2013	3,897		
DEC	2013	4,363	15,207	5464.9
		108232	108,232	24929.6

TOTAL GALLONS 10,823,200

442,194
-
-
468,844
-
-
1,128,457
-
-
561,697
2,601,192

LAKE ELMO WELL # 1

JAN 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	70,653.9	56.3	86.00	0.50	6,246.2	2.1	C 1.4	3	113 / 9:15
WED	1									
THU	2	70,871.3	217.4	85.00	1.00	6,254.7	8.5	LE 1.3	9	122 / 10:00
FRI	3	70,927.8	56.5	84.50	0.50	6,256.8	2.1	B 1.5	3	125 / 9:30
SAT	4									
SUN	5									
MON	6	71,065.1	137.3	83.50	1.00	6,262.0	5.2		6	131 / 2:00
TUE	7	71,114.7	49.6	83.00	0.50	6,263.9	1.9	LE 1.4	5	136 / 11:30
WED	8	71,147.5	32.8	83.00	0.00	6,265.2	1.3	C 1.5	2	138 / 9:30
THU	9	71,215.7	68.2	83.00	0.00	6,267.7	2.5	F 1.6	4	142 / 3:30
FRI	10	71,257.0	41.3	82.50	0.50	6,269.3	1.6		3	145 / 9:10
SAT	11									
SUN	12									
MON	13	71,446.9	189.9	82.00	0.50	6,276.5	7.2	P 1.5	10	155 / 10:00
TUE	14	71,547.2	100.3	81.00	1.00	6,280.3	3.8		4	159 / 12:00
WED	15	71,656.6	109.4	80.00	1.00	6,284.6	4.3	C 1.5	4	163 / 10:00
THU	16	71,725.4	68.8	80.00	0.00	6,287.2	2.6		4	167 / 10:35
FRI	17	71,770.8	45.4	79.50	0.50	6,288.9	1.7	G 1.5	3	170 / 8:00
SAT	18									
SUN	19									
MON	20									
TUE	21	71,962.3	191.5	78.50	1.00	6,296.1	7.2	C 1.4	12	182 / 9:00
WED	22	72,005.0	42.7	78.00	0.50	6,297.8	1.7	f 1.6	4	186 / 9:30
THU	23	72,043.0	38.0	78.00	0.00	6,299.2	1.4	LE 1.3	2	188 / 9:00
FRI	24	72,094.6	51.6	78.00	0.00	6,301.1	1.9	P 1.5	4	192 / 9:00
SAT	25									
SUN	26									
MON	27	72,235.5	140.9	77.00	1.00	6,306.5	5.4		9	201 / 10:20
TUE	28	72,278.1	42.6	77.00	0.00	6,308.1	1.6	F 1.4	3	204 / 9:45
WED	29	72,317.2	39.1	76.50	0.50	6,309.5	1.4	G 1.0	3	207 / 7:55
THU	30									
FRI	31	72,412.3	95.1	76.00	0.50	6,313.1	3.6	B 1.2	7	214 / 10:30
		TOTAL FLOW	1,758.4		10.00		66.9		101	

LAKE ELMO WELL # 1

FEB 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	72,412.3	95.1	76.00	0.50	6,313.1	3.6	B 1.2	7	214 / 10:30
SAT	1									
SUN	2									
MON	3	72,559.5	147.2	75.00	1.00	6,318.7	5.6	LE 1.4	11	225 / 11:10
TUE	4	72,598.5	39.0	75.00	0.00	6,320.1	1.4	F 1.3	3	228 / 9:00
WED	5	72,647.9	49.4	74.50	0.50	6,322.0	1.9	P 1.4	4	232 / 8:50
THU	6	72,697.8	49.9	74.50	0.00	6,323.9	1.9	G 1.3	4	236 / 10:15
FRI	7	72,745.8	48.0	74.00	0.50	6,325.7	1.8	F 1.4	4	240 / 8 ;30
SAT	8									
SUN	9									
MON	10	72,895.4	149.6	74.00	0.00	6,331.3	5.6	C 1.6	13	253 / 9:00
TUE	11	72,938.4	43.0	73.50	0.50	6,332.9	1.6	P 1.5	2	258 / 9:15
WED	12	72,986.6	48.2	73.00	0.50	6,334.7	1.8	F 1.4	4	262 / 8:45
THU	13	73,050.5	63.9	73.00	0.00	6,337.1	2.4	B 1.4	7	269 / 11:40
FRI	14	73,090.0	39.5	72.00	1.00	6,338.6	1.5	LE 1.5	4	273 / 8:40
SAT	15									
SUN	16									
MON	17									
TUE	18	73,355.4	265.4	70.50	1.50	6,348.6	10.0	P 1.3	23	296 / 9:15
WED	19	73,515.5	160.1	70.00	0.50	6,354.8	6.2	C 1.3	7	303 / 9:15
THU	20	73,564.7	49.2	69.50	0.50	6,356.7	1.9	F 1.3	6	309 / 9:45
FRI	21									
SAT	22									
SUN	23									
MON	24									
TUE	25	73,850.7	286.0	68.00	1.50	6,367.4	10.7	LE 1.4	33	342 / 10:00
WED	26	73,903.0	52.3	68.00	0.00	6,369.3	1.9		6	348 / 11:40
THU	27									
FRI	28	74,129.7	226.7	67.00	1.00	6,377.9	8.6	C 1.4	16	364 / 10:00
SAT	1									
SUN	2									
MON	3									
		TOTAL FLOW	1,717.4		9.00		64.8		147	

LAKE ELMO WELL # 1

MAR 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	28	74,129.7	226.7	67.00	1.00	6,377.9	8.6	C 1.4	16	364 / 10:00
SAT	1									
SUN	2									
MON	3	74,310.3	180.6	65.00	2.00	6,384.7	6.8	B 1.3	25	389 / 9:30
TUE	4	74,389.1	78.8	65.00	0.00	6,387.6	2.9	F 1.5	12	401 / 9:00
WED	5	74,730.3	341.2	62.50	2.50	6,400.7	13.1		23	424 / 9;15
THU	6									
FRI	7									
SAT	8									
SUN	9									
MON	10									
TUE	11	75,551.4	821.1	58.00	4.50	6,431.9	31.2		76	500 / 9:30
WED	12	75,646.5	95.1	57.00	1.00	6,435.5	3.6	F 1.4	8	508 / 9:00
THU	13	75,723.7	77.2	57.00	0.00	6,438.4	2.9		12	520 / 11:30
FRI	14	75,779.6	55.9	56.00	1.00	6,440.4	2.0	C 1.4	7	527 / 10:20
SAT	15									
SUN	16									
MON	17	75,998.0	218.4	55.00	1.00	6,448.6	8.2	P 1.5	26	553 / 2:35
TUE	18	76,062.8	64.8	54.50	0.50	6,451.0	2.4	LE 1.3	8	561 / 10:00
WED	19	76,136.0	73.2	54.00	0.50	6,453.7	2.7	F 1.3	10	571 / 10:30
THU	20	76,198.2	62.2	54.00	0.00	6,456.0	2.3	G 1.4	9	580 / 10:30
FRI	21	76,249.7	51.5	53.50	0.50	6,457.9	1.9	C 1.4	6	586 / 8:15
SAT	22									
SUN	23									
MON	24	76,432.0	182.3	52.50	1.00	6,464.8	6.9	B 1.4	20	606 / 8:20
TUE	25	76,499.2	67.2	52.00	0.50	6,467.3	2.5	P 1.4	8	614 / 9:00
WED	26	76,574.1	74.9	51.50	0.50	6,470.1	2.8	C 1.4	9	623 / 11:00
THU	27	76,632.7	58.6	51.00	0.50	6,472.3	2.2	LE 1.4	7	630 / 11:15
FRI	28									
SAT	29									
SUN	30									
MON	31	76,844.7	212.0	50.00	1.00	6,480.2	7.9		20	650 / 10:45
		TOTAL FLOW	2,715.0		17.00		102.3		286	

LAKE ELMO WELL # 1

APR 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	76,844.7	212.0	50.00	1.00	6,480.2	7.9	C 1.4	20	650 / 10:45
TUE	1	76,889.1	44.4	49.00	1.00	6,481.9	1.7		3	653 / 9:00
WED	2	76,968.1	79.0	49.00	0.00	6,484.8	2.9		6	659 / 3:00
THU	3	77,003.2	35.1	49.00	0.00	6,486.1	1.3	P 1.4	3	662 / 10:10
FRI	4									
SAT	5									
SUN	6									
MON	7									
TUE	8	77,365.5	362.3	47.00	2.00	6,499.8	13.7	C 1.4	21	683 / 1:30
WED	9	77,410.8	45.3	46.00	1.00	6,501.5	1.7	F 1.4	3	686 / 9:30
THU	10	77,482.1	71.3	45.50	0.50	6,504.1	2.6	B 1.3	4	690 / 9:25
FRI	11									
SAT	12									
SUN	13									
MON	14	77,751.4	269.3	44.50	1.00	6,514.3	10.2	LE 1.3	21	711 / 9:50
TUE	15	77,799.4	48.0	44.00	0.50	6,516.1	1.8	F 1.4	4	715 / 8:45
WED	16	77,860.4	61.0	43.50	0.50	6,518.4	2.3	C 1.4	5	720 / 8:30
THU	17	77,950.2	89.8	43.00	0.50	6,521.7	3.3	P 1.4	8	728 / 11:50
FRI	18	77,998.6	48.4	43.00	0.00	6,523.6	1.9	P 1.4	4	732 / 8:10
SAT	19			100.00						
SUN	20									
MON	21									
TUE	22	78,233.1	234.5	99.00	1.00	6,532.4	8.8		19	751 / 8:50
WED	23	78,290.0	56.9	98.50	0.50	6,534.5	2.1	C 1.4	6	757 / 10:30
THU	24	78,358.2	68.2	98.00	0.50	6,537.1	2.6	F 1.5	5	762 / 12:00
FRI	25	78,417.9	59.7	97.50	0.50	6,539.3	2.2	C 1.4	5	767 / 2:30
SAT	26									
SUN	27									
MON	28	78,550.0	132.1	97.00	0.50	6,544.3	5.0	LE 1.4	11	778 / 8:30
TUE	29	78,609.9	59.9	96.50	0.50	6,546.5	2.2		5	783 / 8:30
WED	30	78,658.4	48.5	96.00	0.50	6,548.3	1.8	P 1.5	4	787 / 8:45
THU	1									
		TOTAL FLOW	1,813.7		11.00		68.1		137	

LAKE ELMO WELL # 1

MAY 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	78,658.4	48.5	96.00	0.50	6,548.3	1.8	P 1.5	4	787 / 8:45
THU	1	78,713.7	55.3	96.00	0.00	6,550.4	2.1		6	793 / 9:00
FRI	2	78,772.3	58.6	95.50	0.50	6,552.6	2.2	B 1.5	5	798 / 8:20
SAT	3									
SUN	4									
MON	5	78,929.0	156.7	95.00	0.50	6,558.5	5.9	LE 1.5	13	811 / 9:20
TUE	6	79,004.3	75.3	94.50	0.50	6,561.4	2.9	P 1.1	8	819 / 3:00
WED	7	79,041.9	37.6	94.00	0.50	6,562.8	1.4	F 1.1	3	822 / 8:45
THU	8	79,090.1	48.2	94.00	0.00	6,564.6	1.8	G 1.2	4	826 / 9:00
FRI	9	79,150.7	60.6	94.00	0.00	6,566.9	2.3	F 1.1	5	831 / 3:00
SAT	10									
SUN	11									
MON	12	79,305.0	154.3	93.00	1.00	6,572.7	5.8	P 1.4	13	844 / 9:10
TUE	13	79,353.0	48.0	93.00	0.00	6,574.5	1.8	F 1.1	4	848 / 9:45
WED	14	79,401.8	48.8	93.00	0.00	6,576.3	1.8	V 1.1	4	852 / 9:15
THU	15	79,460.9	59.1	92.50	0.50	6,578.6	2.3	C 1.1	5	857 / 9:15
FRI	16	79,532.1	71.2	92.00	0.50	6,581.2	2.6		7	864 / 8:15
SAT	17									
SUN	18									
MON	19	79,706.6	174.5	91.00	1.00	6,587.8	6.6	LE 1.5	7	876 / 2:15
TUE	20									
WED	21									
THU	22	79,863.7	157.1	90.00	1.00	6,593.8	6.0	F 1.3	11	887 / 1:15
FRI	23	79,920.0	56.3	90.00	0.00	6,595.9	2.1	B 1.4	4	891 / 8:00
SAT	24									
SUN	25									
MON	26									
TUE	27	80,201.0	281.0	89.00	1.00	6,606.5	10.6	F 1.1	19	910 / 8:00
WED	28	80,272.5	71.5	88.50	0.50	6,609.2	2.7		5	915 / 11:00
THU	29	80,350.2	77.7	88.00	0.50	6,612.2	3.0		5	920 / 8:15
FRI	30	80,423.8	73.6	88.00	0.00	6,614.9	2.7	P 0.8	5	925 / 8:00
SAT	31									
		TOTAL FLOW	1,765.4		8.00		66.6		133	

LAKE ELMO WELL # 1

JUN 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	80,423.8	73.6	88.00	0.00	6,614.9	2.7	P 0.8	5	925 / 8:00
SUN	1									
MON	2	80,626.3	202.5	87.50	0.50	6,622.6	7.7	LE1.0	14	939 / 9:30
TUE	3	80,682.6	56.3	87.00	0.50	6,624.7	2.1	C 0.9	4	943 / 9:15
WED	4	80,739.9	57.3	86.50	0.50	6,626.9	2.2	F 1.1	4	947 / 8:45
TUE	5	80,825.4	85.5	86.50	0.00	6,630.1	3.2	B 1.2	6	953 / 11:30
FRI	6	80,867.4	42.0	86.00	0.50	6,631.7	1.6	P 1.5	3	956 / 8:20
SAT	7									
SUN	8									
MON	9	81,036.7	169.3	85.00	1.00	6,638.1	6.4	C 1.4	12	968 / 10:00
TUE	10	81,092.6	55.9	85.00	0.00	6,640.2	2.1	B 1.5	4	972 / 8:40
WED	11	81,239.6	147.0	84.00	1.00	6,645.8	5.6		14	986 / 2:30
THU	12	81,287.5	47.9	83.50	0.50	6,647.7	1.9	LE 1.5	4	990/9:30
FRI	13									
SAT	14									
SUN	15									
MON	16	81,550.0	262.5	82.50	1.00	6,657.6	9.9	F 0.8	20	010 / 10:45
TUE	17	81,592.1	42.1	82.00	0.50	6,659.2	1.6	C 0.8	3	013 / 11:00
WED	18	81,653.2	61.1	82.00	0.00	6,661.5	2.3	P 0.9	5	018 / 9:00
THU	19	81,693.5	40.3	82.00	0.00	6,663.0	1.5	LE 1.0	3	021 / 9:50
FRI	20	81,748.5	55.0	82.00	0.00	6,665.1	2.1		4	025 / 10:20
SAT	21									
SUN	22									
MON	23	81,931.5	183.0	81.50	0.50	6,672.0	6.9	B 0.8	13	038 / 9:40
TUE	24	81,992.7	61.2	81.00	0.50	6,674.4	2.4	F 0.6	5	043 / 9:00
WED	25	82,048.7	56.0	81.00	0.00	6,676.5	2.1	C 0.8	4	047 / 8:45
THU	26	82,112.7	64.0	80.50	0.50	6,678.9	2.4	F 0.7	5	052 / 10:15
FRI	27	82,160.2	47.5	80.50	0.00	6,680.7	1.8	LE 0.7	3	055 / 9:15
SAT	28									
SUN	29									
MON	30	82,314.0	153.8	80.00	0.50	6,686.4	5.7	B 0.7	12	067 / 8:40
TUE	1									
		TOTAL FLOW	1,890.2		8.00		71.5		142	

LAKE ELMO WELL # 1

JUL 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	82,314.0	153.8	80.00	0.50	6,686.4	5.7	B 0.7	12	067 / 8:40
TUE	1	82,362.3	48.3	80.00	0.00	6,688.3	1.9	F 1.1	3	070 / 9:00
WED	2	82,417.6	55.3	79.50	0.50	6,690.3	2.0		4	074 / 11:15
THU	3	82,472.6	55.0	79.00	0.50	6,692.4	2.1	P 1.4	4	078 / 8:45
FRI	4									
SAT	5									
SUN	6									
MON	7	82,727.4	254.8	78.00	1.00	6,702.0	9.6	B 1.4	18	096 / 9:40
TUE	8	82,793.3	65.9	77.00	1.00	6,704.5	2.5	P 1.4	5	101 / 10:30
WED	9	82,852.1	58.8	77.00	0.00	6,706.7	2.2	C 1.3	4	105 / 10:00
THU	10	82,904.8	52.7	77.00	0.00	6,709.8	3.1		6	111 / 11:30
FRI	11	82,977.8	73.0	76.50	0.50	6,711.4	1.6	G 1.4	3	114 / 8:15
SAT	12									
SUN	13									
MON	14	83,139.9	162.1	76.00	0.50	6,717.5	6.1	LE 1.5	12	126 / 8:45
TUE	15	83,180.8	40.9	75.50	0.50	6,719.0	1.5		3	129 / 8:30
WED	16	83,235.9	55.1	75.00	0.50	6,721.1	2.1	B 1.5	4	133 / 9:15
THU	17	83,305.4	69.5	90.00	0.00	6,723.7	2.6	P 1.5	5	138 / 10:40
FRI	18	83,380.8	75.4	89.00	1.00	6,726.5	2.8		5	143 / 2:00
SAT	19									
SUN	20									
MON	21	83,601.3	220.5	88.00	1.00	6,734.8	8.3	F 1.5	15	158 / 9:10
TUE	22	83,677.2	75.9	87.50	0.50	6,737.7	2.9	LE 1.4	6	164 / 9:15
WED	23	83,799.0	121.8	86.00	1.50	6,742.3	4.6	B 1.4	8	172 / 10:00
THU	24	83,890.3	91.3	86.00	0.00	6,745.8	3.5	P 1.5	6	178 / 10:15
FRI	25	83,968.5	78.2	86.00	0.00	6,748.7	2.9		5	183 / 9:00
SAT	26									
SUN	27									
MON	28	84,200.9	232.4	85.00	1.00	6,757.5	8.8	C 1.5	17	200 / 2:50
TUE	29	84,288.6	87.7	84.50	0.50	6,760.9	3.4	LE 1.5	5	205 / 10:40
WED	30	84,385.6	97.0	84.00	0.50	6,764.6	3.7	F 1.3	6	211 / 10:00
THU	31	84,465.0	79.4	83.50	0.50	6,767.7	3.1	B 1.4	5	216 / 8:00
		TOTAL FLOW	2,151.0		11.50		81.3		149	

LAKE ELMO WELL # 1

AUG 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	84,465.0	79.4	83.50	0.50	6,767.7	3.1	B 1.4	5	216 / 8:00
FRI	1	84,593.7	128.7	83.00	0.50	6,772.6	4.9	G 1.4	10	226 / 9:30
SAT	2									
SUN	3									
MON	4	84,908.8	315.1	81.00	2.00	6,784.6	12.0		23	249 / 1:55
TUE	5	85,000.8	92.0	80.50	0.50	6,788.1	3.5	F 1.4	7	256 / 11:55
WED	6	85,091.3	90.5	80.00	0.50	6,791.6	3.5	C 1.5	7	263 / 10:30
THU	7	85,193.0	101.7	79.50	0.50	6,795.5	3.9	P 1.5	7	270 / 9:30
FRI	8	85,303.2	110.2	79.00	0.50	6,799.6	4.1	LE 1.3	8	278 / 8:35
SAT	9									
SUN	10									
MON	11	85,639.3	336.1	77.00	2.00	6,812.2	12.6	B 1.5	27	305 / 10:10
TUE	12	85,706.4	67.1	77.00	0.00	6,814.6	2.4	P 1.5	6	3:11 / 11:30
WED	13	85,777.4	71.0	76.00	1.00	6,817.2	2.6	LE 1.4	6	317 / 9:30
THU	14	85,878.5	101.1	76.00	0.00	6,821.0	3.8	F 1.3	8	325 / 10:30
FRI	15									
SAT	16									
SUN	17									
MON	18	86,253.4	374.9	74.00	2.00	6,835.0	14.0	C 1.5	30	355 / 9:20
TUE	19	86,325.5	72.1	74.00	0.00	6,837.7	2.7	P 1.4	6	361 / 9:40
WED	20	86,396.9	71.4	73.50	0.50	6,840.4	2.7	B 1.4	6	367 / 9:40
THU	21	86,480.5	83.6	73.00	0.50	6,843.5	3.1	G 1.3	7	374 / 11:50
FRI	22	86,537.8	57.3	72.50	0.50	6,845.7	2.2	LE 1.5	5	379 / 9:15
SAT	23									
SUN	24									
MON	25	86,729.2	191.4	71.50	1.00	6,852.9	7.2	C 1.5	17	396 / 10:40
TUE	26	86,788.4	59.2	71.00	0.50	6,855.1	2.2	B 1.3	6	402 / 11:00
WED	27	86,870.1	81.7	70.50	0.50	6,858.1	3.0	F 1.4	7	409 / 1:00
THU	28	86,930.6	60.5	70.00	0.50	6,860.4	2.3		5	414 / 9:30
FRI	29	87,001.5	70.9	70.00	0.00	6,863.1	2.7	G 1.3	6	420 / 10:30
SAT	30									
SUN	31									
		TOTAL FLOW	2,536.5		13.50		95.4		204	

LAKE ELMO WELL # 1

SEP 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	87,001.5	70.9	70.00	0.00	6,863.1	2.7	G 1.3	6	420 / 10 ;30
MON	1									
TUE	2	87,205.6	204.1	69.00	1.00	6,870.9	7.8	LE 1.4	18	438 / 9:00
WED	3	87,271.5	65.9	69.00	0.00	6,873.4	2.5		5	443 / 9:30
THU	4	87,341.9	70.4	68.00	1.00	6,876.0	2.6	LE 1.4	6	449 / 10:15
FRI	5	87,400.5	58.6	68.00	0.00	6,878.7	2.7	P 1.4	5	454 / 9:10
SAT	6									
SUN	7									
MON	8	87,601.0	200.5	67.00	1.00	6,885.8	7.1	C 1.5	17	471 / 11:00
TUE	9	87,659.7	58.7	67.00	0.00	6,888.0	2.2	F 1.6	5	476 / 8:35
WED	10	87,729.7	70.0	66.00	1.00	6,890.6	2.6	C 1.3	6	482 / 11:00
THU	11	87,789.6	59.9	66.00	0.00	6,892.8	2.2		5	487 / 10:30
FRI	12									
SAT	13									
SUN	14									
MON	15	88,048.3	258.7	65.00	1.00	6,902.4	9.6	P 1.5	22	509 / 10:15
TUE	16	88,101.4	53.1	64.00	1.00	6,904.3	1.9	P 1.4	5	514 / 10:00
WED	17	88,180.5	79.1	63.50	0.50	6,907.3	3.0	C 1.3	7	521 / 3:00
THU	18	88,247.7	67.2	63.50	0.00	6,909.8	2.5	F 1.4	5	526 / 11:00
FRI	19	88,309.0	61.3	63.00	0.50	6,912.1	2.3		5	531 / 8:45
SAT	20									
SUN	21									
MON	22	88,501.9	192.9	62.00	1.00	6,919.2	7.1	LE 1.3	17	548 / 11:00
TUE	23	88,566.9	65.0	62.00	0.00	6,921.5	2.3	F 1.1	5	553 / 8:30
WED	24	88,649.4	82.5	61.00	1.00	6,924.6	3.1		7	560 / 9:00
THU	25	88,719.5	70.1	61.00	0.00	6,927.1	2.5		6	566 / 11:30
FRI	26	88,802.8	83.3	61.00	0.00	6,930.2	3.1	F 1.2	7	573 / 8:35
SAT	27									
SUN	28									
MON	29	89,044.0	241.2	60.00	1.00	6,939.1	8.9	B 1.3	20	593 / 9:20
TUE	30	89,104.3	60.3	59.00	1.00	6,941.3	2.2	W 1.3	5	598 / 8:30
WED	1									
		TOTAL FLOW	2,102.8		11.00		78.2		178	

LAKE ELMO WELL # 1

OCT 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	89,104.3	60.3	59.00	1.00	6,941.3	2.2	W 1.3	5	598 / 8:30
WED	1	89,176.0	71.7	59.00	0.00	6,944.0	2.7	F 1.2	6	604 / 9:30
THU	2	89,236.1	60.1	59.00	0.00	6,946.2	2.2	LE 1.3	5	609 / 8:45
FRI	3	89,295.1	59.0	58.50	0.50	6,948.4	2.2	C 1.3	5	614 / 9:30
SAT	4									
SUN	5									
MON	6	89,458.2	163.1	58.00	0.50	6,954.5	6.1	P 1.2	14	628 / 9:30
TUE	7	89,504.9	46.7	58.00	0.00	6,956.2	1.7	F 1.2	4	632 / 8:00
WED	8	89,563.5	58.6	57.50	0.50	6,958.4	2.2	P 1.1	5	637 / 10:00
THU	9	89,644.1	80.6	57.00	0.50	6,961.4	3.0	C 1.1	5	642 / 8:00
FRI	10	89,692.3	48.2	57.00	0.00	6,963.2	1.8	B 1.1	5	647 /
SAT	11									
SUN	12									
MON	13	89,858.9	166.6	56.00	1.00	6,969.5	6.3	LE 1.0	14	661 / 9:35
TUE	14	89,950.9	92.0	56.00	0.00	6,973.0	3.5		1	662 / 1:30
WED	15	90,004.0	53.1	56.00	0.00	6,975.0	2.0	P 1.0	11	673 / 8:45
THU	16									
FRI	17									
SAT	18									
SUN	19									
MON	20	90,284.1	280.1	55.00	1.00	6,985.5	10.5		23	696 / 11:00
TUE	21	90,349.9	65.8	55.00	0.00	6,988.0	2.5	F 0.5	5	701 / 12:00
WED	22	90,413.1	63.2	55.00	0.00	6,990.3	2.3		6	707 / 1:30
THU	23	90,486.4	73.3	55.00	0.00	6,993.1	2.8		2	709 / 10:45
FRI	24	90,553.9	67.5	54.00	1.00	6,995.7	2.6	G 0.5	8	717 / 10:45
SAT	25									
SUN	26									
MON	27	90,717.3	163.4	54.00	0.00	7,001.8	6.1	P 0.4	13	730 / 2:10
TUE	28	90,752.7	35.4	54.00	0.00	7,003.1	1.3	F 0.4	4	734 / 10:00
WED	29	90,822.3	69.6	53.50	0.50	7,005.7	2.6	G 0.4	5	739 / 2:30
THU	30									
FRI	31	90,946.7	124.4	53.50	0.00	7,010.4	4.7		10	749 /
		TOTAL FLOW	1,842.4		5.50		69.1		151	

LAKE ELMO WELL # 1

NOV 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	90,946.7	124.4	53.50	0.00	7,010.4	4.7		10	749 /
SAT	1									
SUN	2									
MON	3	91,161.5	214.8	53.50	0.00	7,018.5	8.1	F 0.4	17	766 / 1:00
TUE	4	91,235.1	73.6	53.50	0.00	7,021.2	2.7		6	772 / 2:00
WED	5	91,280.6	45.5	53.50	0.00	7,023.0	1.8	LE 0.4	4	776 / 10:40
THU	6	91,388.1	107.5	53.5/100	0.00	7,027.0	4.0	P 1.5	7	783 / 8:10
FRI	7	91,554.0	165.9	100.00	0.00	7,033.3	6.3	F 1.6	7	790 / 10:20
SAT	8									
SUN	9									
MON	10	92,066.6	512.6	99.00	1.00	7,052.9	19.6		22	812 / 1:00
TUE	11									
WED	12	92,415.9	349.3	92.00	7.00	7,066.2	13.3	LE 1.5	18	830 / 11:00
THU	13	92,544.7	128.8	91.50	0.50	7,071.1	4.9	C 1.7	8	838 / 10:00
FRI	14	92,622.2	77.5	91.00	0.50	7,074.2	3.1	F 1.5	3	841 / 8:10
SAT	15									
SUN	16									
MON	17	92,769.5	147.3	91.00	0.00	7,079.8	5.6	P 1.2	7	848 / 8:30
TUE	18	92,813.9	44.4	90.00	1.00	7,081.4	1.6	C 1.3	3	851 / 10:00
WED	19									
THU	20	92,900.7	86.8	90.00	0.00	7,084.7	3.3	F 0.9	6	857 / 9:00
FRI	21	92,951.8	51.1	90.00	0.00	7,086.6	1.9	LE 1.0	4	861 / 9:20
SAT	22									
SUN	23									
MON	24	93,099.0	147.2	90.00	0.00	7,092.1	5.5	P 0.9	13	874 / 9:40
TUE	25	93,178.2	79.2	89.50	0.50	7,095.1	3.0	F 1.0	7	881 / 11:15
WED	26	93,209.7	31.5	89.50	0.00	7,096.2	1.1	C 1.1	3	884 / 9 ;30
THU	27									
FRI	28									
SAT	29									
SUN	30									
MON	1									
		TOTAL FLOW	2,263.0		10.50		85.8		135	

LAKE ELMO WELL # 1

DEC 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	26	93,209.7	31.5	89.50	0.00	7,096.2	1.1	C 1.1	3	884 / 9:30
MON	1	93,455.0	245.3	89.00	0.50	7,105.3	9.1	C 0.9	13	907 / 11:30
TUE	2	93,496.8	41.8	89.00	0.00	7,106.9	1.6	LE 0.9	4	911 / 9:35
WED	3	93,605.2	108.4	88.50	0.50	7,110.9	4.0	B 0.8	6	917 / 8:30
THU	4	93,667.4	62.2	88.50	0.00	7,113.3	2.4		3	920 / 9:00
FRI	5	93,773.5	106.1	88.50	0.00	7,117.2	3.9	P 0.6	3	923 / 10:00
SAT	6									
SUN	7									
MON	8	93,935.2	161.7	88.50	0.00	7,123.1	5.9	C 0.6	14	937 / 11:00
TUE	9	93,987.5	52.3	88.00	0.50	7,125.0	1.9	F 1.3	4	941 / 9:30
WED	10	94,036.2	48.7	87.50	0.50	7,128.8	3.8		4	945 / 10:00
THU	11	94,122.0	85.8	87.00	0.50	7,130.0	1.2	B 0.6	5	950 / 9:40
FRI	12	94,258.0	136.0	86.00	1.00	7,135.2	5.2	LE 0.8	5	955 / 11:00
SAT	13									
SUN	14									
MON	15	94,522.4	264.4	84.00	2.00	7,145.1	9.9		22	977 / 3:30
TUE	16	94,551.2	28.8	84.00	0.00	7,146.2	1.1		2	979 / 9:30
WED	17	94,605.5	54.3	83.00	1.00	7,148.2	2.0	LE 1.7	4	985 / 11:00
THU	18	94,655.8	50.3	83.00	0.00	7,150.0	1.8	P 1.4	3	986 / 9:00
FRI	19	94,705.2	49.4	82.50	0.50	7,151.8	1.8	C 1.6	3	989 / 8:20
SAT	20									
SUN	21									
MON	22	94,871.8	166.6	81.50	1.00	7,158.0	6.2	LE 1.4	10	999 / 10:15
TUE	23	94,953.8	82.0	80.50	1.00	7,161.0	3.0	B 1.3	4	003 / 11:00
WED	24									
THU	25									
FRI	26									
SAT	27									
SUN	28									
MON	29	95,353.1	399.3	78.00	2.50	7,175.9	14.9	F 1.7	16	19 / 10:55
TUE	30	95,403.2	50.1	77.50	0.50	7,177.7	1.8	B 1.8	2	21 / 9:45
WED	31	95,446.0	42.8	77.00	0.50	7,179.5	1.8		2	23 / 8:30
		TOTAL FLOW	2,236.3		12.50		83.3		129	

2014 WELL #1 FLOW

MONTH	FLOW READING			SCADA READING
JAN	1758.4	1,758,400		1454
FEB	1717.4	1,717,400		1752
MAR	2715	2,715,000	6,190,800	2684
APR	1813.7	1,813,700		434
MAY	1765.4	1,765,400		1121
JUN	1890.2	1,890,200	5,469,300	1505
JUL	2151	2,151,000		1884
AUG	2536.5	2,536,500		2455
SEP	2102.8	2,102,800	6,790,300	1957
OCT	1842.4	1,842,400		1712
NOV	2263	2,263,000		2058
DEC	2236.3	2,236,300	6,341,700	1697
	24,792.10	24,792,100	24,792,100.00	20,713,000
TOTALS	2,479,210			

SCADA LOST DATA AFTER 4/7

LAKE ELMO WELL # 1

15-Jan		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS
PREVIOUS	31								
THU	1								
FRI	2								
SAT	3								
SUN	4								
MON	5								
TUE	6								
WED	7								
THU	8								
FRI	9								
SAT	10								
SUN	11								
MON	12								
TUE	13								
WED	14								
THU	15								
FRI	16								
SAT	17								
SUN	18								
MON	19								
TUE	20								
WED	21								
THU	22								
FRI	23								
SAT	24								
SUN	25								
MON	26								
TUE	27								
WED	28								
THU	29								
FRI	30								
SAT	31								
		TOTAL FLOW	0.0		0.00		0.0		0

LAKE ELMO WELL # 2

JAN 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	836,900	133	74.0	1.0	16,272.2	2.8	F 1.0	2	5121 / 8:45	20.9	150.0	F 0.3
WED	1												
THU	2	837,167	267	74.0	0.0	16,277.7	5.5	W 0.8	4	5125 / 10:30	19.7		W 0.6
FRI	3	837,294	127	73.0	1.0	16,280.5	2.8	TOW 1.3	2	5127 / 10:00	18.9		TOW 0.3
SAT	4												
SUN	5												
MON	6	837,762	468	71.0	2.0	16,290.3	9.8		7	5134 / 2:30	17.0		
TUE	7	837,828	66	70.0	1.0	16,291.7	1.4	FFE 1.1	1	5135 / 11:00	16.7		FFE 0.3
WED	8	837,964	136	70.0	0.0	16,294.6	2.9	W 0.8	3	5138 / 9:00	16.0		W 0.5
THU	9	838,161	197	70.0	0.0	16,298.7	4.1	P 1.1	3	5141 / 3:00	14.6		P 0.0
FRI	10	838,226	65	70.0	0.0	16,300.0	1.3		1	5142 / 9:25	14.2		
SAT	11												
SUN	12												
MON	13	838,628	402	68.0	2.0	16,308.4	8.4	TOW 1.1	6	5448 / 8:00	12.1		TOW 0.3
TUE	14	838,827	199	67.0	1.0	16,312.6	4.2		3	5151 / 12:00	11.1	150.0	
WED	15	838,894	67	66.5	0.5	16,314.0	1.4	P 1.1	1	5152 / 9:00	11.0		P 0.3
THU	16	839,026	132	66.0	0.5	16,316.8	2.8	F 1.0	3	5155 / 10:20	10.4		F 0.0
FRI	17	839,152	126	66.0	0.0	16,319.5	2.7	W 1.2	1	5156 / 8:20	10.1		W 0.7
SAT	18												
SUN	19												
MON	20												
TUE	21	839,688	536	64.0	2.0	16,330.6	11.1	FFE 1.0	9	5165 / 8:30	7.0		FFE 0.3
WED	22	839,870	182	63.0	1.0	16,334.4	3.8	P 1.0	3	5168 / 9:00	5.9		P 0.3
THU	23	839,997	127	62.0	1.0	16,337.1	2.7	F 1.0	2	5170 / 8:30	5.4		F 0.0
FRI	24	840,144	147	62.0	0.0	16,340.2	3.1	W 1.0	2	5172 / 9:20	4.4	150.0	W 0.9
SAT	25												
SUN	26												
MON	27	840,561	417	60.0	2.0	16,348.9	8.7		7	5179 / 1:40	3.1		
TUE	28	840,693	132	59.5	0.5	16,351.6	2.7	F 1.0	2	5181 / 2:00	2.7	150.0	F 0.0
WED	29	840,790	97	59.0	0.5	16,353.7	2.1	P 1.1	2	5183 / 11:00	2.7	149.7	
THU	30												
FRI	31	841,058	268	58.0	1.0	16,359.3	5.6	V 1.0	4	5187 / 11:00	1.9	148.0	V 0.3
		TOTAL FLOW	4,158		16.0		87.1		66		19.0	2.0	

LAKE ELMO WELL # 2

FEB 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	841,058	268	58.0	1.0	16,359.3	5.6	V 1.0	4	5187 / 11:00	1.9	148.0	V 0.3
SAT	1												
SUN	2												
MON	3	841,515	457	57.0	1.0	16,368.9	9.6	W 0.9	7	5194 / 10:00	1.7	144.6	W 0.9
TUE	4	841,627	112	56	1.0	16,371.3	2.4	F 1.0	3	5197 / 8:00	1.6	144.0	F 0.0
WED	5	841,802	175	55.0	1.0	16,374.9	3.6	V 1.0	2	5199 / 9:25	0.0	142.8	V 0.5
THU	6	841,942	140	55.0	0.0	16,377.8	2.9	FFE 1.3	2	5201 / 9:00	150.0	142.3	FFE 1.0
FRI	7	842,070	128	54.0	1.0	16,380.6	2.8	P 1.3	2	5203 / 9:00		141.5	P 0.1
SAT	8												
SUN	9												
MON	10	842,466	396	53.0	1.0	16,388.8	8.2	TOW 1.4	6	5209 / 9:30		138.9	TOW 0.5
TUE	11	842,577	111	52.5	0.5	16,391.1	2.3	V 1.1	1	5210 / 8:15		138.2	V 0.5
WED	12	842,684	107	52.0	0.5	16,393.4	2.3	P 1.1	1	5211 / 7:45		137.4	P 0.3
THU	13	842,915	231	51.0	1.0	16,398.3	4.9	W 1.4	2	5213 / 2:20		135.9	W 0.7
FRI	14	843,034	119	51.0	0.0	16,401.1	2.8	FFE 1.1	2	5215 / 9:00		135.2	FFE 1.0
SAT	15												
SUN	16												
MON	17												
TUE	18	843,605	571	48.0	3.0	16,414.3	13.2	F 1.0	5	5220 / 8:00		131.0	F 0.3
WED	19	843,708	103	48.0	0.0	16,416.8	2.5	P 1.1	1	5221 / 8:15		130.3	P 0.3
THU	20	843,821	113	47.5	0.5	16,419.4	2.6	FFE 1.0	1	5222 / 9:00		129.4	FFE 1.0
FRI	21												
SAT	22												
SUN	23												
MON	24												
TUE	25												
WED	26	844,812	991	44.0	3.5	16,442.7	23.3	W 0.8	6	5228 / 2:00	150.0	121.9	W 1.2
THU	27												
FRI	28												
SAT	1												
SUN	2												
MON	3												
		TOTAL FLOW	3,754		14.0		83.4		41		1.9	26.1	

LAKE ELMO WELL # 2

MAR 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	26	844,812	991	44.0	3.5	16,442.7	23.3	W 0.8	6	5228 / 2:00	150.0	121.9	W 1.2
SAT	1												
SUN	2												
MON	3												
TUE	4	845,631	819	40	4.0	16,464.1	21.4	F 1.1	7	5235 / 8:30	150.0	115.3	F 1.0
WED	5	845,764	133	39.0	1.0	16,467.6	3.5			5236 / 8:30		114.2	
THU	6												
FRI	7												
SAT	8												
SUN	9												
MON	10												
TUE	11	846,607	843	36.0	3.0	16,489.0	21.4	P 0.9		5247 / 8:30		107.7	P 0.3
WED	12	846,740	133	35.0	1.0	16,492.4	3.4	F 1.1	1	5248 / 8:10		106.7	F 1.0
THU	13	846,918	178	35.0	0.0	16,497.0	4.6						
FRI	14	847,344	426	34.0	1.0	16,507.9	10.9	W 0.9	1	5251 / 9:00		102.0	W 1.0
SAT	15												
SUN	16												
MON	17	847,751	407	30.0	4.0	16,518.5	10.6	V 1.0	1	5252 / 2:00		98.6	V 1.0
TUE	18	847,751	0	30.0	0.0	16,518.5	0.0		0	**5252 / 1:30**		**98.6**	
WED	19	847,751	0	30.0	0.0	16,518.5	0.0	F 1.0	0	**5252 / 9:15**		98.6	F 1.0
THU	20	847,949	198	30.0	0.0	16,523.5	5.0		2	5254 / 8:15		97.1	
FRI	21	848,086	137	29.0	1.0	16,526.9	3.4	TOW 1.0	1	5255 / 8:50		96.0	TOW 0.5
SAT	22												
SUN	23												
MON	24	848,406	320	28.0	1.0	16,534.8	7.9	FFE 1.0	2	5257 / 8:40	150.0	93.6	FFE 0.5
TUE	25	848,553	147	27.0	1.0	16,538.5	3.7	F 1.2	1	5258 / 8:00		92.4	F 0.3
WED	26	848,721	168	26.5	0.5	16,542.7	4.2		2	5260 / 2:30		91.0	
THU	27	848,895	174	26.0	0.5	16,547.0	4.3	TOW 1.1	1	5261 / 2:30		89.8	TOW 0.5
FRI	28												
SAT	29												
SUN	30												
MON	31	849,413	518	23.0	3.0	16,559.6	12.6		6	5267 / 1:45	150.0	85.8	
		TOTAL FLOW	4,601		21.0		116.9		25		0.0	36.1	

LAKE ELMO WELL # 2

APR 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	849,413	518	23.0	3.0	16,559.6	12.6		6	5267 / 1:45	150.0	85.8	
TUE	1	849,413	0	23	0.0	16,559.6	0.0		0	5267 / 8:15	150.0	85.8	
WED	2	849,413	0	23.0	0.0	16,559.6	0.0		0	5267 / 2:15	150.0	85.7	
THU	3	850,016	603	21.0	2.0	16,572.5	12.9	W 1.3	4	5271 / 11:00		81.9	W 1.0
FRI	4												
SAT	5												
SUN	6												
MON	7												
TUE	8	850,849	833	17.0	4.0	16,591.6	19.1	FFE 1.0	8	5279 / 8:30		75.9	FFE 0.5
WED	9	850,849	0	16.5	0.5	16,591.6	0.0	P 1.1	2	5281 / 8:15		75.9	P 0.3
THU	10	851,062	213	16.0	0.5	16,596.6	5.0	TOW 1.2	1	5282 / 10:10		74.2	TOW 0.5
FRI	11			30.0									
SAT	12												
SUN	13												
MON	14	851,692	630	27.0	3.0	16,611.3	14.7	W 0.8	4	5286 / 9:20		70.0	W 1.2
TUE	15	851,852	160	26.0	1.0	16,615.1	3.8	F 0.9	1	5287 / 8:15		68.8	F 1.0
WED	16	851,994	142	25.5	0.5	16,618.5	3.4	FFE 0.9	2	5288 / 8:00		67.7	FFE 0.3
THU	17	852,133	139	25.0	0.5	16,621.8	3.3	P 1.3	1	5289 / 11:30		66.7	P 1.0
FRI	18	852,227	94	25.0	0.0	16,624.1	2.3		1	5290 / 8:30		66.0	
SAT	19			100.0									
SUN	20												
MON	21	852,703	476	98.0	2.0	16,635.2	11.1		3	5293 / 9:00		62.5	
TUE	22	852,863	160	97.5	0.5	16,639.0	3.8		1	5294 / 8:30		61.3	
WED	23	853,015	152	97.0	0.5	16,642.6	3.6	P 1.1	2	5296 / 11:30		60.2	P 0.3
THU	24	853,169	154	96.0	1.0	16,646.2	3.6	F 0.9	1	5297 / 1:00		59.1	F 0.5
FRI	25	853,306	137	95.0	1.0	16,649.5	3.3	FFE 0.9	1	5298 / 1:30		58.1	FFE 0.5
SAT	26												
SUN	27												
MON	28	853,750	444	94.0	1.0	16,659.9	10.4	V 0.9	3	5301 / 9:30		55.0	V 1.0
TUE	29	853,895	145	93.0	1.0	16,663.4	3.5		1	5302 / 8:45		53.6	
WED	30	854,031	136	92.0	1.0	16,666.6	3.2	FFE 1.2	1	5303 / 10:30	150.0	52.7	FFE 0.5
THU	1												
		TOTAL FLOW	4,618		20.0		107.0		37		0.0	33.1	

LAKE ELMO WELL # 2

MAY 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	854,031	136	92.0	1.0	16,666.6	3.2	FFE 1.2	1	5303 / 10:30	150.0	52.7	FFE 0.5
THU	1	854,172	141	92	0.0	16,670.0	3.4	V 1.0	2	5305 / 8:15		51.7	V 1.0
FRI	2	854,309	137	91.0	1.0	16,673.2	3.2	W 1.0	1	5306 / 8:50		50.6	W 1.0
SAT	3												
SUN	4												
MON	5	854,774	465	90.0	1.0	16,684.1	10.9	V 1.1	3	5309 / 10:00		47.4	V 1.0
TUE	6	854,938	164	89.0	1.0	16,688.0	3.9	FFE 1.1	2	5311 / 8:00		46.2	FFE 0.5
WED	7	855,147	209	88.0	1.0	16,692.9	4.9	W 1.3	1	5312 / 8:15		44.7	W 0.5
THU	8	855,407	260	87.0	1.0	16,698.8	5.9	P 1.1	1	5313 / 10:00	150.0	42.8	P 0.3
FRI	9	855,511	104	86.0	1.0	16,701.4	2.6	F 1.2	1	5314 / 9:45		42.1	F 0.5
SAT	10												
SUN	11												
MON	12	856,000	489	84.5	1.5	16,712.8	11.4	TOW 1.3	3	5317 / 10:00		38.6	TOW 0.5
TUE	13	856,058	58	84.0	0.5	16,714.1	1.3	F 1.2	0	5317 / 8:00		38.3	F 0.3
WED	14	856,267	209	83.5	0.5	16,719.0	4.9	V 1.3	2	5319 / 8:30		36.7	V 1.0
THU	15	856,422	155	83.0	0.5	16,722.7	3.7	P 1.3	1	5320 / 8:00		35.5	P 0.5
FRI	16	856,679	257	82.0	1.0	16,728.7	6.0		1	5321 / 2:00		33.7	
SAT	17												
SUN	18												
MON	19	857,180	501	80.0	2.0	16,740.6	11.9	FFE 1.2	4	5325 / 11:00		30.1	FFE 1.0
TUE	20	857,365	185	79.0	1.0	16,746.7	6.1		2	5327 / 11:15		28.2	
WED	21												
THU	22	857,961	596	77.0	2.0	16,766.3	19.6	P 1.2	4	5331 / 1:40		22.1	P 0.3
FRI	23	858,168	207	76.0	1.0	16,772.7	6.4	FFE 1.0	0	5331 / 8:45		20.3	FFE 1.0
SAT	24												
SUN	25												
MON	26										150.0		
TUE	27	859,510	1,342	71.0	5.0	16,808.4	35.7	W 1.0	6	5337 / 8:05	149.6	9.3	W 1.0
WED	28	859,914	404	69.0	2.0	16,822.2	13.8		4	5341 / 11:30		5.7	
THU	29	860,198	284	68.0	1.0	16,832.2	10.0		1	5342 / 8:00		3.2	
FRI	30	860,704	506	66.0	2.0	16,849.3	17.1	W 0.9	1	5343 / 9:00	147.7	0.9	W 0.9
SAT	31												
		TOTAL FLOW	6,673		26.0		182.7		40		2.3	51.8	

LAKE ELMO WELL # 2													
JUN 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	860,704	506	66.0	2.0	16,849.3	17.1	W 0.9	1	5343 / 9:00	147.7	0.9	W 0.9
SUN	1												
MON	2	861,567	863	63.0	3.0	16,871.8	22.5	V 1.0	6	5349 / 10:10	141.5	0.8	V 1.0
TUE	3	861,838	271	61.5	1.5	16,879.1	7.3	F 1.0	1	5350 / 8:00	139.8	0.0	F 0.3
WED	4	862,234	396	60	1.5	16,899.0	19.9	FFE 1.0	3	5353 / 8:10	137.2		FFE 1.5
THU	5	862,910	676	58.0	2.0	16,906.2	7.2	W 1.1	1	5354 / 2:00	133.0		W 1.0
FRI	6	863,137	227	57.0	1.0	16,911.7	5.5		1	5355 / 9:00	131.6		
SAT	7												
SUN	8												
MON	9	863,979	842	54.0	3.0	16,930.4	18.7	V 1.0	5	5360 / 10:20	126.9		V 1.0
TUE	10	864,219	240	53.0	1.0	16,935.7	5.3	P 1.1	1	5361 / 10:40	126.5	150.0	P 0.5
WED	11												
THU	12	864,796	577	50.0	3.0	16,948.3	12.6	TOW 1.0	3	5364 / 8:30	123.5		TOW 1.0
FRI	13												
SAT	14												
SUN	15												
MON	16	865,875	1,079	46.0	4.0	16,972.0	23.7	W 0.8	6	5370 / 11:00	117.9		W 1.0
TUE	17	866,192	317	45.0	1.0	16,979.2	7.2	F 1.0	2	5371 / 10:00	116.1		F 0.3
WED	18	866,356	164	44.0	1.0	16,982.7	3.5	F 1.2	1	**5373 / 8:20**	**115.3**		F 0.3
THU	19	866,503	147	44.0	0.0	16,986.0	3.3	FFE 1.1	1	**5374 / 10:15**	114.6		FFE 0.5
FRI	20	866,661	158	44.0	0.0	16,989.4	3.4		1	5375 / 10:45	113.7		
SAT	21												
SUN	22												
MON	23	867,320	659	41.0	3.0	17,004.2	14.8	W 0.9	4	5379 / 10:50	110.2		W 0.9
TUE	24	867,657	337	39.0	2.0	17,011.5	7.3	F 0.9	3	5382 / 8:00	108.3		F 0.3
WED	25	867,896	239	39.0	0.0	17,016.6	5.1	V 1.0	2	5384 / 9:00	107.3		V 1.0
THU	26	868,063	167	38.0	1.0	17,020.3	3.7	TOW 0.9	1	5385 / 10:00	106.5		TOW 0.5
FRI	27	868,420	357	36.0	2.0	17,028.2	7.9	P 1.1	2	5387 / 10:00	104.5		P 0.3
SAT	28												
SUN	29												
MON	30	869,097	677	34.0	2.0	17,043.0	14.8	FFE 1.0	4	5391 / 9:50	100.9		FFE 0.3
TUE	1												
		TOTAL FLOW	8,393		32.0		193.7		48		46.8	0.9	

LAKE ELMO WELL # 2

JUL 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	869,097	677	34.0	2.0	17,043.0	14.8	FFE 1.0	4	5391 / 9:50	100.9	150.0	FFE 0.3
TUE	1	869,256	159	33	1.0	17,046.5	3.5	P 1.0	1	5392 / 8:00	100.3		P 0.5
WED	2	869,626	370	31.5	1.5	17,054.7	8.2		2	5394 / 11:30	98.4		
THU	3	869,916	290	30.0	1.5	17,061.8	7.1	V 1.1	2	5396 / 9:40	96.7		V 0.5
FRI	4												
SAT	5												
SUN	6												
MON	7	871,614	1,698	24.0	6.0	17,097.7	35.9	TOW 1.2	8	5404 / 10:00	88.0		TOW 0.5
TUE	8	871,859	245	23.0	1.0	17,103.1	5.4	V 1.1	1	5405 / 8:00	87.0		V 0.5
WED	9	872,244	385	22.0	1.0	17,111.4	8.3	P 1.1	2	5407 / 10:30	84.8		P 0.4
THU	10	872,656	412	20.0	2.0	17,120.4	9.0	FFE 1.0	2	5409 / 1:00	82.9		FFE 0.5
FRI	11	872,976	320	19.0	1.0	17,127.3	6.9	P 1.1	2	5411 / 8:50	81.1		TOW 0.5
SAT	12												
SUN	13												
MON	14	873,804	828	15.0	4.0	17,145.4	18.1	W 0.9	4	5415 / 9:00	76.7		W 0.8
TUE	15	873,994	190	14.0	1.0	17,149.6	4.2		1	5416 / 8:00	76.3		
WED	16	874,370	376	13.0	1.0	17,157.8	8.2	FFE 1.0	2	5418 / 8:50	73.9		FFE 0.5
THU	17	874,742	372	98.0	2.0	17,165.9	8.1	TOW 1.0	2	5420 / 10:00	72.0		TOW 1.0
FRI	18	875,318	576	97.0	1.0	17,178.1	12.2		2	5422 / 11:00	69.4		
SAT	19												
SUN	20												
MON	21	876,816	1,498	91.0	6.0	17,209.8	31.7	V 1.0	6	5428 / 10:50	61.7		V 0.5
TUE	22	877,410	594	88.0	3.0	17,222.0	12.2	P 1.1	2	5430 / 10:00	58.8		P 0.3
WED	23	878,038	628	86.0	2.0	17,235.0	13.0	W 0.9	3	5433 / 8:30	55.8		W 1.0
THU	24	878,985	947	83.0	3.0	17,254.3	19.3	FFE 1.0	2	5435 / 11:00	51.2		
FRI	25	879,412	427	81.0	2.0	17,263.1	8.8		2	5437 / 7:30	49.4		
SAT	26												
SUN	27												
MON	28	881,099	1,687	74.0	7.0	17,294.0	30.9	W 1.1	8	5445 / 11:00	40.6	150.0	W 1.0
TUE	29	881,686	587	72.0	2.0	17,305.5	11.5		2	5447 / 8:00	37.7	150.0	
WED	30	882,362	676	70.0	2.0	17,318.8	13.3	V 1.1	2	5449 / 9:40	34.5	150.0	V 0.5
THU	31	883,024	662	67.0	3.0	17,331.8	13.0	P 1.1	2	5451 / 9:40	31.3	150.0	P 0.5
		TOTAL FLOW	13,927		54.0		288.8		60		69.6	0.0	

LAKE ELMO WELL # 2

AUG 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	883,024	662	67.0	3.0	17,331.8	13.0	P 1.1	2	5451 / 9:40	31.3	150.0	P 0.5
FRI	1	883,772	748	65	2.0	17,346.0	14.2	TOW 1.2	2	5453 / 10:10	27.5	150.0	TOW 0.5
SAT	2												
SUN	3												
MON	4	885,831	2,059	57	8.0	17,385.5	39.5		6	5459 / 3:50	18.8		
TUE	5	886,428	597	55.0	2.0	17,396.7	11.2	F 1.1	4	5463 / 11:15	15.0		F 1.0
WED	6	887,063	635	52.5	2.5	17,408.8	12.1	F 1.1	2	5463 / 10:00	11.9		F 0.5
THU	7	887,822	759	50.0	2.5	17,423.2	14.4	P 1.1	2	5465 / 10:00	8.3		P 0.3
FRI	8	888,588	766	47.0	3.0	17,437.7	14.5	FFE 1.0	2	5467 / 9:10	4.7		FFE 0.3
SAT	9												
SUN	10												
MON	11	890,836	2,248	39.0	8.0	17,480.3	42.6	W 1.0	6	5473 / 10:45	3.1	141.5	W 0.7
TUE	12	891,181	345	37.5	1.5	17,487.0	6.7	TOW 1.0	2	5475 / 1:00	0.0	139.8	TOW 0.5
WED	13	891,715	534	36.0	1.5	17,497.2	10.2	P 1.0	2	5477 / 10:00	0.0	137.2	P 0.3
THU	14	892,332	617	33.0	3.0	17,509.0	11.8	F 1.0	2	5479 / 9:30		134.2	F 0.3
FRI	15												
SAT	16												
SUN	17												
MON	18	894,775	2,443	25.0	8.0	17,555.8	46.8	V 1.0	8	5487 / 10:20		122.6	V 0.5
TUE	19	895,130	355	24.0	1.0	17,562.7	6.9		2	5489 / 9:00	150.0	120.9	
WED	20	895,622	492	21.0	3.0	17,572.1	9.4	FFE 1.2	2	5491 / 10:00	150.0	118.5	FFE 0.5
THU	21	896,083	461	20.0	1.0	17,581.0	8.9	W 1.1	4	5493 / 2:15		116.3	W 1.0
FRI	22	896,282	199	19.0	1.0	17,584.9	3.9	F 1.2	2	5495 / 9:40		115.3	F 0.5
SAT	23												
SUN	24												
MON	25	897,516	1,234	14.0	5.0	17,608.9	24.0	P 1.1	6	5501 / 11:00		109.1	P 0.3
TUE	26	897,770	254	102.0	0.0	17,613.9	5.0	W 1.4	2	5503 / 8:45		107.6	W 1.1
WED	27	898,204	434	100.0	2.0	17,622.3	8.4	F 1.0	2	5505 / 8:00		105.5	F 0.5
THU	28	898,676	472	99.0	1.0	17,631.3	9.0		2	5507 / 9:00		103.2	
FRI	29	898,957	281	99.0	0.0	17,637.0	5.7	FFE 1.0	2	5509 / 10:00		102.1	FFE 0.5
SAT	30												
SUN	31												
		TOTAL FLOW	15,933		56.0		305.2		62		31.3	47.9	

LAKE ELMO WELL # 2

SEP 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	29	898,957	281	99.0	0.0	17,637.0	5.7	FFE 1.0	2	5509 / 10:00	150.0	102.1	FFE 0.5
MON	1												
TUE	2	899,839	882	94.0	5.0	17,654.4	17.4		5	5514 / 8:30		97.6	
WED	3	900,232	393	93.0	1.0	17,663.0	8.6		2	5516 / 8:00		95.7	
THU	4	900,383	151	92	1.0	17,665.1	2.1	V 1.1	1	5517 / 10:50	150.0	95.0	V 1.0
FRI	5	900,713	330	91.0	1.0	17,671.6	6.5	P 1.0	2	5519 / 9:45		93.3	P 0.3
SAT	6												
SUN	7												
MON	8	901,557	844	88.0	3.0	17,688.1	16.5	TOW 1.0	5	5524 / 11:20		89.2	TOW 0.3
TUE	9	901,728	171	87.0	1.0	17,691.5	3.4	F 1.1	1	5525 / 9:30		88.4	F 0.3
WED	10	902,043	315	86.0	1.0	17,697.7	6.2	P 1.1	2	5527 / 10:00		86.9	P 0.3
THU	11	902,216	173	85.5	0.5	17,701.1	3.4		1	5528 / 9:00		86.0	
FRI	12												
SAT	13												
SUN	14												
MON	15	903,117	901	82.0	3.5	17,718.9	17.8	W 1.3	6	5534 / 11:25		81.6	W 1.0
TUE	16	903,377	260	81.0	1.0	17,725.0	6.1	FFE 1.0	1	5535 / 8:30		80.0	FFE 0.3
WED	17	903,576	199	80.0	1.0	17,729.7	4.7		2	5537 / 11:30		78.9	
THU	18	904,025	449	79.0	1.0	17,740.3	10.6	F 1.1	2	5539 / 2:00		76.3	F 0.3
FRI	19	904,328	303	77.0	2.0	17,747.3	7.0		2	5541 / 9:20		74.5	
SAT	20												
SUN	21												
MON	22	905,230	902	74.0	3.0	17,768.2	20.9	W 0.9	4	5545 / 11:40		69.3	W 1.0
TUE	23	905,434	204	73.0	1.0	17,773.0	4.8	F 1.0	2	5547 / 9:15	150.0	68.2	F 0.3
WED	24	905,772	338	72.0	1.0	17,780.9	7.9		1	5548 / 8:00		66.1	
THU	25	906,178	406	70.0	2.0	17,790.3	9.4		2	5550 / 8:00		63.7	
FRI	26	906,526	348	69.0	1.0	17,798.4	8.1	TOW 1.1	2	5552 / 10:00		61.7	TOW 0.5
SAT	27												
SUN	28												
MON	29	908,013	1,487	64.0	5.0	17,832.3	33.9	V 1.2	6	5558 / 10:40		53.3	V 1.0
TUE	30	908,302	289	63.0	1.0	17,839.0	6.7	P 1.0	1	5559 / 8:15	150.0	51.7	P 0.3
WED	1												
		TOTAL FLOW	9,345		36.0		202.0		50		0.0	50.4	

LAKE ELMO WELL # 2

OCT 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	908,302	289	63.0	1.0	17,839.0	6.7	P 1.0	1	5559 / 8:15	150.0	51.7	P 0.3
WED	1	908,463	161	62	1.0	17,842.8	3.8	F 1.1	2	5561 / 8:15		50.7	F 0.3
THU	2	908,767	304	61.0	1.0	17,849.9	7.1	FFE 1.1	1	5561 / 10:15		48.9	FFE0.5
FRI	3	908,964	197	60.0	1.0	17,854.5	4.6	TOW 1.3	2	5563 / 9:50		47.8	TOW 0.5
SAT	4												
SUN	5												
MON	6	909,480	516	58.0	2.0	17,866.5	12.0	W 0.8	3	5566 / 10:45		44.9	W 0.8
TUE	7	909,744	264	57.0	1.0	17,872.7	6.2	F 1.0	2	5568 / 9:30		43.4	F 0.5
WED	8	910,009	265	56.0	1.0	17,879.6	6.9	P 1.0	1	5569 / 8:00		41.6	P 0.3
THU	9	910,255	246	55.0	1.0	17,886.5	6.9	FFE 1.2	2	5571 / 11:15		39.7	FFE 0.5
FRI	10	910,515	260	54.0	1.0	17,893.9	7.4	TOW 0.9	1	5572 / 9:15		37.8	TOW 0.3
SAT	11												
SUN	12												
MON	13	911,198	683	52.0	2.0	17,912.9	19.0	V 0.9	4	5576 / 9:35		33.2	V 1.0
TUE	14	911,482	284	51.0	1.0	17,920.8	7.9		1	5577 / 11:00		31.2	
WED	15	911,653	171	50.0	1.0	17,925.5	4.7	FFE 0.9	1	5578 / 9:40		30.1	FFE 0.5
THU	16												
FRI	17												
SAT	18												
SUN	19												
MON	20	912,723	1,070	45.0	5.0	17,955.6	30.1		6	5584 / 11:30		22.7	
TUE	21	912,963	240	45.0	0.0	17,962.2	6.6	P 0.8	1	5585 / 10:30		21.0	P 0.3
WED	22	913,155	192	45.0	0.0	17,967.6	5.4		1	5586 / 11:30		19.7	
THU	23	913,337	182	45.0	0.0	17,972.6	5.0		1	5587 / 11:00		18.4	
FRI	24	913,383	46	44.0	1.0	17,973.9	1.3	P 0.9	1	5588 / 8:20		18.2	P 0.0
SAT	25												
SUN	26												
MON	27	913,982	599	42.0	2.0	17,990.0	16.1	V 0.9	3	5591 / 9:25		13.6	V 0.5
TUE	28	914,213	231	41.0	1.0	17,997.0	7.0	P 0.8	1	5592 / 11:30		12.0	P 0.0
WED	29	914,252	39	41.0	0.0	17,998.5	1.5	TOW 0.9	1	5593 / 10:50		11.9	TOW 0.5
THU	30												
FRI	31	914,534	282	40.0	1.0	18,006.7	8.2		1	5594 / 8:30	150.0	10.0	
		TOTAL FLOW	6,232		23.0		167.7		36		0.0	41.7	

LAKE ELMO WELL # 2

NOV 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	914,534	282	40.0	1.0	18,006.7	8.2		1	5594 / 8:30	150.0	10.0	
SAT	1												
SUN	2												
MON	3	915,079	545	38.0	2.0	18,022.3	15.6	F 0.8	4	5598 / 11:00		6.0	F 0.5
TUE	4	915,236	157	37.5	0.5	18,026.8	4.5		1	5599 / 1:00		5.0	
WED	5	915,334	98	37.0	0.5	18,029.7	2.9	W 1.2	1	5600 / 10:00		4.3	W 0.7
THU	6	915,461	127	37 / 100	0.0	18,033.3	3.6	TOW 1.1	2	5602 / 9:00		2.6	TOW 0.5
FRI	7	915,659	198	99.0	1.0	18,038.9	5.6	F 1.0	1	5603 / 10:00	150.0	0.0	F 0.5
SAT	8												
SUN	9												
MON	10	916,098	439	97.0	2.0	18,051.6	12.7		4	5607 / 3:30	146.6		
TUE	11												
WED	12	916,424	326	96.0	1.0	18,060.8	9.2	V 1.1	3	5610 / 11:15	144.4		V 1.0
THU	13	916,424	0	96.0	0.0	18,060.8	0.0	P 1.2	0	5610 / 10:20	143.9	150.0	P 0.3
FRI	14												
SAT	15												
SUN	16												
MON	17	916,802	378	95.0	1.0	18,070.6	9.8	V 1.2	2	5612 /	141.9		V 0.5
TUE	18	916,882	80	94.5	0.5	18,072.4	1.8	TOW 1.2	1	5613 / 8:30			TOW 0.5
WED	19												
THU	20	917,232	350	93.0	1.5	18,080.9	8.5	F 1.0	6	5619 / 11:00	139.7		F 0.3
FRI	21	917,324	92	93.0	0.0	18,083.2	2.3	P 1.1	4	5623 / 9:40	139.1		P 0.1
SAT	22												
SUN	23												
MON	24	917,834	510	91.0	2.0	18,095.9	12.7	FFE 1.1	11	5634 / 10:00	136.3	150.0	FFE 0.5
TUE	25	917,981	147	90.5	0.5	18,099.6	3.7	F 0.9	2	5636 / 2:00	135.5		F 0.5
WED	26	918,058	77	90.0	0.5	18,101.5	1.9	P 1.0	1	5637 / 10:00	135.1	150.0	P 0.3
THU	27												
FRI	28												
SAT	29												
SUN	30												
MON	1												
		TOTAL FLOW	3,524		13.0		94.8		43		14.9	10.0	

LAKE ELMO WELL # 2

DEC 14		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	26	918,058	77	90.0	0.5	18,101.5	1.9	P 1.0	1	5637 / 10:00	135.1	150.0	P 0.3
MON	1	918,974	916	87	3.0	18,124.5	23.0	W 1.1	11	5648 / 2:20	129.4	150.0	W 0.9
TUE	2	919,250	276	86.0	1.0	18,130.7	6.2	V 1.1	3	5651 / 1:00	127.9		V 0.5
WED	3	919,374	124	85.0	1.0	18,133.9	3.2	P 1.1	0	5651 / 10:30	127.2		P 0.3
THU	4	919,445	71	85	0.0	18,135.6	1.7		1	5652 / 9:00	126.7		
FRI	5	919,583	138	84.5	0.5	18,139.1	3.5	TOW1.2	2	5654 / 9:45	125.9		TOW 0.5
SAT	6												
SUN	7												
MON	8	920,033	450	83.0	1.5	18,150.4	11.3	W 1.3	6	5660 / 2:00	123.4	150.0	W 1.0
TUE	9	920,115	82	82.5	0.5	18,152.5	2.1	F 1.2	2	5662 / 8:00	123.0		F 0.5
WED	10	920,275	160	82.0	0.5	18,156.6	4.1		2	5664 / 2:00	122.0		
THU	11	920,527	252	81.0	1.0	18,162.4	5.8	FFE 1.0	1	5665 / 9:20	120.7		FFE 0.3
FRI	12	920,894	367	80.0	1.0	18,171.1	8.7	W 1.3	1	5666 / 10:55	118.7		W 1.0
SAT	13												
SUN	14												
MON	15												
TUE	16	921,485	591	78.0	2.0	18,186.0	14.9		4	5670 / 10:50	115.3		
WED	17	921,618	133	77.0	1.0	18,189.4	3.4	TOW 1.3	3	5673 / 9:30	114.5		TOW 0.5
THU	18	921,788	170	76.5	0.5	18,193.8	4.4	V 1.2	1	**5674 / 8:40**	**113.5**		V 1.0
FRI	19	922,000	212	76.0	0.5	18,199.3	5.5	P 1.2	1	**5675 / 9:00**	112.2		P 0.3
SAT	20												
SUN	21												
MON	22	922,419	419	74.0	2.0	18,210.2	10.9	W 1.1	3	5678 / 9:30	109.6		W 1.0
TUE	23	922,551	132	74.0	0.0	18,213.5	3.3	FFE 1.0	1	5679 / 8:30	108.8		FFE 1.0
WED	24												
THU	25												
FRI	26												
SAT	27												
SUN	28												
MON	29	923,606	1,055	70.0	4.0	18,236.4	22.9	F 1.3	8	5687 / 2:20	103.7		F 0.3
TUE	30	923,733	127	69.0	1.0	18,239.1	2.7	P 1.4	1	5688 / 10:30	103.1		P 0.3
WED	31	923,847	114	69.0	0.0	18,241.6	2.5			5689 / 9:30	102.4		
		TOTAL FLOW	5,789		21.0		140.1		51		135.1	150.0	

WELL # 2 FLOW

MONTH	FLOW READING	X 1,000	QUARTERLY FLOW	SCADA READINGS
JAN	4,158	4,158,000		3793
FEB	3,754	3,754,000		4048
MAR	4,601	4,601,000	12,513,000	4291
APR	4,618	4,618,000		1100
MAY	6,673	6,673,000		4743
JUN	8,393	8,393,000	19,684,000	6994
JUL	13,927	13,927,000		12309
AUG	15,933	15,933,000		15797
SEP	9,345	9,345,000	39,205,000	8839
OCT	6,232	6,232,000		5960
NOV	3,524	3,524,000		3568
DEC	5,789	5,789,000	15,545,000	4431
	86,947	86,947,000	86,947,000	75,873,000

86,947,000 GALLONS

LAKE ELMO WELL # 2

JAN 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31												
THU	1												
FRI	2												
SAT	3												
SUN	4												
MON	5												
TUE	6												
WED	7												
THU	8												
FRI	9												
SAT	10												
SUN	11												
MON	12												
TUE	13												
WED	14												
THU	15												
FRI	16												
SAT	17												
SUN	18												
MON	19												
TUE	20												
WED	21												
THU	22												
FRI	23												
SAT	24												
SUN	25												
MON	26												
TUE	27												
WED	28												
THU	29												
FRI	30												
SAT	31												
		TOTAL FLOW	0		0.0		0.0		0		0.0	0.0	

LAKE ELMO WELL # 4

DEC 14		WATER READ	USE	FLUORIDEWEIGHT #	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	26												
MON	1												
TUE	2												
WED	3												
THU	4												
FRI	5												
SAT	6												
SUN	7												
MON	8	31,346		1,506.6		26.7			34	34 / 11:25	148.1	149.9	
TUE	9												
WED	10												
THU	11												
FRI	12												
SAT	13												
SUN	14												
MON	15												
TUE	16												
WED	17	45,085	13,739	1,503.7	2.9	27.0	0.3		6	40 / 2:35	147.7	150.1	
THU	18												
FRI	19												
SAT	20												
SUN	21												
MON	22												
TUE	23												
WED	24												
THU	25												
FRI	26												
SAT	27												
SUN	28												
MON	29												
TUE	30	48,045	2,961	1,505.6	-1.9	27.1	0.1		9	49 / 11:04	148.5	150.1	
WED	31												
		TOTAL FLOW	16,699		1.0		0.4		49		0.0	0.0	

LAKE ELMO WELL # 4

DEC 14		WATER READ	USE	FLUORIDEWEIGHT #	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	26												
MON	1												
TUE	2												
WED	3												
THU	4												
FRI	5												
SAT	6												
SUN	7												
MON	8	31,346		1,506.6		26.7			34	34 / 11:25	148.1	149.9	
TUE	9												
WED	10												
THU	11												
FRI	12												
SAT	13												
SUN	14												
MON	15												
TUE	16												
WED	17	45,085	13,739	1,503.7	2.9	27.0	0.3		6	40 / 2:35	147.7	150.1	
THU	18												
FRI	19												
SAT	20												
SUN	21												
MON	22												
TUE	23												
WED	24												
THU	25												
FRI	26												
SAT	27												
SUN	28												
MON	29												
TUE	30	48,045	2,961	1,505.6	-1.9	27.1	0.1		9	49 / 11:04	148.5	150.1	
WED	31												
		TOTAL FLOW	16,699		1.0		0.4		49		0.0	0.0	

2015 WELL #1 SUMMARY

MONTH	FLOW READING	SCADA READING
JAN	1497.7	1577
FEB	1469.5	1335
MAR	1662.8	1585
APR	1662.3	
MAY		
JUN		
JUL		
AUG		
SEP		
OCT		
NOV		
DEC		
TOTAL	6292.3	4497

LAKE ELMO WELL # 1

JAN 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	95,446.0	42.8	77.50	0.00	7,179.5	1.8		2	23 / 8:30
THU	1									
FRI	2	95,540.5	94.5	77.50	0.00	7,183.0	3.5	P 0.7	4	27 / 8:50
SAT	3									
SUN	4									
MON	5	95,702.5	162.0	77.50	0.00	7,189.1	6.1	LE 0.8	7	34 / 10:30
TUE	6	95,744.4	41.9	77.00	0.50	7,190.7	1.6	P 0.5	2	36 / 9:30
WED	7	95,811.2	66.8	77.00	0.00	7,193.2	2.5	F 0.6	3	39 / 11:30
THU	8	95,845.0	33.8	77.00	0.00	7,194.4	1.2	B 0.5	2	41 / 8:40
FRI	9									
SAT	10									
SUN	11									
MON	12	96,040.3	195.3	76.00	1.00	7,201.8	7.4	B 0.5	9	50 / 9:15
TUE	13	96,101.2	60.9	75.00	1.00	7,204.1	2.3	P 1.8	3	53 / 9:00
WED	14	96,139.8	38.6	75.00	0.00	7,205.5	1.4	C 1.7	2	55 / 9:30
THU	15	96,201.7	61.9	74.50	0.50	7,207.8	2.3	LE 1.8	3	58 / 9:00
FRI	16	96,250.2	48.5	74.00	0.50	7,209.6	1.8	P 1.8	3	61 / 8:45
SAT	17									
SUN	18									
MON	19									
TUE	20	96,447.5	197.3	72.00	2.00	7,217.0	7.4		12	73 / 10:00
WED	21	96,499.3	51.8	72.00	0.00	7,219.0	2.0	F 1.9	1	77 / 9:30
THU	22	96,546.2	46.9	71.50	0.50	7,220.7	1.7	LE 1.8	3	80 / 8:45
FRI	23	96,610.2	64.0	71.00	0.50	7,223.1	2.4	P 1.8	4	84 / 10:30
SAT	24									
SUN	25									
MON	26	96,794.9	184.7	70.00	1.00	7,230.0	6.9	C 1.8	10	94 / 3:45
TUE	27	96,839.1	44.2	70.00	0.00	7,231.7	1.7	F 1.5	3	97 / 11:15
WED	28	96,889.2	50.1	70.00	0.00	7,233.6	1.9	C 1.6	3	100 / 8:00
THU	29	96,943.7	54.5	69.50	0.50	7,235.6	2.0		3	103 / 9:15
FRI	30									
SAT	31									
		TOTAL FLOW	1,497.7		8.00		56.1		77	

LAKE ELMO WELL # 1

FEB 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	96,943.7	54.5	69.50	0.50	7,235.6	2.0		3	103 / 9:15
SUN	1									
MON	2	97,147.8	204.1	69.00	0.50	7,243.3	7.7	B 1.6	11	114 / 9:10
TUE	3	97,202.5	54.7	68.00	1.00	7,245.4	2.1	F1.6	3	117 / 9:45
WED	4									
THU	5	97,309.9	107.4	68.00	0.00	7,249.4	4.0	LE 1.5	6	123 / 9:00
FRI	6	97,357.5	47.6	67.50	0.50	7,251.2	1.8	P 1.4	3	126 / 9:00
SAT	7									
SUN	8									
MON	9	97,500.0	142.5	67.00	0.50	7,256.6	5.4	C 1.4	8	134 / 10:10
TUE	10	97,552.9	52.9	67.00	0.00	7,258.5	1.9	B 1.5	3	137 / 10:00
WED	11									
THU	12	97,657.2	104.3	66.50	0.50	7,262.4	3.9	LE 1.3	6	143 / 8:45
FRI	13									
SAT	14									
SUN	15									
MON	16									
TUE	17	97,907.5	250.3	65.00	1.50	7,271.8	9.4	C 1.4	15	158 / 9:00
WED	18	97,957.0	49.5	65.00	0.00	7,273.7	1.9	F 1.3	3	161 / 9:00
THU	19	98,004.7	47.7	65.00	0.00	7,275.5	1.8	P 1.2	3	164 / 9:30
FRI	20									
SAT	21									
SUN	22									
MON	23	98,208.0	203.3	64.00	1.00	7,283.2	7.7	B 1.3	14	178 / 8:45
TUE	24	98,253.8	45.8	64.00	0.00	7,284.9	1.7	C 1.2	3	181 / 8:30
WED	25	98,305.0	51.2	64.00	0.00	7,286.8	1.9	LE 1.4	4	185 / 9:10
THU	26	98,371.1	66.1	63.50	0.50	7,289.3	2.5	F 1.3	4	189 / 1:00
FRI	27	98,413.2	42.1	63.50	0.00	7,290.9	1.6	B 1.4	3	192 / 9:15
SAT	28									
SUN	1									
MON	2									
TUE	3									
		TOTAL FLOW	1,469.5		6.00		55.3		89	

LAKE ELMO WELL # 1

MAR 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	27	98,413.2	42.1	63.50	0.00	7,290.9	1.6	B 1.4	3	192 / 9:15
SUN	1									
MON	2	98,567.9	154.7	63.00	0.50	7,296.7	5.8	P 1.4	11	203 / 8:50
TUE	3	98,623.4	55.5	62.00	1.00	7,298.8	2.1		4	207 / 11:00
WED	4	98,677.7	54.3	62.00	0.00	7,300.8	2.0	F 1.2	4	211 / 11:00
THU	5	98,717.7	40.0	62.00	0.00	7,302.3	1.5	LE 1.1	3	214 / 9:45
FRI	6	98,770.8	53.1	61.50	0.50	7,304.3	2.0	C 1.3	4	218 / 9:50
SAT	7									
SUN	8									
MON	9	98,919.0	148.2	61.00	0.50	7,309.8	5.5	P 1.2	11	229 / 9:00
TUE	10	98,975.0	56.0	60.50	0.50	7,311.9	2.1		4	233 / 12:20
WED	11	99,026.4	51.4	60.00	0.50	7,313.9	2.0	F 1.2	3	236 / 12:00
THU	12	99,080.8	54.4	60.00	0.00	7,315.9	2.0	B 1.3	3	239 / 10:30
FRI	13	99,118.3	37.5	60.00	0.00	7,317.3	1.4	LE 1.3	2	241 / 9:20
SAT	14									
SUN	15									
MON	16	99,325.3	207.0	59.00	1.00	7,325.1	7.8	P 1.2	10	251 / 2:30
TUE	17	99,344.3	19.0	59.00	0.00	7,325.8	0.7	C 1.2	1	252 / 8:45
WED	18	99,402.3	58.0	59.00	0.00	7,328.0	2.2	P 1.2	3	255 / 9:30
THU	19	99,438.0	35.7	59.00	0.00	7,329.4	1.4	B 1.2	2	257 / 9:20
FRI	20	99,476.8	38.8	58.50	0.50	7,330.8	1.4		2	259 / 7:50
SAT	21									
SUN	22									
MON	23	99,650.2	173.4	58.00	0.50	7,337.3	6.5	LE 1.3	9	268 / 11:00
TUE	24	99,687.4	37.2	57.00	1.00	7,338.7	1.4	F 1.2	2	270 / 9:15
WED	25	99,745.1	57.7	57.00	0.00	7,340.9	2.2	C 1.1	3	273 / 9:15
THU	26	99,804.6	59.5	57.00	0.00	7,343.2	2.3	P 1.2	3	276 / 9:30
FRI	27	99,852.4	47.8	57.00	0.00	7,345.0	1.8	B 1.3	3	279 / 8:30
SAT	28									
SUN	29									
MON	30	100,019.0	166.6	56.00	1.00	7,351.2	6.2	C 1.3	8	287 / 8:49
TUE	31	76.0	57.0	56.00	0.00	7,353.4	2.2	P 1.3	3	290 / 8:30
		TOTAL FLOW	1,662.8		7.50		62.5		98	

LAKE ELMO WELL # 1

APR 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	76.0	57.0	56.00	0.00	7,353.4	2.2	P 1.3	3	290 / 8:30
WED	1	134.4	58.4	56.00	0.00	7,355.6	2.2	LE 1.2	3	293 / 11:10
THU	2	193.0	58.6	55.00	1.00	7,357.8	2.2	P 1.0	3	296 / 11:00
FRI	3	230.8	37.8	55.00	0.00	7,359.2	1.4	B 1.1	2	298 / 8:50
SAT	4									
SUN	5									
MON	6	385.5	154.7	55.00	0.00	7,365.0	5.8	G 1.0	8	306 / 8:40
TUE	7	443.5	58.0	55.00	0.00	7,367.2	2.2	LE 1.0	4	310 / 10:30
WED	8	497.5	54.0	54.50	0.50	7,369.2	2.0	F 1.1	3	313 / 8:30
THU	9	545.2	47.7	54.50	0.00	7,371.0	1.8	P 1.1	4	317 / 9:05
FRI	10	600.0	54.8	54.50	0.00	7,373.1	2.1	B 0.9	5	322 / 8:00
SAT	11			100.00						
SUN	12									
MON	13	761.9	161.9	99.00	1.00	7,379.1	6.0	F 1.6	13	335 / 9:30
TUE	14	822.6	60.7	98.00	1.00	7,381.5	2.4		5	340 / 1:30
WED	15	870.8	48.2	98.00	0.00	7,383.3	1.8	C 1.4	4	344 / 9:20
THU	16	917.9	47.1	97.50	0.50	7,385.1	1.8	LE 1.5	4	348 / 9:30
FRI	17	976.4	58.5	97.00	0.50	7,387.3	2.2	C 1.4	5	353 / 9:20
SAT	18									
SUN	19									
MON	20	1,132.7	156.3	96.50	0.50	7,393.1	5.8	F 1.6	13	366 / 10:10
TUE	21	1,183.0	50.3	96.00	0.50	7,395.0	1.9	P 1.7	4	370 / 8:30
WED	22	1,235.0	52.0	95.50	0.50	7,396.9	1.9	F 1.6	5	375 / 9:00
THU	23	1,311.0	76.0	95.00	0.50	7,399.8	2.9	LE 1.6	6	381 / 3:10
FRI	24	1,359.6	48.6	95.00	0.00	7,401.6	1.8	P 1.2	4	385 / 9:30
SAT	25									
SUN	26									
MON	27	1,535.5	175.9	94.00	1.00	7,408.2	6.6	B 1.5	14	399 / 8:55
TUE	28	1,599.0	63.5	94.00	0.00	7,410.6	2.4	F 1.3	5	404 / 9:30
WED	29	1,676.1	77.1	93.50	0.50	7,413.5	2.9	B 1.3	6	410 / 8:30
THU	30	1,738.3	62.2	93.00	0.50	7,415.9	2.4	P 1.5	5	415 / 9:00
FRI	1									
		TOTAL FLOW	1,662.3		8.50		62.5		125	

LAKE ELMO WELL # 1

MAY 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	1,738.3	62.2	93.00	0.50	7,415.9	2.4	P 1.5	5	415 / 9:00
FRI	1	1,816.4	78.1	93.00	0.00	7,418.8	2.9	C 1.5	6	421 / 8:40
SAT	2									
SUN	3									
MON	4	2,048.1	231.7	91.50	1.50	7,427.5	8.7	G 1.5	18	439 / 9:10
TUE	5	2,108.7	60.6	91.00	0.50	7,429.8	2.3	P 1.1	5	444 / 8:45
WED	6	2,155.1	46.4	91.00	0.00	7,431.5	1.7	C 1.4	4	448 / 9:30
THU	7	2,214.4	59.3	91.00	0.00	7,433.8	2.3	LE 1.1	5	453 / 9:00
FRI	8	2,260.8	46.4	90.50	0.50	7,435.5	1.7	P 1.5	4	457 / 8:50
SAT	9									
SUN	10									
MON	11	2,427.9	167.1	90.00	0.50	7,441.8	6.3	G 1.0	1	458 / 9:30
TUE	12	2,476.3	48.4	90.00	0.00	7,443.6	1.8	F 1.3	17	475 / 10:00
WED	13	2,535.1	58.8	89.50	0.50	7,445.8	2.2	C 1.3	5	480 / 10:00
THU	14	2,582.6	47.5	89.00	0.50	7,447.6	1.8	LE 1.6	4	484 / 8:00
FRI	15	2,629.9	47.3	89.00	0.00	7,449.4	1.8	P 1.6	4	488 / 8:00
SAT	16									
SUN	17									
MON	18	2,809.8	179.9	88.00	1.00	7,456.2	6.8	B 1.5	15	503 / 9:00
TUE	19	2,869.8	60.0	88.00	0.00	7,458.4	2.2	C 1.6	5	508 / 9:00
WED	20	2,917.9	48.1	87.50	0.50	7,460.3	1.9		4	512 / 8:30
THU	21	2,991.4	73.5	87.50	0.00	7,463.0	2.7	P 1.2	6	518 / 10:00
FRI	22	3,053.6	62.2	87.00	0.50	7,465.4	2.4	G 1.2	2	523 / 9:05
SAT	23									
SUN	24									
MON	25									
TUE	26	3,328.0	274.4	86.00	1.00	7,475.7	10.3		22	545 / 10:15
WED	27	3,387.5	59.5	86.00	0.00	7,478.0	2.3	F 1.3	5	550 / 8:15
THU	28	3,447.5	60.0	85.50	0.50	7,480.2	2.2	C 1.3	6	556 / 8:15
FRI	29	3,505.9	58.4	85.50	0.00	7,482.5	2.3	P 1.1	5	561 / 8:10
SAT	30									
SUN	31									
		TOTAL FLOW	1,767.6		7.50		66.6		143	

LAKE ELMO WELL # 1

JUN 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	3,505.9	58.4	85.50	0.00	7,482.5	2.3	P 1.1	5	561 / 8:10
MON	1	3,685.0	179.1	84.00	1.50	7,489.3	6.8	B 1.3	15	576 / 11:45
TUE	2	3,733.8	48.8	84.00	0.00	7,491.0	1.7	C 1.3	4	580 / 9:00
WED	3	3,810.5	76.7	83.50	0.50	7,494.1	3.1	F 1.3	8	588 / 8:00
THU	4	3,913.3	102.8	83.50	0.00	7,497.9	3.8	P 1.6	12	600 / 9:00
FRI	5	4,011.2	97.9	83.00	0.50	7,501.7	3.8	B 1.5	13	613 / 9:40
SAT	6									
SUN	7									
MON	8	4,162.5	151.3	82.00	1.00	7,507.4	5.7	le 1.4	13	626 / 9:40
TUE	9	4,243.6	81.1	81.50	0.50	7,510.4	3.0	B 1.4	8	634 / 2:30
WED	10	4,305.4	61.8	81.50	0.00	7,512.8	2.4		7	641 / 9:00
THU	11	4,372.6	67.2	81.00	0.50	7,515.3	2.5		5	646 / 9:30
FRI	12	4,439.3	66.7	81.00	0.00	7,517.8	2.5	P 1.3	5	651 / 8:20
SAT	13									
SUN	14									
MON	15	4,602.2	162.9	80.00	1.00	7,524.0	6.2	C 1.6	14	665 / 10:00
TUE	16	4,648.5	46.3	80.00	0.00	7,525.7	1.7		4	669 / 8:45
WED	17	4,730.0	81.5	79.00	1.00	7,528.9	3.2	LE 1.5	5	674 / 9:00
THU	18	4,779.1	49.1	79.00	0.00	7,530.7	1.8	B 1.3	4	678 / 9:30
FRI	19	4,844.0	64.9	79.00	0.00	7,533.2	2.5	C 1.3	9	687 / 8:20
SAT	20									
SUN	21									
MON	22	5,000.8	156.8	78.00	1.00	7,539.1	5.9	B 1.5	13	700 / 8:50
TUE	23	5,046.8	46.0	78.00	0.00	7,540.8	1.7	F 1.2	5	705 / 8:40
WED	24	5,103.5	56.7	77.50	0.50	7,543.0	2.2	F 1.1	5	710 / 10:00
THU	25	5,166.4	62.9	77.50	0.00	7,545.3	2.3	P 1.3	6	716 / 11:40
FRI	26	5,225.6	59.2	77.00	0.50	7,547.6	2.3	C 1.1	5	721 / 8:10
SAT	27									
SUN	28									
MON	29	5,398.6	173.0	76.50	0.50	7,554.2	6.6	LE 1.2	15	736 / 9:30
TUE	30	5,449.3	50.7	76.00	0.50	7,556.1	1.9	f 0.7	5	741 / 8:00
WED	1									
		TOTAL FLOW	1,943.4		9.50		73.6		180	

LAKE ELMO WELL # 1

JUL 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	5,449.3	50.7	76.00	0.50	7,556.1	1.9	F 0.7	5	741 / 8:00
WED	1	5,535.0	85.7	76.00	0.00	7,559.3	3.2	F 1.2	6	747V / 9:00
THU	2	5,595.1	60.1	76.00	0.00	7,561.6	2.3		5	752 / 10:20
FRI	3									
SAT	4									
SUN	5									
MON	6	5,851.8	256.7	74.00	2.00	7,571.4	9.8	B 1.3	22	774 / 3:50
TUE	7	5,897.9	46.1	74.00	0.00	7,573.1	1.7	F 1.1	4	778 / 9:30
WED	8	5,944.2	46.3	74.00	0.00	7,574.9	1.8		4	782 / 9:00
THU	9	5,990.7	46.5	100.00	0.00	7,576.6	1.7	LE 1.6	4	786 / 9:00
FRI	10	6,052.3	61.6	100.00	0.00	7,579.4	2.8	P 1.6	6	792 / 8:15
SAT	11									
SUN	12									
MON	13	6,253.7	201.4	98.50	1.50	7,586.7	7.3	C 1.7	16	808 / 9:30
TUE	14	6,323.6	69.9	98.00	0.50	7,589.4	2.7	P 1.5	6	814 / 8:15
WED	15	6,384.7	61.1	98.00	0.00	7,591.7	2.3	B 1.5	5	819 / 8:50
THU	16	6,477.4	92.7	98.00	0.00	7,595.2	3.5	LE 0.5	8	827 / 2:20
FRI	17	6,529.2	51.8	98.00	0.00	7,597.2	2.0	C 1.5	4	831 / 9:00
SAT	18									
SUN	19									
MON	20	6,717.7	188.5	98.00	0.00	7,604.4	7.2	P 0.5	16	842 / 9:25
TUE	21	6,794.0	76.3	98.00	0.00	7,607.3	2.9	P 0.4	7	854 / 9:20
WED	22	6,885.9	91.9	97.00	1.00	7,610.8	3.5	LE 1.5	6	862 / 11:30
THU	23	6,935.0	49.1	97.00	0.00	7,612.7	1.9	F 1.6	4	866 / 9:00
FRI	24	7,019.4	84.4	96.00	1.00	7,615.9	3.2	P 1.0	7	873 / 9:40
SAT	25									
SUN	26									
MON	27									
TUE	28	7,313.7	294.3	95.00	1.00	7,624.2	8.3	C 1.2	24	897 / 10:00
WED	29	7,394.3	80.6	94.00	1.00	7,630.2	6.0		5	902 / 2:00
THU	30	7,461.2	66.9	94.00	0.00	7,632.9	2.7		4	906 / 2:00
FRI	31									
		TOTAL FLOW	2,011.9		8.00		76.8		163	

LAKE ELMO WELL # 1

AUG 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	7,461.2	66.9	94.00	0.00	7,632.9	2.7	F 0.7	4	906 / 2:00
SAT	1									
SUN	2									
MON	3	7,872.8	411.6	92.00	2.00	7,648.9	16.0	F 1.2	19	925 / 10:10
TUE	4	7,997.9	125.1	92.00	0.00	7,653.8	4.9	LE 0.6	5	930 / 10:00
WED	5	8,157.3	159.4	91.50	0.50	7,660.0	6.2	B 0.7	6	936 / 3:30
THU	6	8,253.8	96.5	91.00	0.50	7,663.8	3.8	F 0.8	4	940 / 9:10
FRI	7	8,320.5	66.7	91.00	0.00	7,666.4	2.6		3	943 / 8:30
SAT	8									
SUN	9									
MON	10	8,559.4	238.9	90.00	1.00	7,675.7	9.3	C 0.7	11	954 / 9:30
TUE	11	8,631.3	71.9	90.00	0.00	7,678.5	2.8	F 0.7	3	957 / 8:00
WED	12	8,751.9	120.6	89.00	1.00	7,683.2	4.7		5	962 / 9:00
THU	13	8,864.4	112.5	89.00	0.00	7,687.6	4.4	B 1.0	5	967 / 9:30
FRI	14	8,965.4	101.0	88.50	0.50	7,691.7	4.1		4	971 / 9:30
SAT	15									
SUN	16									
MON	17	9,336.5	371.1	86.50	2.00	7,706.3	14.6	LE 1.1	14	985 / 10:00
TUE	18	9,403.2	66.7	86.00	0.50	7,708.9	2.6		3	988 / 8:00
WED	19	9,468.4	65.2	86.00	0.00	7,711.4	2.5	F 1.1	3	991 / 8:30
THU	20	9,533.7	65.3	85.50	0.50	7,714.0	2.6	B 1.2	3	994 / 9:00
FRI	21	9,635.6	101.9	85.00	0.50	7,718.0	4.0	LE 1.0	4	498 / 10:00
SAT	22									
SUN	23									
MON	24	9,811.4	175.8	84.00	1.00	7,724.8	6.8	F 1.3	8	006 / 10:45
TUE	25	9,836.5	25.1	83.50	0.50	7,726.9	2.1	B 1.0	3	009 / 10:00
WED	26	9,956.0	119.5	83.00	0.50	7,730.5	3.6	G 1.2	3	012 / 9:00
THU	27	10,054.4	98.4	82.50	0.50	7,735.4	4.9		2	014 / 9:50
FRI	28	10,146.0	91.6	82.00	0.50	7,737.9	2.5	F 1.1	4	018 / 9:00
SAT	29									
SUN	30									
MON	31	10,366.6	220.6	81.00	1.00	7,746.6	8.7	G 1.0	9	027 / 9:40
		TOTAL FLOW	2,905.4		13.00		113.7		121	

LAKE ELMO WELL # 1

SEP 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	10,366.6	220.6	81.00	1.00	7,746.6	8.7	G 1.0	9	027 / 9:40
TUE	1	10,483.6	117.0	80.00	1.00	7,751.2	4.6	F 1.1	5	032 / 8:00
WED	2	10,547.6	64.0	80.00	0.00	7,753.7	2.5		3	35 / 9:00
THU	3	10,613.0	65.4	80.00	0.00	7,756.2	2.5	F 1.2	3	38 / 10:00
FRI	4	10,673.0	60.0	79.50	0.50	7,758.6	2.4	F 1.3	3	41 / 9:00
SAT	5									
SUN	6									
MON	7									
TUE	8	10,888.1	215.1	79.00	0.50	7,767.0	8.4	G 1.0	10	51 / 9:30
WED	9	10,956.5	68.4	79.00	0.00	7,769.7	2.7	F 1.1	3	54 / 8:00
THU	10	11,032.1	75.6	78.50	0.50	7,772.7	3.0		3	57 / 11:45
FRI	11									
SAT	12									
SUN	13									
MON	14	11,272.8	240.7	77.50	1.00	7,782.1	9.4	G 1.0	11	68 / 8:00
TUE	15	11,367.4	94.6	77.00	0.50	7,785.8	3.7	F 0.9	3	71 / 8:45
WED	16	11,531.9	164.5	76.50	0.50	7,792.5	6.7	G 0.7	2	73 / 9:00
THU	17	11,596.3	64.4	76.50	0.00	7,795.0	2.5		3	79 / 11:00
FRI	18	11,649.6	53.3	76.50	0.00	7,797.1	2.1		3	79 - 9:45
SAT	19									
SUN	20									
MON	21	11,795.5	145.9	76.00	0.50	7,802.8	5.7	C 0.9	7	86 - 7:50
TUE	22	11,845.6	50.1	76.00	0.00	7,804.7	1.9		3	89 / 8:30
WED	23	11,918.0	72.4	76.00	0.00	7,807.5	2.8	P 0.9	6	95 / 2:00
THU	24	11,945.7	27.7	76.00	0.00	7,808.6	1.1	F 0.8	1	96 / 9:45
FRI	25	11,995.2	49.5	76.00	0.00	7,810.6	2.0		3	99 / 8:45
SAT	26									
SUN	27									
MON	28	12,125.6	130.4	75.50	0.50	7,815.6	5.0	B 0.9	8	107 / 9:45
TUE	29	12,175.3	49.7	75.00	0.50	7,817.6	2.0	G 0.7	3	110 / 9:00
WED	30	12,207.5	32.2	75.00	0.00	7,818.8	1.2	F 0.7	2	112 / 10:00
THU	1									
		TOTAL FLOW	1,840.9		6.00		72.2		85	

LAKE ELMO WELL # 1

OCT 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	12,207.5	32.2	75.00	0.00	7,818.8	1.2	F 0.7	2	112 / 10:00
THU	1	12,275.9	68.4	75.00	0.00	7,821.5	2.7		4	116 / 11:15
FRI	2	12,307.9	32.0	75.00	0.00	7,822.7	1.2		2	118 / 10:00
SAT	3									
SUN	4									
MON	5	12,473.6	165.7	75.00	0.00	7,829.2	6.5	P 0.7	10	128 / 9:00
TUE	6	12,527.8	54.2	75.00	0.00	7,831.3	2.1	G 0.6	4	132 / 9:00
WED	7	12,610.9	83.1	74.50	0.50	7,834.5	3.2	F 0.9	4	136 / 10:00
THU	8	12,687.5	76.6	74.50	0.00	7,837.5	3.0	G 0.6	5	141 / 11:00
FRI	9	12,703.6	16.1	74.50	0.00	7,838.1	0.6	P 0.8	1	142 / 8:20
SAT	10									
SUN	11									
MON	12	13,009.5	305.9	74.00	0.50	7,850.1	12.0	P 0.7	12	154 / 2:35
TUE	13	13,081.2	71.7	74.00	0.00	7,852.9	2.8		3	157 / 1:30
WED	14	13,131.1	49.9	74.00	0.00	7,854.8	1.9	C 0.7	3	160 / 12:30
THU	15	13,190.0	58.9	74.00	0.00	7,857.1	2.3	F 0.7	3	163 / 9:00
FRI	16	13,259.0	69.0	74.00	0.00	7,859.8	2.7	B 0.7	4	167 / 8:50
SAT	17									
SUN	18									
MON	19	13,451.2	192.2	73.00	1.00	7,867.3	7.5		11	178
TUE	20	13,517.5	66.3	73.00	0.00	7,869.9	2.6	F 0.6	3	181 / 11:00
WED	21	13,602.2	84.7	73.00	0.00	7,873.1	3.2	C 0.6	5	186 / 11:50
THU	22	13,653.3	51.1	73.00	0.00	7,875.1	2.0	G 0.5	3	189 / 8:45
FRI	23	13,705.5	52.2	72.50	0.50	7,877.2	2.1	P 1.1	3	192 / 9:35
SAT	24									
SUN	25									
MON	26	13,875.7	170.2	72.50	0.00	7,883.8	6.6	F 0.3	10	202 / 11:45
TUE	27	13,926.7	51.0	72.50	0.00	7,885.7	1.9		3	205
WED	28	13,994.4	67.7	72.00	0.50	7,888.4	2.7		4	209
THU	29	14,049.9	55.5	72.00	0.00	7,890.5	2.1	C 0.6	4	213 / 10:00
FRI	30									
SAT	31									
		TOTAL FLOW	1,842.4		3.00		71.7		101	

LAKE ELMO WELL # 1

NOV 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	14,049.9	55.5	72.00	0.00	7,890.5	2.1	C 0.6	4	213 / 10:00
SUN	1									
MON	2	14,284.3	234.4	71.50	0.50	7,899.7	9.2		13	226 /
TUE	3	14,334.6	50.3	71.50	0.00	7,901.6	1.9	B 0.5	3	229 /
WED	4	14,403.7	69.1	71.50	0.00	7,904.3	2.7	C 0.7	4	233 /
THU	5	14,473.2	69.5	71.00	0.50	7,907.0	2.7		4	237 / 3:45
FRI	6	14,525.0	51.8	71.00	0.00	7,909.0	2.0	G 0.6	3	240 / 9:20
SAT	7									
SUN	8									
MON	9	14,723.0	198.0	71.00	0.00	7,916.7	7.7		11	251 / 9:00
TUE	10	14,821.0	98.0	71.00	0.00	7,920.5	3.8	B 0.5	5	256 / 3:20
WED	11									
THU	12	14,976.5	155.5	70.50	0.50	7,926.5	6.0	C 0.5	8	264 / 2:50
FRI	13	15,017.6	41.1	70.50	0.00	7,928.1	1.6	C 0.5	2	266 / 9:15
SAT	14									
SUN	15									
MON	16	15,186.7	169.1	70.00	0.50	7,934.6	6.5	LE 0.5	10	276 / 8:40
TUE	17	15,242.2	55.5	70.00	0.00	7,936.7	2.1	G 0.6	3	279 / 8:30
WED	18	15,291.2	49.0	70.00	0.00	7,938.6	1.9	F 0.4	3	282 / 8:30
THU	19	15,340.6	49.4	70.00	0.00	7,940.5	1.9	P 0.4	3	285 / 8:15
FRI	20	15,408.5	67.9	70.00	0.00	7,943.1	2.6	B 0.4	4	289 / 8:50
SAT	21									
SUN	22									
MON	23	15,541.2	132.7	70.00	0.00	7,948.2	5.1	F 0.4	8	297 / 7:50
TUE	24	15,616.8	75.6	69.50	0.50	7,951.1	2.9	G 0.2	5	302 / 11:30
WED	25	15,665.3	48.5	69.50	0.00	7,953.0	1.9		4	306 / 9:45
THU	26									
FRI	27									
SAT	28									
SUN	29									
MON	30									
TUE	1									
		TOTAL FLOW	1,615.4		2.50		62.5		93	

LAKE ELMO WELL # 1

DEC 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	25	15,665.3	48.5	69.50	0.00	7,953.0	1.9		4	306 / 9:45
TUE	1	15,665.3	0.0	69.50	0.00	7,953.0	0.0	LE 0.9	0	306 / 8:15
WED	2									
THU	3	15,665.3	0.0	69.50	0.00	7,953.0	0.0	C 0.7	0	306 / 8:40
FRI	4									
SAT	5									
SUN	6									
MON	7	15,785.7	120.4	69.50	0.00	7,957.6	4.6	P 0.5	7	313 / 9:30
TUE	8	15,850.6	64.9	69.50	0.00	7,960.1	2.5	F 0.7	4	317 / 8:30
WED	9	15,925.1	74.5	69.00	0.50	7,962.9	2.8	C 0.7	4	321 / 10:00
THU	10	15,980.7	55.6	69.00	0.00	7,965.0	2.1		3	324 / 9:00
FRI	11	15,998.5	17.8	69.00	0.00	7,965.7	0.7	P 0.8	1	325 / 7:50
SAT	12									
SUN	13									
MON	14	15,998.5	0.0	69.00	0.00	7,965.7	0.0	P 0.8	0	325 / 9:10
TUE	15	15,998.5	0.0	69.00	0.00	7,965.7	0.0	C 0.8	0	325 / 10:00
WED	16	15,998.5	0.0	69.00	0.00	7,965.7	0.0		0	325 /
THU	17									
FRI	18									
SAT	19									
SUN	20									
MON	21	16,185.2	186.7	69.00	0.00	7,972.8	7.1	B 0.7	11	336 / 9:35
TUE	22	16,222.6	37.4	69.00	0.00	7,974.2	1.4	G 0.7	2	338 / 8:30
WED	23	16,271.1	48.5	69.00	0.00	7,976.0	1.8		3	341 / 11:00
THU	24									
FRI	25									
SAT	26									
SUN	27									
MON	28	16,271.1	0.0	69.00	0.00	7,976.0	0.0	LE 0.8	0	341 / 8:45
TUE	29									
WED	30	16,283.7	12.6	69.00	0.00	7,976.6	0.6	LE 1.0	3	344 / 9:30
THU	31	16,283.7	0.0	69.00	0.00	7,976.6	0.0		0	344 / 10:10
		TOTAL FLOW	618.4		0.50		23.6		38	

2015 WELL #1 FLOW

MONTH	FLOW READING	X - 1000	QUARTERLY
JAN	1497.7	1,497,700	
FEB	1469.5	1,469,500	
MAR	1662.8	1,662,800	4,630,000
APR	1662.3	1,662,300	
MAY	1767.6	1,767,600	
JUN	1943.4	1,943,400	5,373,300
JUL	2011.9	2,011,900	
AUG	2905.4	2,905,400	
SEP	1840.9	1,840,900	6,758,200
OCT	1842.4	1,842,400	
NOV	1615.4	1,615,400	
DEC	618.4	618,400	4,076,200
TOTAL	20837.7	20,837,700	20,837,700

SCADA READING

LAKE ELMO WELL # 1

JAN 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	16,283.7	0.0	69.00	0.00	7,976.6	0.0		0	344 / 10:10
FRI	1									
SAT	2									
SUN	3									
MON	4	16,283.8	0.1	69.00	0.00	7,976.6	0.0	C 0.7	0	344 / 10:00
TUE	5	16,283.8	0.0	69.00	0.00	7,976.6	0.0	G 0.8	0	344 / 10:00
WED	6									
THU	7									
FRI	8									
SAT	9									
SUN	10									
MON	11									
TUE	12									
WED	13									
THU	14									
FRI	15									
SAT	16									
SUN	17									
MON	18									
TUE	19									
WED	20									
THU	21									
FRI	22									
SAT	23									
SUN	24									
MON	25									
TUE	26									
WED	27									
THU	28									
FRI	29									
SAT	30									
SUN	31									
		TOTAL FLOW	0.1		0.00		0.0		0	

2015 WELL #1 FLOW

MONTH	FLOW READING	X - 1000	QUARTERLY
JAN	1497.7	1,497,700	
FEB	1469.5	1,469,500	
MAR	1662.8	1,662,800	4,630,000
APR	1662.3	1,662,300	
MAY	1767.6	1,767,600	
JUN	1943.4	1,943,400	5,373,300
JUL	2011.9	2,011,900	
AUG	2905.4	2,905,400	
SEP	1840.9	1,840,900	6,758,200
OCT	1842.4	1,842,400	
NOV	1615.4	1,615,400	
DEC	618.4	618,400	4,076,200
TOTAL	20837.7	20,837,700	20,837,700

2015 WELL #2 SUMMARY

MONTH	FLOW READING	X - 100	QUARTERLY
JAN	4,428	4,428,000	
FEB	4,272	4,272,000	
MAR	4,550	4,550,000	13,250,000
APR	5,148	5,148,000	
MAY	8,127	8,127,000	
JUN	8,768	8,768,000	22,043,000
JUL	11,363	11,363,000	
AUG	4,077	4,077,000	
SEP	206	206,000	15,646,000
OCT	3,206	3,206,000	
NOV	962	962,000	
DEC	3,973	3,973,000	8,141,000
TOTAL	59,080	59,080,000	

2015 WELL #4 SUMMARY

MONTH	FLOW READING	X - 100	QUARTERLY
JAN			
FEB			
MAR			
APR			
MAY			
JUN			
JUL			
AUG	14,298,832		
SEP	7,527,032		21,825,864
OCT	2,948,418		
NOV	2,334,440		
DEC	2,595,166		7,878,024
TOTAL	29,703,888		29,703,888

	#1	#2	#4	TOTALS	
JAN	1,497,700	4,428,000		5,925,700	
FEB	1,469,500	4,272,000		5,741,500	
MAR	1,662,800	4,550,000		6,212,800	17,880,000
APR	1,662,300	5,148,000		6,810,300	
MAY	1,767,600	8,127,000		9,894,600	
JUN	1,943,400	8,768,000		10,711,400	27,416,300
JUL	2,011,900	11,363,000		13,374,900	
AUG	2,905,400	4,077,000	14,298,832	21,281,232	
SEP	1,840,900	206,000	7,527,032	9,573,932	44,230,064
OCT	1,842,400	3,206,000	2,948,418	7,996,818	
NOV	1,615,400	962,000	2,334,440	4,911,840	
DEC	618,400	3,973,000	2,595,166	7,186,566	20,095,224
	20,837,700	59,080,000	29,703,888	109,621,588	
				109,621,588	

LAKE ELMO WELL # 2

JAN 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	923,847	114	69.0	0.0	18,241.6	2.5		1	5689 / 9:30	102.4	150.0	
THU	1												
FRI	2	924,092	245	68.0	1.0	18,246.9	5.3	FFE 1.2	2	5691 / 9:40	101.1		FFE 0.5
SAT	3												
SUN	4												
MON	5	924,611	519	66.0	2.0	18,258.1	11.2	W 1.3	4	5695 / 10:00	98.6		W 0.7
TUE	6	924,723	112	65.5	0.5	18,260.6	2.5	P 1.3	1	5696 / 11:00	98.0		P 0.3
WED	7	924,846	123	65.0	0.5	18,263.2	2.6	TOW 1.5	1	5697 / 2:20	97.4		TOW 0.5
THU	8	924,971	125	65.0	0.0	18,265.9	2.7	F 1.1	1	5698 / 9:00	96.8		F 0.3
FRI	9												
SAT	10												
SUN	11												
MON	12	925,577	606	63.0	2.0	18,279.1	13.2	V 1.2	5	5703 / 10:00	93.8		V 1.0
TUE	13	925,702	125	62.0	1.0	18,281.8	2.7	FFE 1.2	1	5704 / 11:00	93.2		FFE 0.3
WED	14	925,868	166	61.0	1.0	18,285.4	3.6	P 1.3	2	5706 / 10:00	92.1		P 0.3
THU	15	926,104	236	60.0	1.0	18,290.4	5.0	V 1.2	1	5707 / 9:30	90.9		V 1.0
FRI	16	926,240	136	60.0	0.0	18,293.4	3.0	W 1.5	1	5708 / 9:00	90.2		W 1.3
SAT	17												
SUN	18												
MON	19												
TUE	20	926,845	605	58.0	2.0	18,306.4	13.0		5	5713 / 9:25	87.2	150.0	
WED	21	926,978	133	57.0	1.0	18,309.3	2.9	F 1.3	2	5715 / 10:00	86.5		F 1.0
THU	22	927,100	122	57.0	0.0	18,312.0	2.7	FFE 1.0	1	5716 / 9:30	86.0		FFE 0.5
FRI	23	927,213	113	56.0	1.0	18,314.3	2.3	TOW 1.2	1	5717 / 9:30	85.4		TOW 0.5
SAT	24												
SUN	25												
MON	26	927,719	506	55.0	1.0	18,325.3	11.0	W 1.0	4	5721 / 1:40	82.9		W 1.0
TUE	27	927,967	248	53.0	2.0	18,330.8	5.5	F 1.3	9	5730 / 2:00	81.6		F 1.0
WED	28	928,275	308	52.0	1.0	18,337.6	6.8	FFE 1.1	1	5731 / 9:00	80.1	150.0	FFE 0.5
THU	29	928,275	0	52.0	0.0	18,337.6	0.0		1	5732 / 9:30	80.1	150.0	
FRI	30												
SAT	31												
		TOTAL FLOW	4,428		17.0		96.0		43		19.5	150.0	

LAKE ELMO WELL # 2

FEB 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	29	928,275	0	52.0	0.0	18,337.6	0.0		1	5732 / 9:30	80.1	150.0	
SUN	1												
MON	2	928,894	619	50.0	2.0	18,351.0	13.4	W 1.3	5	5737 / 10:00	77.1		W 1.0
TUE	3	929,022	128	49.5	0.5	18,353.8	2.8	P 1.2	1	5738 / 9:30	76.5		P 0.5
WED	4	929,148	126	49	0.5	18,356.5	2.7		1	5739 / 11:00	75.9		
THU	5	929,269	121	48.0	1.0	18,359.1	2.6	F 1.2	1	5740 / 9:35	75.3		F 0.3
FRI	6	929,485	216	48.0	0.0	18,363.8	4.7	W 1.0	2	5742 / 9:20	74.1		W 1.0
SAT	7												
SUN	8												
MON	9	929,887	402	46.0	2.0	18,372.5	8.7	V 1.3	3	5745 / 10:45	72.0	150.0	V 1.0
TUE	10	930,007	120	46.0	0.0	18,375.1	2.6	F 1.3	1	5746 / 9:00	71.4		F 0.3
WED	11												
THU	12	930,375	368	45.0	1.0	18,383.1	8.0	P 1.2	3	5749 / 10:10	69.8		P 0.3
FRI	13												
SAT	14												
SUN	15												
MON	16												
TUE	17	931,036	661	42.0	3.0	18,397.3	14.2	F 1.3	6	5755 / 8:00	66.6		F 0.3
WED	18	931,225	189	41.0	1.0	18,401.4	4.1	P 1.4	1	5756 / 8:00	65.7		P1.0
THU	19	931,356	131	40.0	1.0	18,404.3	2.9	P 1.4	1	5756 / 8:00	65.7		P 1.0
FRI	20												
SAT	21												
SUN	22												
MON	23	931,980	624	39.0	1.0	18,417.7	13.4	W 1.5	6	5763 / 9:15	61.5		W 1.0
TUE	24	932,091	111	39.0	0.0	18,420.2	2.5	F 1.2	1	5764 / 8:00	61.0		F 0.3
WED	25	932,214	123	38.0	1.0	18,422.8	2.6	FFE 1.2	1	5765 / 9:50	60.5		FFE 0.5
THU	26	932,335	121	37.0	1.0	18,425.4	2.6	P 1.2	1	5766 / 10:30	60.1		P 0.5
FRI	27	932,547	212	36.0	1.0	18,430.1	4.7	TOW 1.4	2	5768 / 9:30	59.0	150.0	TOW 0.5
SAT	28												
SUN	1												
MON	2												
TUE	3												
		TOTAL FLOW	4,272		16.0		92.5		36		21.1	0.0	

LAKE ELMO WELL # 2

MAR 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	27	932,547	212	36.0	1.0	18,430.1	4.7	TOW 1.4	2	5768 / 9:30	59.0	150.0	TOW 0.5
SUN	1												
MON	2	932,924	377	35.0	1.0	18,438.3	8.2	P 1.3	3	5771 / 9:00	57.0	150.0	P 0.3
TUE	3	933,164	240	34.0	1.0	18,443.4	5.1		2	5773 / 8:45	55.7		
WED	4	933,389	225	33	1.0	18,448.3	4.9	F 1.3	2	5775 / 10:15	54.8		F 0.5
THU	5	933,526	137	33.0	0.0	18,451.3	3.0	V 1.4	1	5776 / 11:15	54.1		V 0.5
FRI	6	933,641	115	32.0	1.0	18,453.8	2.5	FFE 1.3	1	5777 / 10:15	53.4		FFE 1.0
SAT	7												
SUN	8												
MON	9	934,120	479	30.0	2.0	18,464.2	10.4	V 1.2	4	578 / 9:30	50.8		V 1.0
TUE	10	934,248	128	30.0	0.0	18,466.9	2.7		1	5782 / 1:00	50.2		
WED	11	934,361	113	29.0	1.0	18,469.4	2.5	F 0.8	1	5783 / 10:00	49.7		F 0.3
THU	12	934,489	128	29.0	0.0	18,472.1	2.7	FFE 1.1	1	5784 / 10:55	49.0		FFE 1.0
FRI	13	934,616	127	28.0	1.0	18,474.8	2.7	W 1.0	1	5785 / 9:40	48.4		W 0.5
SAT	14												
SUN	15												
MON	16	935,118	502	27.0	1.0	18,485.4	10.6	W 1.2	4	5789 / 3:20	46.0		W 1.0
TUE	17	935,225	107	26.0	1.0	18,488.1	2.7	TOW 1.2	1	5790 / 9:00	45.6		TOW 0.3
WED	18	935,345	120	26.0	0.0	18,490.8	2.7	V 1.0	1	**5791 / 9:00**	**44.9**		V 0.5
THU	19	935,497	152	25.0	1.0	18,494.0	3.2	FFE 1.0	1	**5792 / 9:40**	44.2		V 0.5
FRI	20	935,624	127	25.0	0.0	18,496.8	2.8		1	5793 / 10:00	43.6		
SAT	21												
SUN	22												
MON	23	935,999	375	24.0	1.0	18,505.0	8.2	W 1.1	3	5796 / 10:40	41.9		W 0.5
TUE	24	936,118	119	23.0	1.0	18,507.6	2.6	TOW 1.4	1	5797 / 10:00	41.4		TOW 0.3
WED	25	936,235	117	23.0	0.0	18,510.1	2.5	F 1.3	1	5798 / 9:15	40.8		F 0.5
THU	26	936,354	119	22.0	1.0	18,512.7	2.6	FFE 1.0	1	5799 / 8:15	40.3		FFE 0.5
FRI	27	936,540	186	21.0	1.0	18,516.8	4.1	P 1.0	2	5801 / 8:50	39.4		P 0.3
SAT	28												
SUN	29												
MON	30	936,985	445	19.0	2.0	18,526.3	9.5	V 1.1	3	5804 / 8:20	37.2		V 0.5
TUE	31	937,097	112	19.0	0.0	18,528.8	2.5	W 1.3	1	5805 / 10:00	36.7	150.0	W 1.0
		TOTAL FLOW	4,550		17.0		98.7		37		22.3	0.0	

LAKE ELMO WELL # 2

APR 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	937,097	112	19.0	0.0	18,528.8	2.5	W 1.3	1	5805 / 10:00	36.7	150.0	W 1.0
WED	1	937,221	124	19	0.0	18,531.5	2.7	P 1.0	1	5806 / 3:10	36.3		P 0.3
THU	2	937,346	125	18.0	1.0	18,534.2	2.7	V 1.0	1	5807 / 2:20	35.7		V 1.0
FRI	3	937,469	123	18.0	0.0	18,536.9	2.7	FFE 1.0	1	5808 / 9:10	35.3		FFE 0.5
SAT	4												
SUN	5												
MON	6	937,898	429	16.0	2.0	18,546.1	9.2	P 0.9	4	5812 / 8:20	33.2		TOW 0.5
TUE	7	938,119	221	15.0	1.0	18,550.9	4.8	F 1.2	1	5813 / 11:15	32.1		F 0.5
WED	8	938,375	256	14.0	1.0	18,556.8	5.9	TOW 1.1	1	5814 / 3:00	31.0		TOW 0.5
THU	9	938,526	151	14.0	0.0	18,560.3	3.5	V 1.0	1	5815 / 8:45	30.3		V 1.0
FRI	10	938,677	151	26.0	1.0	18,563.7	3.4	W 0.9	1	5816 / 8:20	29.6		W 1.0
SAT	11												
SUN	12			100.0									
MON	13	939,118	441	98.0	2.0	18,573.9	10.2	FFE 1.1	3	5819 / 10:10	27.2		FFE 0.5
TUE	14	939,263	145	97.0	1.0	18,577.2	3.3		1	5820 / 10:45	26.5		
WED	15	939,413	150	97.0	0.0	18,580.7	3.5	F 1.1	1	5821 / 8:45	25.8		F 0.3
THU	16	939,570	157	96.0	1.0	18,584.4	3.7	P 1.1	1	5822 / 10:45	25.0		P 0.3
FRI	17	939,721	151	95.0	1.0	18,587.8	3.4	TOW 1.0	1	5823 / 10:00	24.2		TOW 0.3
SAT	18												
SUN	19												
MON	20	940,197	476	94.0	1.0	18,598.6	10.8	F 1.2	3	5826 / 9 :46	22.0		F 0.5
TUE	21	940,343	146	94.0	0.0	18,602.0	3.4	W 1.2	1	5827 / 9:00	21.3		W 1.0
WED	22	940,502	159	93.0	1.0	18,605.7	3.7	F 1.0	2	5829 / 8:30	20.5		F 0.5
THU	23	940,658	156	92.0	1.0	18,609.3	3.6	P 1.0	1	5830 / 3:30	19.6		P 0.3
FRI	24	940,819	161	91.0	1.0	18,613.0	3.7	TOW 1.2	1	5831 / 9:50	18.8		TOW 0.5
SAT	25												
SUN	26												
MON	27	941,532	713	89.0	2.0	18,629.3	16.3	FFE 1.1	4	5835 / 9:40	15.0		FFE 0.5
TUE	28	941,693	161	88.0	1.0	18,633.0	3.7	F 1.1	1	5836 / 9:00	14.3		F 0.3
WED	29	942,075	382	87.0	1.0	18,641.7	8.7	V 1.0	1	5837 / 10:00	13.2		V 1.0
THU	30	942,245	170	86.0	1.0	18,645.5	3.8	TOW 1.2	2	5839 / 9:30	11.5	150.0	TOW 0.3
FRI	1												
		TOTAL FLOW	5,148		20.0		116.7		34		36.7	0.0	

LAKE ELMO WELL # 2

MAY 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	942,245	170	86.0	1.0	18,645.5	3.8	TOW 1.2	2	5839 / 9:30	11.5	150.0	TOW 0.5
FRI	1	942,563	318	85	1.0	18,652.8	7.3	FFE 1.1	2	5841 / 8:20	9.8		FFE 0.5
SAT	2												
SUN	3												
MON	4	943,745	1,182	80	5.0	18,679.6	26.8	P 1.3	7	5848 / 8:40	3.9	150.0	P 0.3
TUE	5	944,140	395	79.0	1.0	18,688.5	8.9	FFE 1.1	1	5849 / 8:15	2.9	148.9	FFE 0.5
WED	6	944,374	234	78.0	1.0	18,693.9	5.4	V 1.4	2	5851 / 9:00	0.0	147.8	V 1.0
THU	7	944,705	331	77.0	1.0	18,701.1	7.2	W 1.0	1	5852 / 10:00		146.0	W 1.0
FRI	8	944,855	150	76.0	1.0	18,704.5	3.4	TOW 1.4	1	5853 / 8:15		145.4	TOW 0.5
SAT	9												
SUN	10												
MON	11	945,427	572	74.0	2.0	18,717.7	13.2	F 1.2	3	5856 / 8:40		142.5	F 0.0
TUE	12	945,802	375	72.5	1.5	18,726.1	8.4		2	5858 / 8:30		140.6	
WED	13	946,087	285	71.5	1.0	18,733.1	7.0	P 1.2	2	5860 / 11:30		138.9	P 0.0
THU	14	946,335	248	70.0	1.5	18,739.9	6.8	FFE 1.2	2	5862 / 10:00		137.4	FFE 1.0
FRI	15	946,602	267	69.0	1.0	18,745.9	6.0	TOW 1.0	1	5863 / 8:20		135.9	TOW 0.5
SAT	16												
SUN	17												
MON	18	947,177	575	68.0	1.0	18,758.6	12.7	V 1.2	4	5867 / 9:30		132.8	V 1.0
TUE	19	947,367	190	68.0	0.0	18,762.8	4.2	W 1.5	2	5869 / 9:40		129.8	W 1.0
WED	20	947,674	307	65.0	3.0	18,769.6	6.8		2	5871 / 9:00		128.1	
THU	21	947,965	291	64.0	1.0	18,775.8	6.2	FFE 1.2	2	5873 / 9:00		126.5	FFE 0.5
FRI	22	948,378	413	63.0	1.0	18,785.1	9.3	TOW 1.3	1	5875 / 8:05		149.9	TOW 0.5
SAT	23												
SUN	24												
MON	25												
TUE	26	949,324	946	59.0	4.0	18,806.3	21.2	F 1.1	7	5882 / 2:00		119.0	F 1.0
WED	27	949,539	215	58.5	0.5	18,811.2	4.9		1	5883 / 8:00		117.8	
THU	28	950,070	531	57.0	1.5	18,823.4	12.2	P 1.2	2	5885 / 10:00		114.8	P 0.3
FRI	29	950,372	302	57.0	0.0	18,830.2	6.8	TOW 1.1	1	5888 / 8:20	150.0	113.0	TOW 0.5
SAT	30												
SUN	31												
		TOTAL FLOW	8,127		29.0		184.7		46		11.5	150.0	

LAKE ELMO WELL # 2

JUN 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	29	950,372	302	57.0	0.0	18,830.2	6.8	TOW 1.1	1	5888 / 8:20	150.0	113.0	TOW 0.5
MON	1	951,078	706	54	3.0	18,846.5	16.3	W 0.9	5	5893 / 2:10	150.0	108.9	W 1.0
TUE	2	951,405	327	52.0	2.0	18,853.8	7.3	P 1.2		5895 / 1:30		107.0	P 0.3
WED	3	951,775	370	50.0	2.0	18,862.2	8.4	F 1.1	2	5897 / 10:00		105.0	0.3
THU	4	951,957	182	50	0.0	18,866.4	4.2	V 1.2	1	5898 / 8:40		104.0	V 1.0
FRI	5	952,141	184	49.0	1.0	18,870.5	4.1	P 1.1	1	5900 / 8:20		103.0	P 0.3
SAT	6												
SUN	7												
MON	8	952,969	828	46.0	3.0	18,889.4	18.9	V 1.1	5	5905 / 10:30		98.2	V 1.0
TUE	9	953,313	344	45.0	1.0	18,897.2	7.8	W 1.1	2	5907 / 3:00		96.3	W 1.0
WED	10	953,580	267	43.5	1.5	18,903.1	5.9		2	5909 / 8:30		94.8	
THU	11	953,954	374	42.0	1.5	18,911.6	8.5		2	5911 / 9:20		92.7	
FRI	12	954,080	126	42.0	0.0	18,914.6	3.0	P 1.1	1	5912 / 9:17		92.0	P 0.3
SAT	13												
SUN	14												
MON	15	954,848	768	39.0	3.0	18,932.0	17.4	W 1.2	5	5917 / 11:20		87.7	W 1.0
TUE	16	955,163	315	38.0	1.0	18,939.2	7.2		2	5919 / 7:30		85.8	
WED	17	955,450	287	37.0	1.0	18,945.8	6.6	FFE 1.0	2	5921 / 8:45		84.2	FFE 0.5
THU	18	955,727	277	36.0	1.0	18,952.1	6.3	F 1.1	2	**5923 / 9:15**		**82.5**	F 0.3
FRI	19	955,937	210	35.0	1.0	18,956.8	4.7	P 1.2	1	**5925 / 10:30**		81.4	P 0.3
SAT	20												
SUN	21												
MON	22	956,684	747	32.0	3.0	18,974.0	17.2	W 1.0	5	5930 / 9:30		77.1	W 1.0
TUE	23	956,889	205	31.0	1.0	18,978.5	4.5	F 1.1	2	5932 / 9:30		76.0	F 0.3
WED	24	957,190	301	30.0	1.0	18,985.4	6.9		2	5934 / 11:00		74.4	
THU	25	957,466	276	29.0	1.0	18,991.8	6.4	V 1.0	3	5837 / 11:10		72.9	V 1.0
FRI	26	957,871	405	28.0	1.0	19,000.9	9.1	FFE 1.2	2	5839 / 9:00		70.8	FFE 0.5
SAT	27												
SUN	28												
MON	29	959,020	1,149	24.0	4.0	19,026.8	25.9	W 1.1	6	5945 / 10:45		64.7	W 1.0
TUE	30	959,140	120	23.0	1.0	19,029.5	2.7	FFE 1.1	1	5946 / 8:15	150.0	64.2	FFE 0.5
WED	1												
		TOTAL FLOW	8,768		34.0		199.3		54		0.0	48.8	

LAKE ELMO WELL # 2

JUL 15		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	30	959,140	120	23.0	1.0	19,029.5	2.7	FFE 1.1	1	5946 / 8:15	150.0	64.2	FFE 0.5
WED	1	959,476	336	22	1.0	19,037.2	7.7	P 1.1	2	5948 / 9:30	150.0	62.6	P 0.3
THU	2	959,887	411	21.0	1.0	19,046.3	9.1		2	5950 / 9:50		60.4	
FRI	3												
SAT	4												
SUN	5												
MON	6	961,531	1,644	14.0	7.0	19,082.8	36.5	FFE 1.1	8	5958 / 2:30		52.0	FFE 0.3
TUE	7	961,699	168	14.0	0.0	19,086.6	3.8	P 0.8	1	5959 / 10:30		51.1	P 0.3
WED	8	962,031	332	13.0	1.0	19,094.2	7.6		2	5961 / 11:00		49.2	
THU	9	962,350	319	99.0	1.0	19,101.5	7.3	V 1.1	2	5963 / 9:45		47.5	V 1.0
FRI	10	962,766	416	98.0	1.0	19,110.5	9.0		2	5965 / 10:00		45.3	
SAT	11												
SUN	12												
MON	13	964,023	1,257	93.0	5.0	19,138.8	28.3	TOW 1.2	6	5971 / 10:25		38.8	TOW 0.5
TUE	14	964,269	246	92.0	1.0	19,144.4	5.6	V 1.1	2	5973 / 9:00	150.0	37.5	V 0.5
WED	15	964,728	459	91.0	1.0	19,155.0	10.6	W 0.9	2	5975 / 10:50		35.0	W 1.0
THU	16	965,086	358	89.0	2.0	19,162.8	7.8	F 1.1	2	5977 / 2:30		33.3	F 0.3
FRI	17	965,265	179	89.0	0.0	19,166.8	4.0	P 1.1	1	5978 / 9:20		32.3	P 0.3
SAT	18												
SUN	19												
MON	20	966,232	967	85.0	4.0	19,188.9	22.1	W 1.3	6	5984 / 10:00		27.2	W 1.0
TUE	21	966,550	318	84.0	1.0	19,196.0	7.1		2	5986 / 8:30		25.5	
WED	22	967,205	655	82.0	2.0	19,210.4	14.4	FFE 1.1	2	5988 / 9:00		22.1	FFE 0.5
THU	23	967,647	442	80.0	2.0	19,220.2	9.8	F 1.1	2	5990 / 11:00		19.8	F 0.5
FRI	24	968,062	415	79.0	1.0	19,225.9	5.7	P 1.0	1	5992 / 8:45	149.2	17.7	
SAT	25												
SUN	26												
MON	27												
TUE	28	970,410	2,348	70.0	9.0	19,278.5	52.6	P 1.2	8	6000 / 9:15		5.0	P 0.3
WED	29	970,503	93	70.0	0.0	19,280.5	2.0	F 1.1	5	6005 / 10:00	149.2	4.4	F 0.5
THU	30												
FRI	31												
		TOTAL FLOW	11,363		40.0		251.0		58		0.8	59.8	

MDH MONTHLY FLUORIDE REPORT								
AUG 15		WELL #2 FLOW	WELL #4 FLOW	FLOW TOTAL	WELL #2 FLUORIDE	WELL #4 FLUORIDE	FLUORIDE TOTAL	FLUORIDE TEST
PREVIOUS	28							
SAT	1	0	0	0	0.0	0.0	0.0	0.0
SUN	2	0	0	0	0.0	0.0	0.0	0.0
MON	3	1,746	1,878	3,624	6.0	8.4	14.4	0.0
TUE	4	286	0	286	1.0	1.8	2.8	TOW 0.9
WED	5	544	829	1,373	2.0	1.6	3.6	V 0.7
THU	6	588	115	703	2.0	0.4	2.4	0.0
FRI	7	154	288	442	0.0	1.0	1.0	FFE 0.8
SAT	8	0	0	0	0.0	0.0	0.0	0.0
SUN	9	0	0	0	0.0	0.0	0.0	0.0
MON	10	354	1,261	1,615	2.0	4.3	6.3	V 0.8
TUE	11	0	749	749	0.0	2.3	2.3	F 0.9
WED	12	0	870	870	0.0	2.7	2.7	P 0.8
THU	13	0	754	754	0.0	2.4	2.4	TOW 0.9
FRI	14	101	737	838	0.0	2.3	2.3	0.0
SAT	15	0	0	0	0.0	0.0	0.0	0.0
SUN	16	0	0	0	0.0	0.0	0.0	0.0
MON	17	304	2,045	2,349	1.0	6.5	7.5	FFE 1.0
TUE	18	0	276	276	0.0	1.2	1.2	0.0
WED	19	0	294	294	0.0	1.3	1.3	0.0
THU	20	0	190	190	0.0	1.0	1.0	V 0.9
FRI	21	0	404	404	0.0	1.7	1.7	0.0
SAT	22	0	0	0	0.0	0.0	0.0	0.0
SUN	23	0	0	0	0.0	0.0	0.0	0.0
MON	24	0	848	848	0.0	3.4	3.4	0.0
TUE	25	0	316	316	0.0	1.1	1.1	0.0
WED	26	0	356	356	0.0	1.2	1.2	0.0
THU	27	0	434	434	0.0	1.2	1.2	0.0
FRI	28	0	370	370	0.0	1.0	1.0	0.0
SAT	29	0	0	0	0.0	0.0	0.0	0.0
SUN	30	0	0	0	0.0	0.0	0.0	0.0
MON	31	0	1,284	1,284	0.0	3.5	3.5	P 0.8
		4,077	14,299	18,376	14.0	50.2	64.2	

MDH MONTHLY FLUORIDE REPORT								
SEP 15		WELL #2 FLOW	WELL #4 FLOW	FLOW TOTAL	WELL #2 FLUORIDE	WELL #4 FLUORIDE	FLUORIDE TOTAL	FLUORIDE TEST
PREVIOUS	28							
TUE	1	0	485	485	0.0	1.3	1.3	0.0
WED	2	0	325	325	0.0	0.9	0.9	0.0
THU	3	0	281	281	0.0	0.8	0.8	0.0
FRI	4	0	340	340	0.0	0.9	0.9	0.0
SAT	5	0	0	0	0.0	0.0	0.0	0.0
SUN	6	0	0	0	0.0	0.0	0.0	0.0
MON	7	0	0	0	0.0	0.0	0.0	0.0
TUE	8	0	1,320	1,320	0.0	3.6	3.6	0.0
WED	9	0	281	281	0.0	0.9	0.9	0.0
THU	10	0	212	212	0.0	0.6	0.6	0.0
FRI	11	0	0	0	0.0	0.0	0.0	0.0
SAT	12	0	0	0	0.0	0.0	0.0	0.0
SUN	13	0	0	0	0.0	0.0	0.0	0.0
MON	14	0	1,059	1,059	0.0	3.4	3.4	0.0
TUE	15	0	331	331	0.0	0.7	0.7	0.0
WED	16	0	264	264	0.0	0.7	0.7	0.0
THU	17	120	103	223	1.0	0.2	1.2	0.0
FRI	18	0	149	149	0.0	0.7	0.7	0.0
SAT	19	0	0	0	0.0	0.0	0.0	0.0
SUN	20	0	0	0	0.0	0.0	0.0	0.0
MON	21	0	595	595	0.0	1.7	1.7	0.0
TUE	22	1	227	228	0.0	0.5	0.5	0.0
WED	23	0	226	226	0.0	0.6	0.6	0.0
THU	24	0	148	148	0.0	0.4	0.4	0.0
FRI	25	0	151	151	0.0	0.5	0.5	0.0
SAT	26	0	0	0	0.0	0.0	0.0	0.0
SUN	27	0	0	0	0.0	0.0	0.0	0.0
MON	28	0	617	617	0.0	1.4	1.4	0.0
TUE	29	0	249	249	0.0	0.8	0.8	0.0
WED	30	85	165	250	0.0	0.6	0.6	0.0
THU	1	0	0	0	0.0	0.0	0.0	0.0
		206	7,527	7,733	1.0	20.9	21.9	

MDH MONTHLY FLUORIDE REPORT									
OCT 15		WELL #2 FLOW	WELL #4 FLOW	FLOW TOTAL	WELL #2 FLUORIDE	WELL #4 FLUORIDE	FLUORIDE TOTAL	FLUORIDE TEST	
PREVIOUS	28								
THU	1	181	71	252	0.5	0.3	0.8	V 0.8	
FRI	2	171	157	328	0.5	0.5	1.0		0.0
SAT	3	0	0	0	0.0	0.0	0.0		0.0
SUN	4	0	0	0	0.0	0.0	0.0		0.0
MON	5	484	429	913	2.0	1.6	3.6	W2 1.0	
TUE	6	125	155	280	0.0	0.4	0.4	FFE 0.8	
WED	7	199	114	313	1.0	0.3	1.3	F 1.0	
THU	8	78	153	231	1.0	0.3	1.3	P 1.0	
FRI	9	78	90	168	0.0	0.4	0.4	V 0.9	
SAT	10	0	0	0	0.0	0.0	0.0		0.0
SUN	11	0	0	0	0.0	0.0	0.0		0.0
MON	12	431	311	742	0.0	0.8	0.8	FFE 1.0	
TUE	13	69	131	200	0.0	0.6	0.6		0.0
WED	14	126	84	210	0.0	0.4	0.4	FFE 0.4	
THU	15	121	75	196	0.0	0.1	0.1	TOW 1.0	
FRI	16	75	147	222	0.0	0.7	0.7	W2 0.4	
SAT	17	0	0	0	0.0	0.0	0.0		0.0
SUN	18	0	0	0	0.0	0.0	0.0		0.0
MON	19	0	229	229	0.0	0.8	0.8		0.0
TUE	20	408	158	566	0.0	0.4	0.4	F 0.5	
WED	21	81	90	171	0.0	0.0	0.0	P 1.0	
THU	22	77	68	145	0.0	0.4	0.4	V 0.3	
FRI	23	97	77	174	0.0	0.2	0.2	P 1.0	
SAT	24	0	0	0	0.0	0.0	0.0		0.0
SUN	25	0	0	0	0.0	0.0	0.0		0.0
MON	26	261	196	457	0.0	0.8	0.8	F 0.3	
TUE	27	69	138	207	0.0	0.6	0.6		0.0
WED	28	75	75	150	0.0	0.6	0.6	P 1.0	
THU	29	0	0	0	0.0	0.0	0.0		0.0
FRI	30	0	0	0	0.0	0.0	0.0		0.0
SAT	31	0	0	0	0.0	0.0	0.0		0.0
		3,206	2,948	6,154	5.0	10.0	15.0		

MDH MONTHLY FLUORIDE REPORT								
NOV 15		WELL #2 FLOW	WELL #4 FLOW	FLOW TOTAL	WELL #2 FLUORIDE	WELL #4 FLUORIDE	FLUORIDE TOTAL	FLUORIDE TEST
PREVIOUS	28							P 1.0
SUN	1	0	0	0	0.0	0.0	0.0	
MON	2	293	214	507	0.0	0.3	0.3	
TUE	3	0	69	69	0.0	0.1	0.1	V 0.2
WED	4	70	65	135	0.0	0.0	0.0	
THU	5	70	76	146	0.0	0.2	0.2	W2 0.2
FRI	6	76	0	76	0.0	0.0	0.0	W4 1.0
SAT	7	0	0	0	0.0	0.0	0.0	
SUN	8	0	0	0	0.0	0.0	0.0	
MON	9	10	356	366	0.0	1.4	1.4	
TUE	10	0	197	197	0.0	0.3	0.3	F 0.8
WED	11	0	0	0	0.0	0.0	0.0	
THU	12	2	205	207	0.0	1.1	1.1	TOW 1.0
FRI	13	0	136	136	0.0	0.5	0.5	FFE 0.3
SAT	14	0	0	0	0.0	0.0	0.0	
SUN	15	0	0	0	0.0	0.0	0.0	
MON	16	0	342	342	0.0	0.8	0.8	V 0.8
TUE	17	73	65	138	0.0	0.3	0.3	FFE 0.6
WED	18	72	77	149	0.0	0.0	0.0	F 0.7
THU	19	0	118	118	0.0	0.9	0.9	TOW 0.8
FRI	20	0	79	79	0.0	0.4	0.4	W4 0.8
SAT	21	0	0	0	0.0	0.0	0.0	
SUN	22	0	0	0	0.0	0.0	0.0	
MON	23	226	200	426	1.0	0.8	1.8	V 0.7
TUE	24	70	71	141	0.0	0.1	0.1	
WED	25	0	63	63	0.0	0.0	0.0	FFE 0.8
THU	26	0	0	0	0.0	0.0	0.0	
FRI	27	0	0	0	0.0	0.0	0.0	
SAT	28	0	0	0	0.0	0.0	0.0	
SUN	29	0	0	0	0.0	0.0	0.0	
MON	30	0	0	0	0.0	0.0	0.0	
TUE	1	0	0	0	0.0	0.0	0.0	
		962	2,334	3,296	1.0	7.0	8.0	

MDH MONTHLY FLUORIDE REPORT									
DEC 15		WELL #2 FLOW	WELL #4 FLOW	FLOW TOTAL	WELL #2 FLUORIDE	WELL #4 FLUORIDE	FLUORIDE TOTAL	FLUORIDE TEST
PREVIOUS	28							FFE 0.8
TUE	1	919	209	1,128	3.0	0.9	3.9	0.0
WED	2	168	35	203	1.0	0.0	1.0	0.0
THU	3	300	168	468	1.0	0.6	1.6	TOW 0.8
FRI	4	0	0	0	0.0	0.0	0.0	0.0
SAT	5	0	0	0	0.0	0.0	0.0	0.0
SUN	6	0	0	0	0.0	0.0	0.0	0.0
MON	7	424	282	706	1.0	0.8	1.8	V 0.9
TUE	8	0	92	92	0.5	0.1	0.6	F 0.9
WED	9	96	75	171	0.5	0.3	0.8	0.0
THU	10	89	22	111	0.0	0.0	0.0	FFE 0.8
FRI	11	0	96	96	0.0	0.1	0.1	P 0.9
SAT	12	0	0	0	0.0	0.0	0.0	0.0
SUN	13	0	0	0	0.0	0.0	0.0	0.0
MON	14	332	283	615	1.0	0.9	1.9	V 0.9
TUE	15	209	94	303	1.0	0.2	1.2	0.0
WED	16	112	98	210	0.5	0.4	0.9	F 0.9
THU	17	114	120	234	0.5	0.5	1.0	P 0.8
FRI	18	0	0	0	0.0	0.0	0.0	0.0
SAT	19	0	0	0	0.0	0.0	0.0	0.0
SUN	20	0	0	0	0.0	0.0	0.0	0.0
MON	21	434	281	715	1.0	0.9	1.9	FFE 0.3
TUE	22	0	89	89	0.0	0.3	0.3	TOW 0.8
WED	23	97	0	97	1.0	0.0	1.0	0.0
THU	24	0	0	0	0.0	0.0	0.0	0.0
FRI	25	0	0	0	0.0	0.0	0.0	0.0
SAT	26	0	0	0	0.0	0.0	0.0	0.0
SUN	27	0	0	0	0.0	0.0	0.0	0.0
MON	28	554	461	1,015	2.0	1.4	3.4	W4 1.2
TUE	29	0	0	0	0.0	0.0	0.0	0.0
WED	30	125	190	315	0.0	0.5	0.5	V 1.0
THU	31	0	0	0	0.0	0.0	0.0	0.0
0.0		3,973	2,595	6,568	14.0	7.7	21.7	

LAKE ELMO WELL # 4

JAN 16		WATER READ	USE	FLUORIDE WEIGHT #	FLUORIDE USE / POUNDS	FLUORIDE USE / GAL	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	31	29,724,894	0	483.1	0.0	0.0	584.4	0.0		0	410	20.5	116.3	
FRI	1													
SAT	2													
SUN	3													
MON	4	30,139,846	414,952	470.1	13.0		592.8	8.4	F 0.7	4	414 / 9:15		114.3	F 0.3
TUE	5	30,241,786	101,940	465.1	5.0		594.8	2.0	P 0.8	1	414 / 2:00		113.5	P 0.3
WED	6	30,338,760	96,974	465.1	0.0		596.8	2.0	FFE 0.6	2	416 / 10:00		112.7	FFE 0.5
THU	7	30,428,938	90,178	462.2	2.9		598.6	1.8	F 0.8	1	417 / 10:45	21.9	112.1	F 0.3
FRI	8													
SAT	9													
SUN	10													
MON	11													
TUE	12													
WED	13													
THU	14													
FRI	15													
SAT	16													
SUN	17													
MON	18													
TUE	19													
WED	20													
THU	21													
FRI	22													
SAT	23													
SUN	24													
MON	25													
TUE	26													
WED	27													
THU	28													
FRI	29													
SAT	30													
SUN	31													

LAKE ELMO WELL # 1

JAN 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	16,283.7	0.0	69.00	0.00	7,976.6	0.0		0	344 / 10:10
FRI	1									
SAT	2									
SUN	3									
MON	4	16,283.8	0.1	69.00	0.00	7,976.6	0.0	C 0.7	0	344 / 10:00
TUE	5	16,283.8	0.0	69.00	0.00	7,976.6	0.0	G 0.8	0	344 / 10:00
WED	6	16,283.8	0.0	69.00	0.00	7,976.6	0.0	B 0.8	0	344 / 9:00
THU	7	16,283.8	0.0	69.00	0.00	7,976.6	0.0	LE 0.8	0	344 / 11:15
FRI	8									
SAT	9									
SUN	10									
MON	11	16,450.3	166.5	68.50	0.50	7,982.6	6.0	F 0.5	12	359 / 9:30
TUE	12	16,501.8	51.5	68.50	0.00	7,984.9	2.3	B 0.8	3	359 / 8:30
WED	13	16,574.5	72.7	68.50	0.00	7,987.6	2.7	P 0.2	4	363 / 11:00
THU	14	16,611.2	36.7	68.50	0.00	7,989.0	1.4	G 0.2	3	366
FRI	15	16,675.1	63.9	68.50	0.00	7,991.4	2.4	LE 0.4	3	369 / 9:30
SAT	16									
SUN	17									
MON	18									
TUE	19	16,871.2	196.1	67.50	1.00	7,999.0	7.6	C 0.3	13	382 / 9:30
WED	20	16,914.4	43.2	67.00	0.50	8,000.6	1.6	C 0.1	3	385 / 10:00
THU	21	16,957.1	42.7	67.00	0.00	8,002.2	1.6	B 0.3	3	388 / 8:45
FRI	22	16,998.6	41.5	66.50	0.50	8,003.8	1.6	LE 1.3	3	391 / 9:00
SAT	23									
SUN	24									
MON	25	17,168.7	170.1	65.50	1.00	8,010.2	6.4	P 1.4	12	403 / 9:00
TUE	26	17,213.8	45.1	65.00	0.50	8,011.9	1.7		3	406 / 9:00
WED	27	17,255.2	41.4	65.00	0.00	8,013.5	1.6	F 1.4	3	409 / 9:00
THU	28	17,294.8	39.6	64.50	0.50	8,015.0	1.5	C 1.3	3	412 / 8:00
FRI	29	17,334.2	39.4	64.50	0.00	8,016.5	1.5	B 1.3	3	415 / 8:30
SAT	30									
SUN	31									
		TOTAL FLOW	1,050.5		4.50		39.9		71	

LAKE ELMO WELL # 1

FEB 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	17,334.2	39.4	64.50	0.00	8,016.5	1.5	B 1.3	3	415 / 8:30
MON	1	17,493.1	158.9	63.50	1.00	8,022.1	5.6	C 0.6	11	426 / 10:00
TUE	2	17,509.3	16.2	63.50	0.00	8,023.1	1.0	LE 1.4	2	428 / 8:20
WED	3									
THU	4									
FRI	5	17,643.4	134.1	62.50	1.00	8,028.2	5.1	B 1.5	10	438 / 8:50
SAT	6									
SUN	7									
MON	8	17,783.2	139.8	61.00	1.50	8,033.5	5.3	F 1.6	11	449 / 10:00
TUE	9	17,827.9	44.7	61.00	0.00	8,035.1	1.6		3	452 / 8:45
WED	10	17,865.9	38.0	61.00	0.00	8,036.6	1.5	P 0.8	3	455 / 8:00
THU	11	17,917.8	51.9	61.00	0.00	8,038.1	1.5	F 0.8	4	459 / 8:15
FRI	12	17,955.0	37.2	61.00	0.00	8,040.0	1.9	C 0.8	3	462 / 10:15
SAT	13									
SUN	14									
MON	15									
TUE	16	18,125.8	170.8	60.50	0.50	8,046.4	6.4	C 1.2	14	476 / 10:00
WED	17	18,218.0	92.2	60.50	0.00	8,049.9	3.5	LE 0.6	7	483 / 2:15
THU	18	18,269.5	51.5	60.00	0.50	8,051.9	2.0	F 0.6	4	487 / 10:00
FRI	19	18,348.3	78.8	60.00	0.00	8,054.8	2.9	C 0.6	6	493 / 10:00
SAT	20									
SUN	21									
MON	22	18,572.2	223.9	60.00	0.00	8,063.3	8.5	F 0.5	15	508 / 9:45
TUE	23	18,648.5	76.3	60.00	0.00	8,066.3	3.0	C 0.5	4	512 / 10:00
WED	24	18,719.5	71.0	60.00	0.00	8,069.0	2.7	P 0.8	4	516 / 8:15
THU	25	18,801.0	81.5	60.00	0.00	8,071.2	2.2	LE 0.4	5	521 / 10:40
FRI	26	18,832.1	31.1	59.50	0.50	8,073.2	2.0	B 0.5	2	523 / 9:00
SAT	27									
SUN	28									
MON	29	18,980.7	148.6	59.50	0.00	8,078.9	5.7	C 0.6	9	532 / 11:45
TUE	1									
WED	2									
		TOTAL FLOW	1,646.5		5.00		62.4		117	

LAKE ELMO WELL # 1

MAR 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	18,980.7	148.6	59.50	0.00	8,078.9	5.7	C 0.6	9	532 / 11:45
TUE	1	19,010.6	29.9	59.50	0.00	8,080.0	1.1	B 0.6	2	534 / 9:00
WED	2	19,057.6	47.0	59.00	0.50	8,081.8	1.8	F 0.5	3	537 / 8:30
THU	3	19,104.7	47.1	59.00	0.00	8,083.6	1.8	C 0.5	3	540 / 9:15
FRI	4	19,136.8	32.1	59.00	0.00	8,084.8	1.2	p 1.1	2	542 / 8:30
SAT	5									
SUN	6									
MON	7	19,269.1	132.3	59.00	0.00	8,089.8	5.0	P 0.7	8	550 / 8:45
TUE	8	19,318.5	49.4	59.00	0.00	8,091.7	1.9	P 1.2	3	553 / 10:00
WED	9	19,387.4	68.9	59.00	0.00	8,094.3	2.6	F 0.4	4	557 / 2:30
THU	10									
FRI	11	19,469.1	81.7	59.00	0.00	8,097.4	3.1		4	561 / 9:00
SAT	12									
SUN	13									
MON	14	19,615.4	146.3	58.50	0.50	8,103.1	5.7	LE 0.5	10	571 / 10:30
TUE	15	19,664.2	48.8	58.50	0.00	8,105.0	1.9	C 0.5	4	575 / 9:30
WED	16	19,709.2	45.0	58.50	0.00	8,106.7	1.7	P 0.5	3	578 / 9:40
THU	17									
FRI	18	19,796.5	87.3	58.00	0.50	8,110.0	3.3	B 0.6	6	584 / 10:00
SAT	19									
SUN	20									
MON	21	19,925.4	128.9	58.00	0.00	8,114.9	4.9	P 0.8	9	593 / 10:00
TUE	22	20,004.6	79.2	101.00	0.00	8,117.9	3.0	F 0.7	4	597 / 2:00
WED	23	20,032.8	28.2	101.00	0.00	8,119.0	1.1	LE 0.5	2	599 / 9:15
THU	24	20,061.7	28.9	101.00	0.00	8,120.1	1.1	G 0.6	3	602 / 10:40
FRI	25	20,100.8	39.1	101.00	0.00	8,121.6	1.5	P 0.7	2	604 / 9:00
SAT	26									
SUN	27									
MON	28	20,238.5	137.7	101.00	0.00	8,126.9	5.3	F 0.5	10	614 / 9:00
TUE	29	20,282.3	43.8	100.00	1.00	8,128.5	1.6	B 0.5	3	617 / 8:15
WED	30	20,332.3	50.0	100.00	0.00	8,130.4	1.9	C 0.5	3	620 / 9:30
THU	31	20,375.8	43.5	100.00	0.00	8,132.1	1.7	B 0.5	3	623 / 10:45
		TOTAL FLOW	1,395.1		2.50		53.2		91	

LAKE ELMO WELL # 1

APR 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	20,375.8	43.5	100.00	0.00	8,132.1	1.7	B 0.5	3	623 / 10:45
FRI	1	20,418.3	42.5	100.00	0.00	8,133.7	1.6		3	626 /
SAT	2									
SUN	3									
MON	4	20,563.2	144.9	100.00	0.00	8,139.2	5.5	P 0.6	10	636 / 9:30
TUE	5	20,607.5	44.3	100.00	0.00	8,140.9	1.7		3	639 / 9:00
WED	6	20,650.1	42.6	100.00	0.00	8,142.6	1.7	C 0.5	3	642 / 9:00
THU	7	20,695.6	45.5	100.00	0.00	8,144.3	1.7		3	645 / 9:00
FRI	8	20,739.1	43.5	100.00	0.00	8,146.0	1.7		3	648 / 8:30
SAT	9									
SUN	10									
MON	11	20,884.1	145.0	99.50	0.50	8,151.5	5.5	P 0.6	10	658 / 9:10
TUE	12	20,927.2	43.1	99.50	0.00	8,153.1	1.6	LE 0.6	3	661 / 10:00
WED	13	20,971.7	44.5	99.50	0.00	8,154.8	1.7	F 0.4	3	664 / 10:00
THU	14	21,015.0	43.3	99.00	0.50	8,156.5	1.7		3	667 / 8:30
FRI	15	21,069.2	54.2	99.00	0.00	8,158.6	2.1		4	671 / 8:50
SAT	16									
SUN	17									
MON	18	21,234.0	164.8	99.00	0.00	8,164.9	6.3	F 0.5	11	682 / 8:30
TUE	19	21,307.3	73.3	99.00	0.00	8,167.7	2.8	C 0.5	6	688 / 9:00
WED	20	21,352.9	45.6	99.00	0.00	8,169.4	1.7	P 0.5	3	691 / 8:30
THU	21	21,410.7	57.8	99.00	0.00	8,171.6	2.2	P 0.5	4	695
FRI	22	21,453.7	43.0	99.00	0.00	8,173.3	1.7	P 0.8	3	698 / 901
SAT	23									
SUN	24									
MON	25	21,612.0	158.3	98.00	1.00	8,179.4	6.1	B 0.7	11	709 / 9:25
TUE	26	21,670.4	58.4	98.00	0.00	8,181.6	2.2	C 0.7	4	713 / 9:00
WED	27	21,739.1	68.7	98.00	0.00	8,184.2	2.6	LE 0.7	5	918 / 3:10
THU	28	21,782.7	43.6	98.00	0.00	8,185.9	1.7	P 0.8	3	721 / 10:45
FRI	29	21,826.4	43.7	98.00	0.00	8,187.6	1.7	F 0.6	3	724 / 9:00
SAT	30									
SUN	31									
		TOTAL FLOW	1,450.6		2.00		55.5		101	

LAKE ELMO WELL # 1

MAY 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	21,826.4	43.7	98.00	0.00	8,187.6	1.7	F 0.6	3	724 / 9:00
SUN	1									
MON	2	22,001.3	174.9	98.00	0.00	8,194.3	6.7	F 0.6	12	736 / 10:00
TUE	3	22,060.5	59.2	98.00	0.00	8,196.5	2.2		4	740 / 10:00
WED	4	22,122.3	61.8	98.00	0.00	8,198.9	2.4		4	744 / 10:00
THU	5	22,182.4	60.1	98.00	0.00	8,201.2	2.3	P 0.7	4	748 / 9:00
FRI	6	22,242.9	60.5	98.00	0.00	8,203.5	2.3		5	753 / 8:30
SAT	7									
SUN	8									
MON	9	22,464.3	221.4	97.00	1.00	8,212.0	8.5	C 0.6	14	767 / 9:30
TUE	10	22,522.2	57.9	97.00	0.00	8,214.2	2.2	B 0.7	4	771 / 9:45
WED	11	22,579.9	57.7	97.00	0.00	8,216.3	2.1	C 0.7	4	775 / 10:45
THU	12	22,637.7	57.8	97.00	0.00	8,218.6	2.3	LE 0.8	4	779 / 9:30
FRI	13	22,696.5	58.8	97.00	0.00	8,220.8	2.2	P 0.6	4	783 / 9:15
SAT	14									
SUN	15									
MON	16	22,886.0	189.5	97.00	0.00	8,228.1	7.3	LE 0.7	13	796 / 9:15
TUE	17	22,945.7	59.7	97.00	0.00	8,230.4	2.3	P 0.6	4	800 / 10:00
WED	18	23,035.2	89.5	97.00	0.00	8,233.9	3.5	B 0.7	5	805 / 10:30
THU	19	23,157.9	122.7	97.00	0.00	8,238.6	4.7	G 0.0	8	813 / 10:00
FRI	20	23,262.0	104.1	97.00	0.00	8,242.6	4.0	B 0.6	7	820 / 9:15
SAT	21									
SUN	22									
MON	23	23,567.4	305.4	97.00	0.00	8,254.5	11.9	F 0.4	20	840 / 8:40
TUE	24	23,644.3	76.9	96.00	1.00	8,257.5	3.0	LE 0.5	6	846 / 10:05
WED	25	23,714.8	70.5	96.00	0.00	8,260.2	2.7	JT 0.8	5	851 / 11:20
THU	26	23,755.6	40.8	95.00	1.00	8,261.8	1.6		3	854 / 9:15
FRI	27	23,797.2	41.6	95.00	0.00	8,263.4	1.6	DS 1.5	3	857 / 9:05
SAT	28									
SUN	29									
MON	30									
TUE	31	23,990.0	192.8	94.00	1.00	8,270.6	7.2		14	871 / 2:00
		TOTAL FLOW	2,163.6		4.00		83.0		147	

LAKE ELMO WELL # 1

JUN 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	23,990.0	192.8	94.00	1.00	8,270.6	7.2		14	871 / 2:00
WED	1	24,017.3	27.3	94.00	0.00	8,271.7	1.1	JT 1.2	2	873 / 8:45
THU	2	24,059.8	42.5	94.00	0.00	8,273.3	1.6		4	877 / 9:10
FRI	3	24,115.2	55.4	94.00	0.00	8,275.4	2.1	DS 0.8	4	881 / 9:15
SAT	4									
SUN	5									
MON	6	24,297.1	181.9	93.50	0.50	8,282.5	7.1	JT 1.3	12	893 / 10:30
TUE	7	24,372.8	75.7	93.50	0.00	8,285.4	2.9	DS 0.8	4	897 / 3:15
WED	8	24,414.3	41.5	93.50	0.00	8,287.0	1.6	JT 1.0	3	900 / 10:20
THU	9	24,472.2	57.9	93.00	0.50	8,289.2	2.2		5	905 / 9:00
FRI	10	24,513.2	41.0	93.00	0.00	8,290.8	1.6		3	908 / 9:45
SAT	11									
SUN	12									
MON	13	24,694.8	181.6	93.00	0.00	8,297.7	6.9	JT 1.2	13	921 / 9:45
TUE	14	24,749.0	54.2	93.00	0.00	8,299.8	2.1	DS 1.4	4	925 / 8:45
WED	15	24,779.3	30.3	93.00	0.00	8,300.9	1.1	JT 1.0	3	931 / 10:00
THU	16	24,819.0	39.7	93.00	0.00	8,304.2	3.3		3	931 / 8:30
FRI	17	24,874.3	55.3	93.00	0.00	8,304.6	0.4	JT 0.8	4	935 / 8:00
SAT	18									
SUN	19									
MON	20	25,140.2	265.9	92.00	1.00	8,314.9	10.3	JT 0.7	18	953 / 8:45
TUE	21	25,231.4	91.2	92.00	0.00	8,318.3	3.4	JT 0.7	6	959 / 8:45
WED	22	25,394.7	163.3	92.00	0.00	8,324.7	6.4	DS 0.5	10	969 / 9:00
THU	23	25,551.4	156.7	92.00	0.00	8,330.8	6.1		9	978 /
FRI	24									
SAT	25									
SUN	26									
MON	27	26,134.9	583.5	91.00	1.00	8,353.6	22.8	JT 0.5	34	012 / 9:50
TUE	28	26,347.5	212.6	91.00	0.00	8,362.0	8.4	DS 0.4	9	021 / 11:30
WED	29	26,546.8	199.3	91.00	0.00	8,369.8	7.8	DS 0.5	11	032 /
THU	30	26,711.2	164.4	90.00	1.00	8,376.3	6.5	JT 0.6	8	040 / 11:30
FRI	1									
	TOTAL FLOW		2,721.2		4.00		105.7		169	

LAKE ELMO WELL # 1

JUL 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	26,711.2	164.4	90.00	1.00	8,376.3	6.5	JT 0.6	8	040 / 11:30
FRI	1	26,813.3	102.1	90.00	0.00	8,380.3	4.0		7	047 /
SAT	2									
SUN	3									
MON	4									
TUE	5	27,451.0	637.7	89.00	1.00	8,405.4	25.1	JT 0.4	35	82 / 8:30
WED	6	27,538.9	87.9	89.00	0.00	8,408.8	3.4	DS 0.5	5	87 / 9:20
THU	7	27,629.3	90.4	89.00	0.00	8,412.4	3.6		6	93 / 11:00
FRI	8	27,718.0	88.7	89.00	0.00	8,415.9	3.5	DS 0.4	6	99 / 11:00
SAT	9									
SUN	10									
MON	11	28,006.3	288.3	89.00	0.00	8,427.0	11.1	JT 0.6	19	118 / 8:15
TUE	12	28,091.5	85.2	88.50	0.50	8,430.4	3.4	JT 0.7	6	124 / 9:00
WED	13	28,183.2	91.7	88.50	0.00	8,433.9	3.5	JT 0.7	6	130
THU	14	28,346.2	163.0	88.50	0.00	8,440.3	6.4	JT 0.5	10	140 / 3:00
FRI	15	28,423.5	77.3	88.00	0.50	8,443.4	3.1	DS 0.4	5	145 / 9:30
SAT	16									
SUN	17									
MON	18	28,762.6	339.1	88.00	0.00	8,456.6	13.2	JT 0.5	21	166 / 9:00
TUE	19	28,914.8	152.2	87.50	0.50	8,462.6	6.0	JT 0.5	9	175 / 9:15
WED	20	29,031.8	117.0	87.50	0.00	8,467.2	4.6	DS 0.5	7	182 / 10:00
THU	21	29,138.9	107.1	87.00	0.50	8,471.3	4.1	JT 0.5	7	189 / 11:00
FRI	22	29,247.6	108.7	87.00	0.00	8,475.6	4.3		7	196 / 9:00
SAT	23									
SUN	24									
MON	25	29,498.3	250.7	87.00	0.00	8,485.5	9.9	JT 0.3	17	213 / 9:15
TUE	26	29,590.8	92.5	87.00	0.00	8,489.1	3.6	JT 0.6	7	220 / 8:30
WED	27	29,719.3	128.5	87.00	0.00	8,494.2	5.1	JT 0.5	8	228 / 10:00
THU	28	29,790.8	71.5	86.50	0.50	8,496.9	2.7	JT 0.5	5	233 / 9:15
FRI	29	29,867.0	76.2	86.50	0.00	8,499.9	3.0	JT 0.6	5	238 / 9:15
SAT	30									
SUN	31									
		TOTAL FLOW	3,155.8		3.50		123.6		198	

LAKE ELMO WELL # 1

AUG 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	29	29,867.0	76.2	86.50	0.00	8,499.9	3.0	JT 0.6	5	238 / 9:15
MON	1	30,220.3	353.3	86.00	0.50	8,513.8	13.9	JT 0.4	23	261 / 2:00
TUE	2	30,333.1	112.8	86.00	0.00	8,518.2	4.4		7	268 / 1;30
WED	3	30,448.4	115.3	85.50	0.50	8,522.7	4.5	DS 0.7	7	275 / 10:30
THU	4	30,576.5	128.1	85.00	0.50	8,527.8	5.1	JT 0.8	8	283 / 11:00
FRI	5	30,652.0	75.5	85.00	0.00	8,530.7	2.9	DS 0.4	5	588 / 9:00
SAT	6									
SUN	7									
MON	8	30,946.3	294.3	85.00	0.00	8,542.3	11.6	JT 0.4	19	307 / 9:15
TUE	9	31,073.4	127.1	85.00	0.00	8,547.2	4.9	JT 0.5	8	315 / 11:30
WED	10	31,190.0	116.6	85.00	0.00	8,551.8	4.6	JT 0.5	7	322 / 2:00
THU	11									
FRI	12	31,337.9	147.9	84.50	0.50	8,557.7	5.9	JT 0.4	10	332
SAT	13									
SUN	14									
MON	15	31,568.9	231.0	84.00	0.50	8,566.7	9.0	JT 0.6	16	348 / 8:30
TUE	16	31,639.2	70.3	84.00	0.00	8,569.5	2.8	JT 0.3	5	353 / 9:00
WED	17	31,705.3	66.1	84.00	0.00	8,572.1	2.6	JT 0.5	6	359 / 9:20
THU	18	31,764.4	59.1	84.00	0.00	8,574.3	2.2		4	363
FRI	19	31,820.0	55.6	84.00	0.00	8,576.4	2.1	JT 0.5	4	367
SAT	20									
SUN	21									
MON	22	31,985.1	165.1	83.50	0.50	8,582.9	6.5	JT 0.5	12	379
TUE	23	32,043.6	58.5	83.50	0.00	8,582.9	0.0	JT 0.5	3	381
WED	24	32,082.2	38.6	83.50	0.00	8,586.7	3.8	JT 0.4	3	386 / 9:00
THU	25	32,123.8	41.6	83.00	0.50	8,588.3	1.6		4	390 / 8:45
FRI	26	32,185.5	61.7	83.00	0.00	8,590.7	2.4	JT 0.6	5	395 / 8:20
SAT	27									
SUN	28									
MON	29	32,431.4	245.9	83.00	0.00	8,600.2	9.5	JT 0.3	14	409
TUE	30									
WED	31	32,528.7	97.3	82.50	0.50	8,603.9	3.7	DS 0.6	6	415 /
		TOTAL FLOW	2,661.7		4.00		104.0		176	

LAKE ELMO WELL # 1

SEP 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	31	32,528.7	97.3	82.50	0.50	8,603.9	3.7	DS 0.6	6	415
THU	1	32,597.7	69.0	82.50	0.00	8,606.5	2.6	DS 0.6	4	419
FRI	2	32,662.0	64.3	82.50	0.00	8,609.2	2.7	JT 0.4	5	424 / 9:40
SAT	3									
SUN	4									
MON	5									
TUE	6	32,890.3	228.3	82.00	0.50	8,618.0	8.8	JT 0.4	14	438 / 2:30
WED	7	32,927.3	37.0	82.00	0.00	8,619.4	1.4		3	441 / 9:20
THU	8	32,987.0	59.7	82.00	0.00	8,621.7	2.3	DS 0.6	3	444 / 10:30
FRI	9	33,048.4	61.4	81.50	0.50	8,624.0	2.3		4	448
SAT	10									
SUN	11									
MON	12	33,253.0	204.6	81.50	0.00	8,632.0	8.0		12	460 / 3:30
TUE	13	33,311.6	58.6	81.00	0.50	8,634.2	2.2		4	464 / 2:30
WED	14	33,375.2	63.6	81.00	0.00	8,636.7	2.5		3	467 / 10:30
THU	15	33,446.1	70.9	80.00	1.00	8,639.5	2.8	JT 0.6	4	471
FRI	16									
SAT	17									
SUN	18									
MON	19									
TUE	20	33,779.3	333.2	79.00	1.00	8,652.3	12.8	JT 0.6	20	491
WED	21	33,846.1	66.8	79.00	0.00	8,654.8	2.5	JT 0.9	4	495 / 10:30
THU	22	33,896.0	49.9	78.50	0.50	8,656.8	2.0		3	498 / 2:00
FRI	23	33,962.1	66.1	78.50	0.00	8,659.3	2.5		4	502
SAT	24									
SUN	25									
MON	26									
TUE	27	34,209.0	246.9	77.50	1.00	8,668.9	9.6	JT 1.2	15	517 / 10:30
WED	28	34,290.0	81.0	77.00	0.50	8,672.0	3.1	JT 1.2	4	521 / 3:45
THU	29	34,340.3	50.3	77.00	0.00	8,674.0	2.0	JT 1.4	3	524
FRI	30	34,391.7	51.4	77.00	0.00	8,675.9	1.9	JT 1.4	3	527 / 10:00
SAT	1									
		TOTAL FLOW	1,863.0		5.50		72.0		112	

LAKE ELMO WELL # 1

OCT 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	34,391.7	51.4	77.00	0.00	8,675.9	1.9	JT 1.4	3	527 / 10:00
SAT	1									
SUN	2									
MON	3	34,595.2	203.5	77.00	0.00	8,683.7	7.8	JT 1.4	12	539
TUE	4	34,658.1	62.9	76.00	1.00	8,686.2	2.5	JT 1.1	4	543 / 10:00
WED	5	34,709.5	51.4	76.00	0.00	8,688.2	2.0		3	546 / 1:00
THU	6	34,720.1	10.6	76.00	0.00	8,688.6	0.4		1	547 / 3:00
FRI	7	34,720.1	0.0	76.00	0.00	8,688.6	0.0		0	547 / 9:45
SAT	8									
SUN	9									
MON	10	34,750.5	30.4	76.00	0.00	8,689.7	1.1		2	549 / 10:45
TUE	11	34,765.5	15.0	76.00	0.00	8,690.3	0.6	JT 0.4	1	550 / 3:00
WED	12	34,780.0	14.5	76.00	0.00	8,690.9	0.6		1	551 / 10:45
THU	13	34,796.3	16.3	76.00	0.00	8,691.5	0.6	JT 0.4	1	552 / 3:00
FRI	14	34,796.3	0.0	76.00	0.00	8,691.5	0.0	JT 0.6	0	552 / 10:10
SAT	15									
SUN	16									
MON	17	34,841.9	45.6	76.00	0.00	8,693.3	1.8	JT 0.6	3	555 / 145
TUE	18	34,841.9	0.0	76.00	0.00	8,693.3	0.0	JT 0.6	0	555 / 11:40
WED	19	34,856.9	15.0	76.00	0.00	8,693.9	0.6	JT 0.6	1	556 / 11:00
THU	20	34,857.0	0.1	76.00	0.00	8,693.9	0.0		0	556 / 10:00
FRI	21	34,872.0	15.0	76.00	0.00	8,694.4	0.5		1	557 / 8:30
SAT	22									
SUN	23									
MON	24	34,902.1	30.1	76.00	0.00	8,695.6	1.2	JT .72	2	559 / 10:00
TUE	25	34,902.1	0.0	76.00	0.00	8,695.6	0.0	JT .65	0	559 / 9:15
WED	26									
THU	27	34,964.5	62.4	76.00	0.00	8,698.0	2.4		5	564 / 2:15
FRI	28	34,964.5	0.0	76.00	0.00	8,698.0	0.0	JT .63	0	564 / 9:45
SAT	29									
SUN	30									
MON	31	34,964.5	0.0	76.00	0.00	8,698.0	0.0	JT .69	0	564 / 2:30
		TOTAL FLOW	572.8		1.00		22.1		37	

LAKE ELMO WELL # 1

NOV 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	34,964.5	0.0	76.00	0.00	8,698.0	0.0	JT .69	0	564 / 2:30
TUE	1									
WED	2	34,964.5	0.0	76.00	0.00	8,698.0	0.0	B .63	0	564 / 9:45
THU	3									
FRI	4									
SAT	5									
SUN	6									
MON	7	34,964.5	0.0	76.00	0.00	8,698.0	0.0	DS .67	0	564 / 10:30
TUE	8	34,964.5	0.0	76.00	0.00	8,698.0	0.0	JT .6	0	564 / 10:00
WED	9									
THU	10	34,964.5	0.0	76.00	0.00	8,698.0	0.0	P .59	0	564 / 10:30
FRI	11									
SAT	12									
SUN	13									
MON	14	34,964.5	0.0	76.00	0.00	8,698.0	0.0	JT .9	0	564 / 9:00
TUE	15									
WED	16									
THU	17									
FRI	18									
SAT	19									
SUN	20									
MON	21									
TUE	22	34,964.5	0.0	76.00	0.00	8,698.0	0.0		0	564 / 9:30
WED	23									
THU	24									
FRI	25									
SAT	26									
SUN	27									
MON	28	34,988.0	23.5	76.00	0.00	8,698.9	0.9		3	567 / 2:15
TUE	29	35,077.0	89.0	75.00	1.00	8,702.2	3.3		5	572 /
WED	30	35,187.4	110.4	75.00	0.00	8,706.4	4.2	F .8	6	580 /
THU	1									
		TOTAL FLOW	222.9		1.00		8.4		14	

LAKE ELMO WELL # 1

DEC 16		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	35,187.4	110.4	75.00	0.00	8,706.4	4.2	F .8	6	580
THU	1	35,252.5	65.1	75.00	0.00	8,708.8	2.4	JT .6	5	585
FRI	2	35,302.2	49.7	75.00	0.00	8,710.7	1.9		4	589
SAT	3									
SUN	4									
MON	5	35,473.3	171.1	74.00	1.00	8,717.2	6.5		13	602 / 10:00
TUE	6	35,532.5	59.2	74.00	0.00	8,719.5	2.3		3	605 / 8:25
WED	7	35,596.4	63.9	74.00	0.00	8,721.9	2.4	C 0.6	6	611 / 9:00
THU	8	35,648.7	52.3	74.00	0.00	8,723.8	1.9	F 0.6	4	615 / 8:45
FRI	9	35,710.3	61.6	74.00	0.00	8,726.1	2.3	C 0.6	5	620
SAT	10									
SUN	11									
MON	12	35,870.1	159.8	72.00	2.00	8,732.1	6.0	F 1.5	14	634
TUE	13	35,923.7	53.6	72.00	0.00	8,734.1	2.0	F 1.4	4	638 / 10:00
WED	14	36,007.7	84.0	71.50	0.50	8,737.3	3.2	C 1.0	7	645 / 2:00
THU	15	36,041.2	33.5	71.50	0.00	8,738.6	1.3	P .53	3	648 / 8:20
FRI	16									
SAT	17									
SUN	18									
MON	19	36,323.6	282.4	71.00	0.50	8,749.2	10.6	F 0.5	26	674 / 10:00
TUE	20	36,464.6	141.0	71.00	0.00	8,754.5	5.3		10	684 / 11:00
WED	21	36,512.1	47.5	71.00	0.00	8,756.3	1.8		4	688
THU	22	36,541.9	29.8	71.00	0.00	8,757.4	1.1	F 0.5	3	691 / 9:00
FRI	23									
SAT	24									
SUN	25									
MON	26	36,732.9	191.0	70.00	1.00	8,764.5	7.1		19	710
TUE	27	36,771.8	38.9	70.00	0.00	8,766.0	1.5	JT 0.5	4	714
WED	28	36,811.4	39.6	70.00	0.00	8,767.5	1.5		5	719
THU	29									
FRI	30	36,840.7	29.3	70.00	0.00	8,768.6	1.1		3	722 / 9:45
SAT	31									
		TOTAL FLOW	1,653.3		5.00		62.2		142	

LAKE ELMO WELL # 1

JAN 17		WATER READ	USE	FLUORIDE	USE	HOURS	RUN	TEST	STARTS	
PREVIOUS	30	36,840.7	29.3	70.00	0.00	8,768.6	1.1		3	722 / 9:45
SUN	1									
MON	2									
TUE	3	36,997.5	156.8	70.00	0.00	8,774.4	5.8	JT .65	8	730 / 1:35
WED	4									
THU	5									
FRI	6									
SAT	7									
SUN	8									
MON	9									
TUE	10									
WED	11									
THU	12									
FRI	13									
SAT	14									
SUN	15									
MON	16									
TUE	17									
WED	18									
THU	19									
FRI	20									
SAT	21									
SUN	22									
MON	23									
TUE	24									
WED	25									
THU	26									
FRI	27									
SAT	28									
SUN	29									
MON	30									
TUE	31									
		TOTAL FLOW	156.8		0.00		5.8		8	

2016 WELL #1 FLOW

MONTH	FLOW READING	X - 1000	QUARTERLY
JAN	1050.5	1,050,500	
FEB	1646.5	1,646,500	
MAR	1395.1	1,395,100	4,092,100
APR	1450.6	1,450,600	
MAY	2163.6	2,163,600	
JUN	2721.2	2,721,200	6,335,400
JUL	3155.8	3,155,800	
AUG	2661.7	2,661,700	
SEP	1863	1,863,000	7,680,500
OCT	572.8	572,800	
NOV	222.9	222,900	
DEC	1653.3	1,653,300	2,449,000
TOTAL	20557	20,557,000	20,557,000

2016 WELL #2 SUMMARY

MONTH	FLOW READING	X - 100	QUARTERLY
JAN	2,423	2,423,000	
FEB	2,616	2,616,000	
MAR	2,101	2,101,000	7,140,000
APR	2,199	2,199,000	
MAY	5,077	5,077,000	
JUN	7,693	7,693,000	14,969,000
JUL	7,654	7,654,000	
AUG	6,460	6,460,000	
SEP	4,069	4,069,000	18,183,000
OCT	3,569	3,569,000	
NOV	3,090	3,090,000	
DEC	596	596,000	7,255,000
TOTAL	47,547	47,547,000	47,547,000

2016 WELL #4 SUMMARY

MONTH	FLOW READING	X - 100	QUARTERLY
JAN	2,245,918		
FEB	2,320,720		
MAR	2,193,844		6,760,482
APR	2,025,024		
MAY	4,841,776		
JUN	6,620,384		13,487,184
JUL	8,601,924		
AUG	5,938,620		
SEP	3,561,328		18,101,872
OCT	3,261,568		
NOV	2,688,120		
DEC	3,467,416		9,417,104
TOTAL	47,766,642		47,766,642

	#1	#2	#4	TOTALS	
JAN	1,050,500	2,423,000	2,245,918	5,719,418	
FEB	1,646,500	2,616,000	2,320,720	6,583,220	
MAR	1,395,100	2,101,000	2,193,844	5,689,944	17,992,582
APR	1,450,600	2,199,000	2,025,024	5,674,624	
MAY	2,163,600	5,077,000	4,841,776	12,082,376	
JUN	2,721,200	7,693,000	6,620,384	17,034,584	34,791,584
JUL	3,155,800	7,654,000	8,601,924	19,411,724	
AUG	2,661,700	6,460,000	5,938,620	15,060,320	
SEP	1,863,000	4,069,000	3,561,328	9,493,328	43,965,372
OCT	572,800	3,569,000	3,261,568	7,403,368	
NOV	222,900	3,090,000	2,688,120	6,001,020	
DEC	1,653,300	596,000	3,467,416	5,716,716	19,121,104
	20,557,000	47,547,000	47,766,642	115,870,642	
				115,870,642	115,870,642

avg per month	avg per day
9,655,886.83	317,453.81

MDH MONTHLY FLUORIDE REPORT								
JAN 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	30					0.0		
FRI	1	0	0.0	0	0.0	0.0	0	0.0
SAT	2	0	0.0	0	0.0	0.0	0	0.0
SUN	3	0	0.0	0	0.0	0.0	0	0.0
MON	4	437	2.0	415	1.3	F 0.7	852	3.3
TUE	5	66	0.0	102	0.5	P 0.8	168	0.5
WED	6	111	1.0	97	0.0	FFE 0.6	208	1.0
THU	7	106	0.0	90	0.3	F 0.8	196	0.3
FRI	8	0	0.0	0	0.0	0.0	0	0.0
SAT	9	0	0.0	0	0.0	0.0	0	0.0
SUN	10	0	0.0	0	0.0	0.0	0	0.0
MON	11	286	1.0	273	1.4	P 1.1	559	2.4
TUE	12	101	0.5	88	0.2	F 0.9	189	0.7
WED	13	104	0.5	0	0.0	FFE 0.9	104	0.5
THU	14	0	0.0	83	0.1	P 0.9	83	0.1
FRI	15	98	0.0	8	0.0	W2 0.8	106	0.0
SAT	16	0	0.0	0	0.0	0.0	0	0.0
SUN	17	0	0.0	0	0.0	0.0	0	0.0
MON	18	0	0.0	0	0.0	0.0	0	0.0
TUE	19	323	1.0	363	1.2	FFE 0.9	686	2.2
WED	20	99	0.5	89	0.3	TOW 1.0	188	0.8
THU	21	89	0.5	0	0.0	F 0.9	89	0.5
FRI	22	105	0.0	95	0.1	P 0.9	200	0.1
SAT	23	0	0.0	0	0.0	0.0	0	0.0
SUN	24	0	0.0	0	0.0	0.0	0	0.0
MON	25	204	1.0	269	0.7	W2 0.8	473	1.7
TUE	26	97	0.5	93	0.2	0.0	190	0.7
WED	27	93	0.5	0	0.0	F 0.8	93	0.5
THU	28	104	0.0	89	0.2	FFE 1.0	193	0.2
FRI	29	0	0.0	94	0.4	W4 0.9	94	0.4
SAT	30	0	0.0	0	0.0	0.0	0	0.0
SUN	31	0	0.0	0	0.0	0.0	0	0.0
0.0		2,423	9.0	2,246	6.7		4,669	15.7

MDH MONTHLY FLUORIDE REPORT

FEB 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	29					W4 0.9		
MON	1	298	2.0	185	0.2	P 0.6	483	2.2
TUE	2	92	0.0	56	0.1	V 1.2	148	0.1
WED	3	0	0.0	0	0.0	0.0	0	0.0
THU	4	107	0.0	193	0.9	0.0	300	0.9
FRI	5	95	0.0	86	0.3	TOW1.2	181	0.3
SAT	6	0	0.0	0	0.0	0.0	0	0.0
SUN	7	0	0.0	0	0.0	0.0	0	0.0
MON	8	283	1.5	197	0.6	F 1.1	480	2.1
TUE	9	2	0.0	96	0.2	0.0	98	0.2
WED	10	95	0.5	86	0.4	0.0	181	0.9
THU	11	94	0.0	100	0.3	F 0.9	194	0.3
FRI	12	95	1.0	0	0.0	V 0.7	95	1.0
SAT	13	0	0.0	0	0.0	0.0	0	0.0
SUN	14	0	0.0	0	0.0	0.0	0	0.0
MON	15	0	0.0	0	0.0	0.0	0	0.0
TUE	16	291	1.0	357	0.9	V 1.0	648	1.9
WED	17	98	0.0	91	0.2	TOW 1.2	189	0.2
THU	18	191	0.5	0	0.0	F 1.0	191	0.5
FRI	19	101	0.5	88	0.3	W4 0.9	189	0.8
SAT	20	0	0.0	0	0.0	0.0	0	0.0
SUN	21	0	0.0	0	0.0	0.0	0	0.0
MON	22	202	1.0	281	0.5	FFE1.1	483	1.5
TUE	23	101	0.0	0	0.0	P 1.1	101	0.0
WED	24	84	0.0	211	0.7	TOW 1.1	295	0.7
THU	25	0	0.0	0	0.0	V 1.0	0	0.0
FRI	26	95	0.5	99	0.3	0.0	194	0.8
SAT	27	0	0.0	0	0.0	0.0	0	0.0
SUN	28	0	0.0	0	0.0	0.0	0	0.0
MON	29	292	0.5	195	0.2	P 0.9	487	0.7
TUE	1	0	0.0	0	0.0	0.0	0	0.0
WED	2	0	0.0	0	0.0	0.0	0	0.0
0.0		2,616	9.0	2,321	5.9		4,937	14.9

MDH MONTHLY FLUORIDE REPORT								
MAR 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	29					P 0.9		
TUE	1	0	0.0	97	0.6	0.0	97	0.6
WED	2	97	0.5	91	0.5	F 1.2	188	1.0
THU	3	100	1.5	17	0.0	FFE 1.1	117	1.5
FRI	4	93	0.0	76	0.2	TOW 0.6	169	0.2
SAT	5	0	0.0	0	0.0	0.0	0	0.0
SUN	6	0	0.0	0	0.0	0.0	0	0.0
MON	7	211	1.0	273	0.5	V 1.1	484	1.5
TUE	8	98	0.0	89	0.1	P 1.0	187	0.1
WED	9	101	0.0	95	0.1	P 1.1	196	0.1
THU	10	0	0.0	0	0.0	0.0	0	0.0
FRI	11	92	0.5	84	0.4	0.0	176	0.9
SAT	12	0	0.0	0	0.0	0.0	0	0.0
SUN	13	0	0.0	0	0.0	0.0	0	0.0
MON	14	332	1.5	190	0.2	FFE 1.0	522	1.7
TUE	15	3	0.0	113	0.3	TOW 1.1	116	0.3
WED	16	100	0.0	104	0.5	F 1.0	204	0.5
THU	17	0	0.0	0	0.0	0.0	0	0.0
FRI	18	55	0.0	134	0.7	W4 1.1	189	0.7
SAT	19	0	0.0	0	0.0	0.0	0	0.0
SUN	20	0	0.0	0	0.0	0.0	0	0.0
MON	21	273	1.0	138	0.4	F 0.9	411	1.4
TUE	22	0	0.0	136	0.9	P 1.1	136	0.9
WED	23	0	0.0	7	0.0	W2 0.8	7	0.0
THU	24	141	1.0	0	0.0	V 1.0	141	1.0
FRI	25	0	0.0	140	0.5	W4 1.0	140	0.5
SAT	26	0	0.0	0	0.0	0.0	0	0.0
SUN	27	0	0.0	0	0.0	0.0	0	0.0
MON	28	271	1.0	133	0.4	F 1.0	404	1.4
TUE	29	0	0.0	131	0.2	V 1.1	131	0.2
WED	30	134	0.0	0	0.0	P 0.9	134	0.0
THU	31	0	0.0	148	0.2	F 0.9	148	0.2
0.0		2,101	8.0	2,194	6.6		4,295	14.6

MDH MONTHLY FLUORIDE REPORT								
APR 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	31					F 0.9		
FRI	1	0	0.0	0	0.0	0.0	0	0.0
SAT	2	0	0.0	0	0.0	0.0	0	0.0
SUN	3	0	0.0	0	0.0	0.0	0	0.0
MON	4	296	1.0	142	0.5	FFE 1.0	438	1.5
TUE	5	0	0.0	144	0.4	V 1.0	144	0.4
WED	6	153	1.0	0	0.0	W4 0.6	153	1.0
THU	7	0	0.0	134	0.4	0.0	134	0.4
FRI	8	135	0.0	0	0.0	0.0	135	0.0
SAT	9	0	0.0	0	0.0	0.0	0	0.0
SUN	10	0	0.0	0	0.0	0.0	0	0.0
MON	11	138	96.0	262	0.5	TOW 0.9	400	96.5
TUE	12	136	1.0	0	0.0	F 0.8	136	1.0
WED	13	0	0.0	126	0.3	P 0.9	126	0.3
THU	14	138	0.0	0	0.0	0.0	138	0.0
FRI	15	0	0.0	143	0.0	0.0	143	0.0
SAT	16	0	0.0	0	0.0	0.0	0	0.0
SUN	17	0	0.0	0	0.0	0.0	0	0.0
MON	18	317	1.0	260	0.0	FFE 1.0	577	1.0
TUE	19	141	0.0	54	0.0	V 1.0	195	0.0
WED	20	5	0.5	145	0.0	P 0.9	150	0.5
THU	21	155	0.5	0	0.0	FFE 1.0	155	0.5
FRI	22	0	0.0	197	0.2	P 1.3	197	0.2
SAT	23	0	0.0	0	0.0	0.0	0	0.0
SUN	24	0	0.0	0	0.0	0.0	0	0.0
MON	25	301	1.0	183	0.7	V 1.3	484	1.7
TUE	26	0	0.0	54	0.1	W4 0.6	54	0.1
WED	27	141	1.0	138	0.4	W2 1.4	279	1.4
THU	28	143	1.0	0	0.0	FFE 1.2	143	1.0
FRI	29	0	0.0	43	0.4	F 0.9	43	0.4
SAT	30	0	0.0	0	0.0	0.0	0	0.0
SUN	1	0	0.0	0	0.0	0.0	0	0.0
0.0		2,199	104.0	2,025	3.9		4,224	107.9

WELL #4

MAY 16		WATER READ	USE	FLUORIDE WEIGHT #	FLUORIDE USE / POUNDS	FLUORIDE USE / GAL	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORINE TEST
PREVIOUS	29	38,510,400	42,640	1,229.8	4.2	0.4	764.1	0.9	F 0.9	1	496 / 10:30	150.0	71.1	F 0.5
SUN	1													
MON	2	38,763,620	253,220	1,227.9	1.9	0.2	769.4	5.3	V 1.2	1	497 / 8:40		69.7	V 1.0
TUE	3	38,896,012	132,392	1,227.9	0.0	0.0	772.2	2.8		1	498 / 8:30		68.6	
WED	4	38,989,370	93,358	1227.9	0.0	0.0	774.1	1.9		1	499 / 9:00		68.3	
THU	5	39,045,136	55,766	1,227.9	0.0	0.0	775.3	1.2	F 1.1	0	499 / 9:00		68.1	F 0.3
FRI	6	39,214,424	169,288	1,226.9	1.0	0.1	778.8	3.5		1	500 / 10:00		67.0	
SAT	7					0.0								
SUN	8					0.0								
MON	9	39,690,492	476,068	1,226.9	0.0	0.0	788.7	788.7	F 1.1	3	503 / 9:15		64.4	F 0.3
TUE	10	39,869,328	178,836	1,225.0	1.9	0.2	792.4	3.7	V 1.2	1	504 / 10:00		63.8	V 1.0
WED	11	39,869,328	0	1,225.0	0.0	0.0	792.4	0.0	W2 1.2	0	504 / 8:00		63.8	W2 1.0
THU	12	40,012,532	143,204	1,220.0	5.0	0.5	795.4	3.0	TOW 1.0	1	505 / 9:00		63.1	TOW 0.5
FRI	13	40,163,696	151,164	1,217.1	2.9	0.3	798.5	3.1	P 1.1	1	506 / 8:50		62.5	P 0.3
SAT	14					0.0								
SUN	15					0.0								
MON	16	40,447,825	284,129	1,207.9	9.2	0.9	804.5	6.0	F 0.8	2	508 / 8:30		61.3	F 0.5
TUE	17	40,536,856	89,031	1,207.9	0.0	0.0	806.3	1.8	P 1.0	0	508 / 9:00		60.9	P 0.3
WED	18	40,800,350	263,494	1,207.0	0.9	0.1	811.8	5.5	FFE 1.2	2	**510 / 11:00**		**59.5**	FFE 0.5
THU	19	41,099,644	299,294	1,207.0	0.0	0.0	817.9	6.1	W4 0.4	1	**511 / 11:30**		58.0	W4 1.0
FRI	20	41,261,100	161,456	1,207.0	0.0	0.0	821.2	3.3	TOW 0.9	1	512 / 10:00		57.1	TOW 0.5
SAT	21					0.0								
SUN	22					0.0								
MON	23	41,948,790	687,690	1,207.0	0.0	0.0	835.3	14.1	P 0.8	3	515 / 8:30		53.2	P 0.3
TUE	24	42,262,800	314,010	1,206.5	0.5	0.0	841.7	6.4	V 0.6	1	516 / 9:45		51.6	V 1.0
WED	25	42,705,460	442,660	1,205.3	1.2	0.1	850.8	9.1	F 0.3	1	517 / 3:30		49.2	F 0.3
THU	26	42,705,460	0	1,205.3	0.0	0.0	850.8	0.0	FFE 0.5	0	517 / 9:35		49.2	FFE 0.5
FRI	27	42,859,060	153,600	1,205.0	0.3	0.0	854.0	3.2	TOW 0.7	1	518 / 9:40		48.6	TOW 0.5
SAT	28					0.0								
SUN	29					0.0								
MON	30					0.0								
TUE	31	43,352,176	493,116	1,204.3	0.7	0.1	864.3	10.3		3	521 / 2:30		46.2	
		TOTAL FLOW	4,841,776		25.5	2.5		879.0		25		0.0	24.9	

MDH MONTHLY FLUORIDE REPORT

JUN 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	31					0.0		
WED	1	0	0.0	240	0.2	F 0.9	240	0.2
THU	2	173	1.0	109	0.3	V 1.3	282	1.3
FRI	3	160	0.0	173	0.1	P 0.9	333	0.1
SAT	4	0	0.0	0	0.0	0.0	0	0.0
SUN	5	0	0.0	0	0.0	0.0	0	0.0
MON	6	650	2.0	428	0.3	TOW 0.9	1,078	2.3
TUE	7	210	1.0	150	0.1	FFE 0.8	360	1.1
WED	8	179	1.0	166	0.1	V 0.7	345	1.1
THU	9	245	1.0	219	0.1	W4 0.6	464	1.1
FRI	10	268	0.0	171	0.0	0.0	439	0.0
SAT	11	0	0.0	0	0.0	0.0	0	0.0
SUN	12	0	0.0	0	0.0	0.0	0	0.0
MON	13	662	3.0	528	0.0	F 0.7	1,190	3.0
TUE	14	143	1.0	179	0.2	V 0.7	322	1.2
WED	15	157	0.0	1	0.0	TOW 0.6	158	0.0
THU	16	200	1.0	146	0.1	0.0	346	1.1
FRI	17	134	1.0	154	0.1	F 0.8	288	1.1
SAT	18	0	0.0	0	0.0	0.0	0	0.0
SUN	19	0	0.0	0	0.0	0.0	0	0.0
MON	20	1,019	3.0	513	0.0	P 0.6	1,532	3.0
TUE	21	224	1.0	218	0.3	0.0	442	1.3
WED	22	290	1.0	206	0.2	FFE 0.5	496	1.2
THU	23	410	1.0	256	0.2	0.0	666	1.2
FRI	24	0	0.0	0	0.0	0.0	0	0.0
SAT	25	0	0.0	0	0.0	0.0	0	0.0
SUN	26	0	0.0	0	0.0	0.0	0	0.0
MON	27	1,268	4.0	1,607	1.0	W2 0.8	2,875	5.0
TUE	28	353	2.0	372	0.3	F 0.2	725	2.3
WED	29	340	1.0	577	0.3	P 0.3	917	1.3
THU	30	608	2.0	208	0.1	0.0	816	2.1
FRI	1	0	0.0	0	0.0	0.0	0	0.0
		7,693	27.0	6,620	3.9		14,313	30.9

MDH MONTHLY FLUORIDE REPORT								
JUL 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	30					0.0		
FRI	1	342	1.0	385	0.3	0.0	727	1.3
SAT	2	0	0.0	0	0.0	0.0	0	0.0
SUN	3	0	0.0	0	0.0	0.0	0	0.0
MON	4	0	0.0	0	0.0	0.0	0	0.0
TUE	5	1,380	5.0	1,849	1.0	V 0.9	3,229	6.0
WED	6	228	1.0	64	0.0	W4 0.3	292	1.0
THU	7	0	0.0	294	0.2	0.0	294	0.2
FRI	8	375	2.0	376	0.2	TOW 0.5	751	2.2
SAT	9	0	0.0	0	0.0	0.0	0	0.0
SUN	10	0	0.0	0	0.0	0.0	0	0.0
MON	11	604	2.0	771	0.4	F 0.4	1,375	2.4
TUE	12	180	0.0	265	0.1	P 0.5	445	0.1
WED	13	227	1.0	274	0.1	F 0.5	501	1.1
THU	14	243	1.0	518	0.4	TOW 0.5	761	1.4
FRI	15	192	1.0	190	0.2	FFE 0.9	382	1.2
SAT	16	0	0.0	0	0.0	0.0	0	0.0
SUN	17	0	0.0	0	0.0	0.0	0	0.0
MON	18	604	1.0	971	0.5	V 0.9	1,575	1.5
TUE	19	685	3.0	86	0.0	F 0.3	771	3.0
WED	20	244	1.0	344	0.2	TOW 0.7	588	1.2
THU	21	555	2.0	221	0.0	F 0.4	776	2.0
FRI	22	253	0.0	383	0.2	0.0	636	0.2
SAT	23	0	0.0	0	0.0	0.0	0	0.0
SUN	24	0	0.0	0	0.0	0.0	0	0.0
MON	25	653	3.0	779	0.5	FFE 0.9	1,432	3.5
TUE	26	196	1.0	236	0.1	F 0.3	432	1.1
WED	27	180	0.0	374	0.2	TOW 0.5	554	0.2
THU	28	201	1.0	80	0.1	0.0	281	1.1
FRI	29	312	1.0	141	0.2	F 0.4	453	1.2
SAT	30	0	0.0	0	0.0	0.0	0	0.0
SUN	31	0	0.0	0	0.0	0.0	0	0.0
		7,654	27.0	8,602	4.8		16,256	31.8

MDH MONTHLY FLUORIDE REPORT

AUG 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	29					F 0.4		
MON	1	735	3.0	609	0.2	V 0.9	1,344	3.2
TUE	2	280	1.0	182	0.1	0.0	462	1.1
WED	3	380	0.0	362	0.2	W4 0.2	742	0.2
THU	4	413	1.0	180	0.0	V 1.0	593	1.0
FRI	5	144	1.0	209	0.3	W4 0.7	353	1.3
SAT	6	0	0.0	0	0.0	0.0	0	0.0
SUN	7	0	0.0	0	0.0	0.0	0	0.0
MON	8	807	3.0	525	0.6	FFE 0.9	1,332	3.6
TUE	9	427	2.0	326	0.3	P 0.7	753	2.3
WED	10	205	1.0	358	0.2	F 0.6	563	1.2
THU	11	168	0.0	157	0.1	P 0.4	325	0.1
FRI	12	0	0.0	228	0.3	TOW 0.4	228	0.3
SAT	13	0	0.0	0	0.0	0.0	0	0.0
SUN	14	0	0.0	0	0.0	0.0	0	0.0
MON	15	498	2.0	533	0.6	V 0.8	1,031	2.6
TUE	16	170	0.0	273	0.3	F 0.4	443	0.3
WED	17	209	1.0	63	0.1	P 0.5	272	1.1
THU	18	195	1.0	149	0.0	0.0	344	1.0
FRI	19	20	0.0	160	0.3	F 0.4	180	0.3
SAT	20	0	0.0	0	0.0	0.0	0	0.0
SUN	21	0	0.0	0	0.0	0.0	0	0.0
MON	22	524	2.0	305	0.6	0.0	829	2.6
TUE	23	215	1.0	162	0.1	V 1.0	377	1.1
WED	24	0	0.0	152	0.2	V 0.8	152	0.2
THU	25	155	0.5	201	0.2	0.0	356	0.7
FRI	26	173	0.5	88	0.2	W2 1.1	261	0.7
SAT	27	0	0.0	0	0.0	0.0	0	0.0
SUN	28	0	0.0	0	0.0	0.0	0	0.0
MON	29	493	2.0	403	0.4	F 0.5	896	2.4
TUE	30	0	0.0	0	0.0	0.0	0	0.0
WED	31	249	1.0	315	0.3	F 0.6	564	1.3
		6,460	23.0	5,939	5.5		12,399	28.5

MDH MONTHLY FLUORIDE REPORT								
SEP 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	31					F 0.6		
THU	1	186	0.0	3	0.0	TOW 0.6	189	0.0
FRI	2	260	1.0	146	0.2	P 0.5	406	1.2
SAT	3	0	0.0	0	0.0	0.0	0	0.0
SUN	4	0	0.0	0	0.0	0.0	0	0.0
MON	5	0	0.0	0	0.0	0.0	0	0.0
TUE	6	512	2.0	561	0.7	TOW 0.5	1,073	2.7
WED	7	237	1.0	47	0.0	V 1.0	284	1.0
THU	8	206	1.0	508	0.8	P 0.4	714	1.8
FRI	9	0	0.0	0	0.0	0.0	0	0.0
SAT	10	0	0.0	0	0.0	0.0	0	0.0
SUN	11	0	0.0	0	0.0	0.0	0	0.0
MON	12	492	2.0	498	0.7	0.0	990	2.7
TUE	13	169	0.0	150	0.2	0.0	319	0.2
WED	14	213	0.5	0	0.0	0.0	213	0.5
THU	15	84	0.5	149	0.4	F 0.6	233	0.9
FRI	16	0	0.0	0	0.0	0.0	0	0.0
SAT	17	0	0.0	0	0.0	0.0	0	0.0
SUN	18	0	0.0	0	0.0	0.0	0	0.0
MON	19	0	0.0	0	0.0	0.0	0	0.0
TUE	20	571	2.0	583	0.9	FFE 1.0	1,154	2.9
WED	21	165	1.0	5	0.0	F 0.8	170	1.0
THU	22	153	0.0	142	0.2	W4 0.6	295	0.2
FRI	23	0	0.0	137	0.3	0.0	137	0.3
SAT	24	0	0.0	0	0.0	0.0	0	0.0
SUN	25	0	0.0	0	0.0	0.0	0	0.0
MON	26	0	0.0	0	0.0	0.0	0	0.0
TUE	27	413	2.0	296	0.8	F 1.1	709	2.8
WED	28	61	0.0	159	0.5	0.0	220	0.5
THU	29	157	0.5	149	0.3	V 1.2	306	0.8
FRI	30	190	0.5	30	0.0	0.0	220	0.5
SAT	1	0	0.0	0	0.0	0.0	0	0.0
		4,069	14.0	3,561	5.9		7,630	19.9

MDH MONTHLY FLUORIDE REPORT

OCT 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	30					0.0		
SAT	1	0	0.0	0	0.0	0.0	0	0.0
SUN	2	0	0.0	0	0.0	0.0	0	0.0
MON	3	344	2.0	299	0.0	P1.3	643	2.0
TUE	4	167	0.0	146	0.3	V 1.0	313	0.3
WED	5	0	0.0	141	0.2	0.0	141	0.2
THU	6	184	1.0	162	0.2	0.0	346	1.2
FRI	7	155	0.0	0	0.0	0.0	155	0.0
SAT	8	0	0.0	0	0.0	0.0	0	0.0
SUN	9	0	0.0	0	0.0	0.0	0	0.0
MON	10	371	1.0	440	1.3	0.0	811	2.3
TUE	11	170	1.0	34	0.2	FFE 0.8	204	1.2
WED	12	170	1.0	121	0.2	0.0	291	1.2
THU	13	0	0.0	146	0.4	0.0	146	0.4
FRI	14	204	1.0	78	0.3	0.0	282	1.3
SAT	15	0	0.0	0	0.0	0.0	0	0.0
SUN	16	0	0.0	0	0.0	0.0	0	0.0
MON	17	401	1.0	376	0.4	P 0.7	777	1.4
TUE	18	94	0.0	147	0.0	F 0.7	241	0.0
WED	19	178	1.0	0	0.0	0.0	178	1.0
THU	20	0	0.0	144	0.4	0.0	144	0.4
FRI	21	158	1.0	0	0.2	0.0	158	1.2
SAT	22	0	0.0	0	0.0	0.0	0	0.0
SUN	23	0	0.0	0	0.0	0.0	0	0.0
MON	24	314	1.0	294	0.6	F 0.75	608	1.6
TUE	25	0	0.0	147	0.4	FFE 1.0	147	0.4
WED	26	0	0.0	0	0.0	0.0	0	0.0
THU	27	327	1.0	143	0.6	0.0	470	1.6
FRI	28	0	0.0	136	0.3	W2 .98	136	0.3
SAT	29	0	0.0	0	0.0	0.0	0	0.0
SUN	30	0	0.0	0	0.0	0.0	0	0.0
MON	1	332	1.0	308	0.5	F 0.7	640	1.5
		3,569	13.0	3,262	6.4		6,831	19.4

MDH MONTHLY FLUORIDE REPORT								
NOV 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	31							
TUE	1	0	0.0	0	0.0	0.0	0	0.0
WED	2	161	1.0	149	0.0	0.0	310	1.0
THU	3	164	0.0	142	0.0	0.0	306	0.0
FRI	4	0	0.0	3	0.0	0.0	3	0.0
SAT	5	0	0.0	0	0.0	0.0	0	0.0
SUN	6	0	0.0	0	0.0	0.0	0	0.0
MON	7	467	2.0	319	0.2	V 1.0	786	2.2
TUE	8	0	0.0	184	0.2	W4 1.0	184	0.2
WED	9	142	0.0	0	0.0	0.0	142	0.0
THU	10	2	1.0	153	0.0	0.0	155	1.0
FRI	11	0	0.0	0	0.0	0.0	0	0.0
SAT	12	0	0.0	0	0.0	0.0	0	0.0
SUN	13	0	0.0	0	0.0	0.0	0	0.0
MON	14	506	1.0	288	1.1	FFE 1.0	794	2.1
TUE	15	173	1.0	156	0.3	V 1.0	329	1.3
WED	16	3	0.0	132	0.2	0.0	135	0.2
THU	17	169	1.0	0	0.0	F 0.8	169	1.0
FRI	18	0	0.0	146	0.1	P 0.9	146	0.1
SAT	19	0	0.0	0	0.0	0.0	0	0.0
SUN	20	0	0.0	0	0.0	0.0	0	0.0
MON	21	333	0.0	291	1.1	F 0.8	624	1.1
TUE	22	166	0.0	0	0.0	0.0	166	0.0
WED	23	119	1.0	141	0.3	0.0	260	1.3
THU	24	0	0.0	0	0.0	0.0	0	0.0
FRI	25	0	0.0	0	0.0	0.0	0	0.0
SAT	26	0	0.0	0	0.0	0.0	0	0.0
SUN	27	0	0.0	0	0.0	0.0	0	0.0
MON	28	537	1.0	456	0.4	F 0.6	993	1.4
TUE	29	0	0.0	129	0.2	0.0	129	0.2
WED	30	148	0.0	0	0.0	F 0.5	148	0.0
THU	1	0	0.0	0	0.0	0.0	0	0.0
		3,090	9.0	2,688	4.0		5,778	13.0

MDH MONTHLY FLUORIDE REPORT								
DEC 16		WELL #2 FLOW	WELL #2 FLUORIDE	WELL #4 FLOW	WELL #4 FLUORIDE	FLUORIDE TEST	FLOW TOTAL	FLUORIDE TOTAL
PREVIOUS	30							
THU	1	0	0.0	129	0.1	0.0	129	0.1
FRI	2	70	0.5	0	0.0	0.0	70	0.5
SAT	3	0	0.0	0	0.0	0.0	0	0.0
SUN	4	0	0.0	0	0.0	0.0	0	0.0
MON	5	235	0.0	141	0.5	F 0.5	376	0.5
TUE	6	0	0.0	139	0.3	PW 0.9	139	0.3
WED	7	144	0.0	0	0.0	FFE 0.6	144	0.0
THU	8	1	0.0	142	0.5	F 0.7	143	0.5
FRI	9	143	0.5	0	0.0	PW 0.6	143	0.5
SAT	10	0	0.0	0	0.0	0.0	0	0.0
SUN	11	0	0.0	0	0.0	0.0	0	0.0
MON	12	0	0.0	419	0.5	F 0.3	419	0.5
TUE	13	0	0.0	136	0.2	F 0.3	136	0.2
WED	14	0	0.0	137	0.3	FFE 0.3	137	0.3
THU	15	0	0.0	127	0.0	W4 .51	127	0.0
FRI	16	0	0.0	0	0.0	0.0	0	0.0
SAT	17	0	0.0	0	0.0	0.0	0	0.0
SUN	18	0	0.0	0	0.0	0.0	0	0.0
MON	19	0	0.0	513	0.4	TOW 0.7	513	0.4
TUE	20	0	0.0	139	0.1	0.0	139	0.1
WED	21	0	0.0	138	0.1	0.0	138	0.1
THU	22	0	0.0	137	0.1	0.0	137	0.1
FRI	23	0	0.0	0	0.0	0.0	0	0.0
SAT	24	0	0.0	0	0.0	0.0	0	0.0
SUN	25	0	0.0	0	0.0	0.0	0	0.0
MON	26	0	0.0	0	0.0	0.0	0	0.0
TUE	27	0	0.0	740	0.6	0.0	740	0.6
WED	28	0	0.0	145	0.2	C .3	145	0.2
THU	29	0	0.0	271	0.2	0.0	271	0.2
FRI	30	3	0.0	15	0.1	W4 1.0	18	0.1
SAT	1	0	0.0	0	0.0	0.0	0	0.0
		596	1.0	3,467	4.2		4,063	5.2

WELL #4														
DEC 16		WATER READ	USE	FLUORIDE WEIGHT #	FLUORIDE USE / POUNDS	FLUORIDE USE / GAL	HOURS	RUN	FLUORIDE TEST	STARTS	TOTAL STARTS / TIME	CHL TANK #1 WEIGHT	CHL TANK #2 WEIGHT	CHLORIN E TEST
PREVIOUS	30	77,491,536	15,036	865.8	1.2	0.1	1,501.0		W4 1.0	1	713/10:00	9.9		W4 1.0
SUN	1													
MON	2													
TUE	3													
WED	4													
THUR	5													
FRI	6													
SAT	7													
SUN	8													
MON	9													
TUE	10													
WED	11													
THUR	12													
FRI	13													
SAT	14													
SUN	15													
MON	16													
TUE	17													
WED	18													
THUR	19													
FRI	20													
SAT	21													
SUN	22													
MON	23													
TUE	24													
WED	25													
THUR	26													
FRI	27													
SAT	28													
SUN	29													
MON	30													
TUE	1													

Appendix 2

There are currently no set parameters for monitoring water level readings at any city well location. In 2018 the City of Lake Elmo will implement monthly water level readings at all city wells.

Appendix 3

Current data is scattered and difficult to retrieve from SCADA. In 2018 the SCADA computer will be modified to make the information more accessible and easier to read. Also monthly water level readings will be documented.

City of Lake Elmo
Capital Improvement Program
2018 – 2022

DRAFT 10-12-17 Finance Committee

TABLE OF CONTENTS

INTRODUCTION

What is a CIP?

A Capital Improvement Program, or CIP, is a multi-year (typically 5 years) capital expenditure plan for a City's infrastructure (such as streets, parks and utility systems), vehicles, equipment and public buildings. It identifies the major projects needed and desired by the community, their potential costs and how they would be financed. Including a project in a CIP does not commit the city to that project. The City Council must specifically authorize each one, and the associated funding, before any project may proceed. When the CIP is reviewed (ideally annually, in conjunction with the budgeting process) projects may go forward as planned, advance ahead of schedule, be removed entirely, or new projects may be added, depending upon changes in circumstances and priorities.

The Minnesota Land Planning Act requires that the implementation plan portion of the Comprehensive Plan include a CIP for major infrastructure needs (transportation, wastewater, water supply, parks and open space) for a five-year time period. Cities often expand the scope of their CIPs to include other capital needs (major equipment replacements, for example) and sometimes look beyond the five-year time period, up to 20 years in the future for some projects. Such projects represent more of a "wish-list" that can be evaluated each time the plan is updated.

As a part of the Comprehensive Plan, the CIP has some legal standing. Minnesota Statutes Chapter 473.865 provides that "a local governmental unit shall not adopt any official control or fiscal device which is in conflict with its comprehensive plan." A fiscal device includes a budget or bond issue; so it is important that the plan and CIP be kept up to date and in synch with city budgets.

The primary benefit of a CIP is as a financial planning tool, to help the city plan for the impact of capital needs on future budgets and property taxes, and to help forecast the need for borrowing to undertake major projects. The information developed as part of the capital planning process can help document the need for various projects and help the City Council sort out competing priorities.

Scope of the CIP

Lake Elmo's CIP includes all capital projects that **cost at least $25,000 and have a useful life span of five years or longer.** Projects include **all capital needs including major repairs to buildings and equipment purchases and replacements**. Any projects not meeting these parameters would be reviewed as part of the annual operating budget, but would not be included in the CIP.

Funding Sources

The CIP identifies a possible funding source(s) for each project listed. The various funding sources are as follows:

Debt Service Fund	*Projects financed by borrowing, later to be repaid with property taxes, and potentially special assessments depending upon the characteristics of the project.*
General Fund	*Annual operating budget, primarily funded by property tax revenues.*
Park Improvement Fund	*Existing City fund, receipts from cash-in-lieu of land park dedication fees paid by developers and others who subdivide their land.*
Stormwater Fund	*Funds come from fees paid by users of the system*
Wastewater Fund	*Funds come from fees paid by users on the Wastewater System*
Water Fund	*Funds come from fees paid by users on the Water System*
Municipal State Aid (MSA)	*State aid funds allocated to the City each year; annual allocation grows as the City grows.*

In addition to these sources, it is possible that future projects could be funded from donations, grants, user fees or other sources not listed. The City also has a City Facility Fund that was created during the building of the public works barn. There is no plan to continue contributing to the fund however there is $272,000 currently and that is projected to be $258,500 by the end of the year. Approximately $77,000 has been reserved for paving the library parking lot in 2018. The remaining funds could be transferred to the General Fund or used for some of the projects in the CIP, i.e the new facilities planned. The Finance Committee recommends they be transferred to the General Fund.

Project Priorities

Capital improvement projects should be prioritized in some way so that limited funding can be allocated to those which are most important. This is difficult because the varying nature of the projects and their benefits and objectives are so disparate as to be essentially not comparable. Some public agencies have developed elaborate rating and ranking systems to try to set priorities. Complicated scoring systems may have some disadvantages because they may give a false sense of objectivity or precision to the priority setting process. Others use simpler systems, or simply do not try to compare projects that are like "apples and oranges." There is no accepted system or "industry standard" for prioritizing projects.

The following system has been utilized by staff:

1 Critical or urgent, high-priority projects that should be done if at all possible; a special effort should be made to find sufficient funding for all of the projects in this group.

2 Very important, high-priority projects that should be done as funding becomes available.

3 Important and worthwhile projects to be considered if funding is available; may be deferred to a subsequent year.

4 Less important, low-priority projects; desirable but not essential.

5 Future Consideration

2018-2022 CIP OVERVIEW

For 2018 through 2022, the draft CIP includes 82 separate projects (active, pending and new recommendations) with a total estimated cost of $49,043,666. All cost estimates are preliminary and based on current dollars. No assumptions have been made about inflation. It will be important to refine and update costs when the plan is reviewed, especially for projects in the first year or two of the plan.

Some projects beyond the five-year planning period are also included in the CIP. Most of these projects are replacements for equipment and vehicles (such as fire trucks) which may have a life span of 10, 15 to 20 years or even more. The plan may include "pending" projects for which timelines (and in most cases, cost estimates) have not yet been identified. As more information is developed about the need for, cost, and possible funding sources for these projects, they will be included in future CIP updates.

Street Projects

The update includes the following street projects in the CIP:

- PW-010, Lake Elmo Ave turn lanes at 5th St for $50,000 in 2018.
- PW-011, South Tri Lakes roads and Phase Four of the downtown area are planned for reconstruction in 2018 for a revised estimated cost of $1,760,000
- PW-013, 36th, 37th, 38th, 39th, Irwin and Innsdale streets are planned for reconstruction in 2019 at a revised estimated cost of $1,390,000.
- PW-026, Reclaim roads in Heritage Farms, Stonegate 2nd at a cost of $1,050,000 in 2020
- PW-027, Reconstruction of roads in Fields of St Croix, Tamarack Farms, and Hamlet on Sunfish Lake and Old Village Phase 5 for $3,109,000 in 2021.
- PW-029, CSAH 19/Hudson Blvd Signal and Turn Lanes for an estimated $500,000 has been moved up to 2018 from 2019.

- PW-030, CSAH 15/30th St Signal (Manning) for $100,000 in 2020
- PW-031, CSAH 6/Inwood Signal for $100,000 in 2022

- PW-034, 15th St N (MSA Street) for $950,000 in 2020
- PW-035, UP RR Crossing-Village Parkway for $500,000 moved to 2019 from 2018
- PW-036, UP RR Crossing-Private Drive Closure for $100,000 moved to 2019 from 2018
- PW-037, UP RR Crossing-Klondike Ave for $250,000 moved to 2019 from 2018
- PW-038, 2022 Street Improvements and Old Village Phase 6 streets, $1,300,000 (new)
- PW-051, CSAH 14/CSAH 15 realignment payment in 2019 (new)

Project Highlights by Department

Administration/Finance:

- AF-001, New City Hall, Fire Station and Public Works Improvements, is the only request in this department. The scope of the space needs study was expanded to include a new fire station and improvements to the main public works facility as well. The Finance Committee recommendation was to break these projects out over multiple years. A new fire station would built in 2019/2020 with borrowing split amongst the two year ($3.5 million each year). The improvements to the public works facility was split amongst three years with a new salt shed planned for 2018 at $250,000; an office addition for $500,000 in 2019, and improvements to the yard (paving) for $250,000 in 2020. A new city hall it programmed for 2021/2022 with borrowing of $3.5 million each year.

Fire:

- F-001, Rescue Engine E2 replacement at a revised estimated cost of $625,000 in 2018
- F-004, Replace Tender 1 for revised estimated cost of $400,000 in 2019
- F-005, Replacement of the parking lot at Station 2 for $87,560 in 2018. This item was recommended to move to pending by the Finance Committee.
- F-006, Replacement of U2 Truck for $75,000 in 2019 could be removed if combined with E2 engine
- F-007, Self-Contained Breathing Apparatus (SCBA) replacements for $207,000 in 2019
- F-010, Replace B1 for $70,000 in 2021.
- F-011, Engine E1 replacement for $500,000 in 2022
- F-017, Turnout Gear Replacements for $60,000 in 2022 (new)

Parks and Recreation:

- PR-003, Demontreville Park Improvements for $75,000 in 2018. The Park Commission is again requesting this funding for a new field, regrading the existing field, and a new backstop.
- PR-004, Lions Park Improvements, Phase 2 in 2018. This includes a new pavilion and picnic tables but would only occur of the items are donated.(new)
- PR-005, Pebble Park Improvements for $72,000 in 2019 (paving parking area and two volleyball courts, lighting and security features).
- PR-006, Reid Park Improvements for $50,000 in 2018 (this would be a grant or in-kind donation for mountain bike trails) and $25,000 for widening the walking trails. In 2019

(tot lot, outdoor gym stations, bleachers), extending fencing, and elimination of basketball court (Phase II) for $34,250

- PR-007, Sunfish Lake Park Improvements for $90,000 in 2021 includes paving trails to meet ADA standards.
- PR-008, Tablyn Park Improvements includes additional lighting at the top of the hill and better use of the parking lot space to address safety concerns for $55,000 in 2018. The 2019 improvements would be $45,000 related to setting up a skating rink at the park.
- PR-009, Lake Elmo Regional Trail for $827,316 in 2021 and $765,600 in 2022. This project would be 75% grant funded and is dependent upon County participation. The City share is estimated at $398k.
- PR-012, Service Truck for $200,000 in 2019 with costs split equally amongst water, sewer, streets and parks (new)
- PR-013, Trac Hoe for $60,000 in 2020 with costs split equally amongst water, stormwater, streets and parks (new)
- PR-014, Tri Deck Mower for $70,000 in 2020 (new)
- PR-015, One Ton Truck for $130,000 in 2022 (new)
- PR-016, Cushman replacement for $25,000 in 2018 (new)
- PR-017, New Ballfields for $1 million in 2022. (new)
- PR-018, New Park Development for $150,000 in 2020 (new)

Public Works:

- Street Projects were mentioned above
- PW-004. Loader, for $185,000 in 2019 was moved to 2023
- PW-006, Tractor, for $80,000 in 2018 was moved to 2020
- PW-019, Pickup Replacement, for $30,000 in 2020 was moved to 2022
- PW-020, Pickup Replacement, for $30,000 in 2021 was moved to 2024
- PW-021. 1 Ton Replacement, for $70,000 in 2019 was moved up to 2018
- PW-022, Dump Truck with Plow Wing and Sander, for revised estimated cost of $240,000 in 2019 was moved up to 2018
- PW-023, Vac Trailer, for $45,000 in 2018
- PW-043, Service Truck for $200,000 in 2019 with costs split equally amongst water, sewer, streets and parks (new)
- PW-044, Trac Hoe for $60,000 in 2020 with costs split equally amongst water, stormwater, streets and parks (new)
- PW-045, Tandem Plow Truck for $265,000 in 2019 (new)
- PW-046, Asphalt Roller for $30,000 in 2018 (new)
- PW-047, Dump Truck with Plow for $240,000 in 2020 (new)
- PW-048, Mini Loader for $120,000 in 2020 (new)
- PW-049, Asphalt Hot Box for $60,000 in 2021 (new)
- PW-050, Dump Truck with Plow for $245,000 in 2022 (new)

Sewer System:

- S-003, Sunfish Lake Sewer (Includes Hamlet), for $240,000 in 2018. This is per an agreement with MPCA
- S-004, Old Village Sewer Extension Phase Four, for revised estimated cost of $585,000 in 2018

- S-005, Old Village Sewer Extension Phase Five, for revised estimated cost of $1,100,000 in 2021
- S-007, Utility Vehicle, cost split between water and sewer funds in 2018. Sewer portion is $32,500
- S-012, Section 36 Trunk Sewer for $1,500,000 in 2021
- S-013, Sewer Oversizing for $52,500 in 2018
- S-014, Service Truck for $200,000 in 2019 with costs split equally amongst water, sewer, streets and parks (new)
- S-015, Utility Truck for $70,000 in 2021 with costs split equally amongst water and sewer (new).
- S-016, Old Village Sewer Extension Phase Six for $510,000 in 2022
- S-017, Old Village Sewer Extension Phase Seven for $475,000 in 2023

Storm Water System:

- SW-001, Phase 2 Regional Drainage Improvements for $1,200,000 in 2019 and $800,000 in 2020
- SW-002, Phase 3 Regional Drainage Improvements for $500,000 in 2020
- SW-003, Kramer Lake Floodplain Study for $60,000 in 2022 assumes a grant from the watershed district
- SW-004, Surface Water Management Plan (Comp Plan) update for $40,000 in 2018
- SW-006, Trac Hoe for $60,000 in 2020 with costs split equally amongst water, stormwater, streets and parks (new)

Water System:

- W-001, 36th, 37th, 38th, 39th, Innsdale and Irwin water main for $900,000 in 2019
- W-003, Old Village water extension Phase Four, for $350,000 in 2018
- W-004, Pressure reduction Station-Hammes Bypass for $120,000 in 2020
- W-005, Old Village water main Phase Five, for revised estimated cost of $885,000 in 2021
- W-006, Elevated Storage Tank #3, for $200,000 in 2019 and 2,800,000 in 2020
- W-008, Village East Trunk Water main, for $120,000 in 2019
- W-009, Utility Vehicle, shared with sewer fund. Water fund portion is $32,500
- W-013, Water main Oversizing for $105,000 in 2018, $42,000 in 2019 and $119,000 in 2022.
- W-014, Well & Pumphouse #5 for $2,100,000 in 2021
- W-017, Water Main replacement consistent with 2020 Street Replacement for $50,000 in 2020
- W-018, Water Main replacement consistent with 2021 Street Replacement for $50,000 in 2021.
- W-019, SCADA System Upgrade for $30,000 in 2022
- W-020, Service Truck for $200,000 in 2019 with costs split equally amongst water, sewer, streets and parks (new)
- W-021, Trac Hoe for $60,000 in 2020 with costs split equally amongst water, stormwater, streets and parks (new)

- W-022, Utility Truck for $70,000 in 2021 with costs split equally amongst water and sewer (new).
- W-023, Water Meter Change out for $47,000 each year in 2018-2022 (new)
- W-024, Automated Radio Read System for $300,000 in 2022 (new)
- W-025, Old Village water extension Phase Six for $200,000 in 2022
- W-026, Old Village water extension Phase Seven for $230,000 in 2023
- W-027, Pressure Reduction Station-Connection to WT #3 for $120,000 in 2022

City of Lake Elmo
Capital Improvement Program
2018-2022

Appendix

Appendix 6

A Cooperative Agreement for Emergency Services does not currently exist for the City of lake Elmo Public Works/Water Supply System.

Appendix 7

§ 50.40 WATER USE RESTRICTIONS.

(A) *Emergency authority.* To protect the health and safety of the consumers, as well as the general welfare, the Mayor or City Council may impose emergency regulations pertaining to city water use. Whenever the city shall determine that a critical water deficiency prevails, it may limit the times and hours during which water may be used from the city water system for lawn and garden sprinkling, irrigation, car washing, air conditioning, and other nonessential uses. It is unlawful for any water consumer to cause or permit water to be used in violation of such determination after public announcement thereof has been made through publication or by posting in the City Hall and city website specifically indicating the restrictions thereof.

(1) The Mayor or City Council may declare a critical water deficiency to prevail within the city whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the city to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

(2) The Mayor or City Council shall thereupon enact such regulations and restrictions on the delivery of water and the consumption within the city to conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

(3) When the Governor of the State of Minnesota declares a critical water deficiency, the Mayor or City Council will enact and enforce water conservation restrictions in accordance with M.S. § 103G.291.

(4) Water use regulations and restrictions may include the right to deny applications for new or additional service connections, and provisions for their enforcement by discontinuing service to customers willfully violating the regulations and restrictions.

(B) *Permanent water use restrictions.* To encourage water conservation and allow flexibility in the city's water system in meeting peak demands, and to reduce the required water supply and storage capacity requirements allowing for a lower cost water system, certain limitations must be placed on the city's water supply.

(1) *Odd/even sprinkling ban.* Property owners having even numbered postal addresses may water, sprinkle, or irrigate their lawns only on even numbered days, and property owners having odd numbered postal addresses may water, sprinkle, or irrigate their lawns only on odd numbered days.

(2) *Time of day sprinkling ban.* All property owners are prohibited from watering, sprinkling, or irrigating their lawns between the hours of 10:00 a.m. and 5:00 p.m. daily.

(3) *Exceptions.* The permanent water use restrictions do not apply in the following situations.

(a) Private wells.

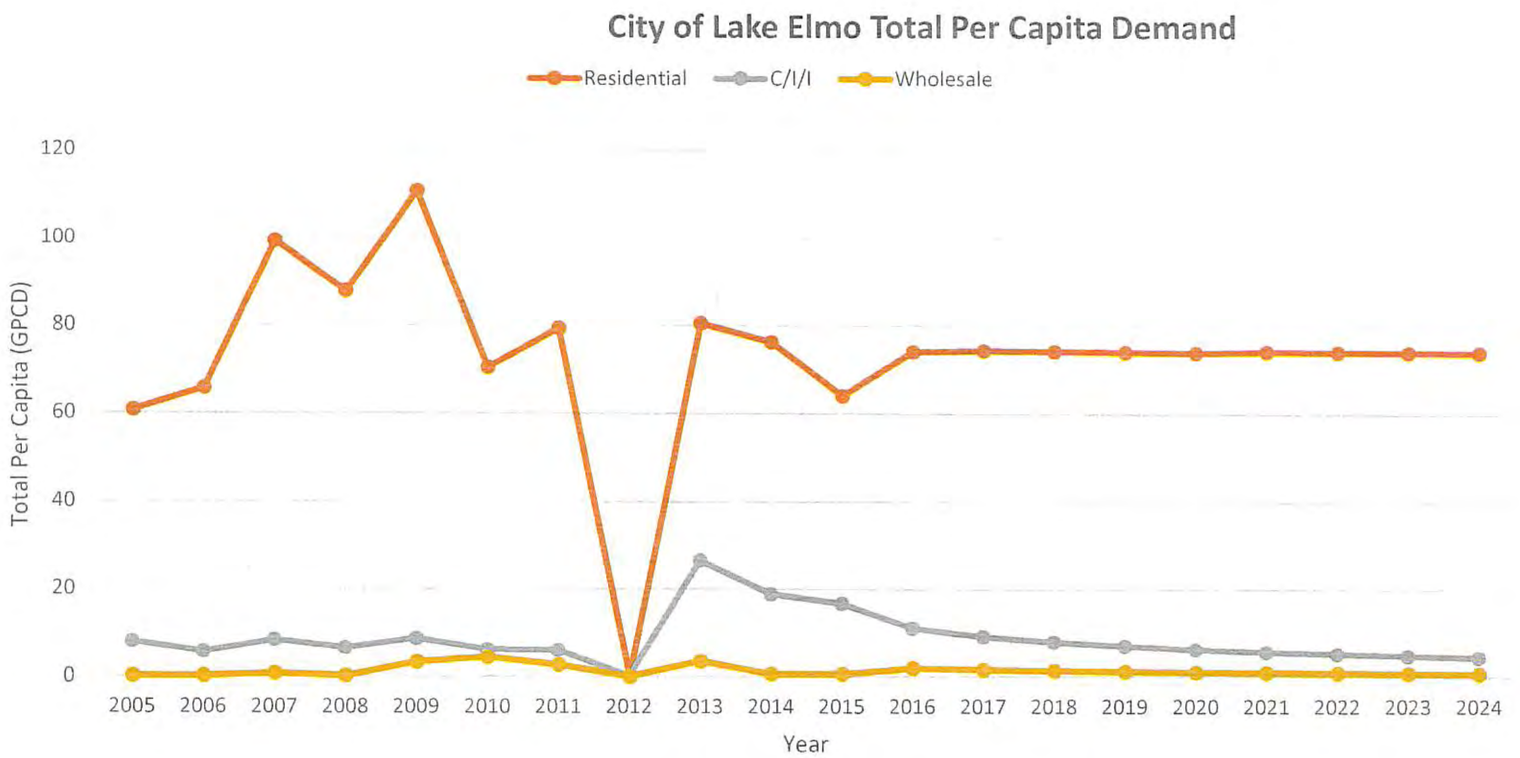
(b) Recently established lawns if permission is granted through a watering restriction waiver form, allowing daily watering for up to 30 days after installation. Watering must still adhere to the restricted hours for the time of day sprinkling ban. New sod or seeded lawns or other landscaping requiring watering, sprinkling, or irrigation, shall not be installed during a water shortage emergency.

(c) Attended hand watering of plants, shrubs, trees, and gardens.

(C) *Lawn watering, sprinkling, and irrigation.* All lawn sprinkler systems and irrigation systems connected to the municipal water system, whether such systems are aboveground or underground, shall require a permit for connection and shall be installed in accordance with the Minnesota State Plumbing Code. To conserve water, all lawn sprinkler systems and irrigation systems which are automatic or are equipped to operate automatically and which are connected to the municipal water system, shall be equipped with a rain-detection device such to prevent the system from operating when it rains (per M.S. § 103G.298). All lawn sprinkler systems and irrigation systems connected to the municipal water system shall be constructed and operated to prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff, low head drainage, over spray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures.

(D) *Enforcement.* Failure to comply with restrictions or prohibitions imposed under this section shall result in a surcharge for water service for each violation in an amount determined by resolution of the City Council, which shall be added to the water bill for the property on which such violation occurs. Each day of violation shall be deemed a separate violation. Continued violation shall be cause for discontinuing water service.

(Ord. 08-018, passed 11-4-2009)


City of Lake Elmo Total Per Capita Demand
Residential
C/I/I
Wholesale
120
100
80
60
40
20
0
Total Per Capita (GPCD)
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023
2024
Year

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
Amateur Radio Antenna	$875.00		Planning
Appeal (to Board of Adjustment and Appeals)	$250.00		Administration
Bee Keeping Permit	$25.00	Valid for 2 years from issuance	Administration
Building Regulations		* State Sur Charge Collected per MN Statute 326B.148 on all permits	Building
Building Permit Fee Schedule			
Total Valuation			
$1.00 to $500.00	$29.50		Building
$501.00 to $2,000.00	$28.00 for the first $500.00 plus $3.70 for each additional $100.00, or fraction thereof, to and including $2,000.00.		
$2,001.00 to $25,000.00	$83.50 for the first $2,000.00 + $16.55 for each additional $1,000.00, or fraction thereof, to and including $25,000.00.		
$25,001.00 to $50,000.00	$464.15 for the first $25,000.00 + $12.00 for each additional $1,000.00, or fraction thereof, to and including $50,000.00.		
$50,001.00 to $100,000.00	$764.15 for the first $50,000.00 + $8.45 for each additional $1,000.00, or fraction thereof, to and including $100,000.00.		
$100,001.00 to $500,000.00	$1,186.65 for the first $100,000.00 + $6.75 for each additional $1,000.00, or fraction thereof, to and including $500,000.00.		
$500,001.00 to $1,000,000.00	$3,886.65 for the first $500,000.00 + $5.50 for each additional $1,000.00, or fraction thereof, to and including $1,000,000.00.		
$1,000,001.00 and up	$6,636.65 for the first $1,000,000.00 + $4.50 for each additional $1,000.00, or fraction thereof.		Building
Planning and Zoning Compliance Review and Verification	$100.00		Building
Plan Review Fee	65% of building permit fee		Building
Plan review for similar plans	25% of normal building permit fee (MN Rules 1300.0160 subp. 5)		Building
Single Family Decks	Fee based on Valuation		Building
Single Family Residential Basement Finish	Fee Based on Valuation		Building
Swimming Pool In-Ground	$150.00		Building
Swimming Pool Above-Ground	$75.00		Building
Reinspection Fee	$75.00		Building
Inspection outside normal business hours	$120.00 per hour - 2 hour minimum		Building
Investigation fee - work started without required permit	Equal to permit fee amount		Building
Replace Inspection Record Card	$25.00		Building
Additional Plan Review required by changes, addendum or revisions to plans	$75.00 per hour, one hour minimum		Building
Building Demolition - Residential	$200.00		Building
Building Demolition - Commercial	$300.00		Building
Fuel Tank Removal (Underground)	$250.00		Building
Fuel Tank Installation	2% Value of the work		Building
Roofing - Residential	Fee Based on Valuation		Building
Roofing - Commercial	Fee Based on Valuation		Building
Siding - Residential	Fee Based on Valuation		Building

THE CITY OF LAKE ELMO

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
Siding - Commercial	Fee Based on Valuation		Building
Retaining Walls over 4'	Fee Based on Valuation		Building
Commercial Plumbing	$60.00 per unit, Up to 3 Units or 1.5% Value of work, whichever is greater		Building
Residential Plumbing	$60.00 per Unit, max fee $180.00		Building
Sewer Service Installation Inspection	$60.00		Building
Water Service Installation Inspection	$60.00		Building
Sewer & Water Service Installation Inspection when completed together	$60.00		Building
Investigation fee - Plumbing work started without required permit	Equal to permit fee amount		Building
Commercial HVAC	$60.00 per unit, Up to 3 Units or 1.5% Value of work, whichever is greater		Building
Residential HVAC	$60.00 per Unit, max fee $180.00		Building
Fireplace Installation	$60 per unit		Building
Investigation fee - HVAC work started without required permit	Equal to permit fee amount		Building
Manufactured Home Move In	$200.00		Building
Manufactured Home Move Out	$200.00		Building
Moving House or Primary Structure into the City	2% Value of the Work plus security amount determined by the Building Official		Building
Moving Accessory Structure into the City	2% Value of the Work plus security amount determined by the Building Official		Building
Automatic Fire Extinguishing Systems	2% Value, $100.00 minimum		Building
Investigation fee - Fire Suppression work started without required permit	Equal to permit fee amount		Building
Fire Alarm Systems	2% Value, $100.00 minimum		Building
Investigation fee - Fire Alarm work started without required permit	Equal to permit fee amount		Building
Annual Retail Consumer Fireworks (retailers only selling fireworks)	$350.00		Building
Annual Retail Consumer Fireworks (all other retailers)	$100.00		Building
Outdoor Public Fireworks Display	$150.00		Building
Residential Day Care Inspections	$50.00		Building
Residential Adult Care/Foster Care/Adoption Inspections	$50.00		Building
Escrow Administration Fee	$100.00		Building
New Single Family Dwelling Construction Escrow	$2,000.00		Building
Two or more dwelling units per building Construction Escrow	$1,000.00 per unit		Building
Commercial/Industrial and Other structures	$5,000.00 or amount detrmined by the Building Official		Building

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
Burning Permit			Fire
Residential	$45.00		Fire
Commercial	$80.00		Fire
Illegal Burn	see notes →	Additional fees may be incurred based on Wash. Cty. Chief's fee schedule and # of responding units	Fire
Chicken Keeping Permit	$25.00	Initial permit expires on 12/31 of 2nd year.	Administration
Comprehensive Plan Amendment	$1,300.00	Land Use Escrow $2500	Planning
Conditional Use Permit (CUP)		Wireless Communication Facilities Fee Escrow $6,000.00. Flood Plain Ordinance Fee Escrow $500.00 Land Use Escrow $2500	Planning
New	$1,050.00		Planning
Amended	$500.00		Planning
Contractor License Fees			Licensing
Driveway	$50.00		Licensing
Solid Waste Hauler	$120.00		Licensing
Copy Services (Paper/Electronic)			Administration
Copies (B&W)	$0.25 per page	100 pages or more are charged at actual cost of production	Administration
Copies (Color)	$0.50 per page	100 pages or more are charged at actual cost of production	Administration
Copies (B&W) 11x17	$1.00 per page	100 pages or more are charged at actual cost of production	Administration
Copies (Color) 11x17	$2.00 per page	100 pages or more are charged at actual cost of production	Administration
Data DVD Fee	$15.00		Administration
GIS Scaled Aerial	$25.00		Administration
Existing Maps	$5.00		Administration
Custom (Per Hour Rate)	$70.00		Administration
Plan Size Maps (Larger than 11x17)	$15.00		Administration
Development Standards Specs/Details	$55.00		Administration
Video reproduction	$10.00		Administration
Culverts in Developments with Rural Section	$160.00		Administration
Dog License- altered	$20.00		Licensing
Dog License- unaltered	$25.00		Licensing
Dog License- late fee	$2.50 per month	Maximum $10	Licensing
Service Dog License	No Charge		Licensing
Duplicate License or Tag	$1.00		Licensing
First Impound- Unlicensed Dog	$60.00	All Impound Fees plus $20/day Boarding Fee	Licensing
First Impound- Licensed Dog	$42.00		Licensing
First Impound- Cat	$42.00		Licensing

THE CITY OF LAKE ELMO

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
Subsequent dog/ cat impound	$85.00		Licensing
Driveway			Planning
Residential	$70.00		Planning
Commercial	$160.00		Planning
Easement Encroachment	$100.00	Staff & Recording Fee	Planning
Electronic Fund Withdrawl/Bill Payment	Fee + Trans. Charge		Administration
Environmental Review (EAW/EIS)	$1,500.00	$2,500 Land Use escrow	
Village Area AUAR Fee	$230.00	Per REC Unit. To be charged to development applications that increase the number of REC units above existing conditions within the Village AUAR Area. The fee will be based on the difference between the proposed and existing REC units. Fee to be paid as part of a developer's agreement for larger projects or at the time a building permit is issued for smaller projects. Once paid, the same land will not be charged again.	Planning
Erosion Control			Building
Re-inspection Fee (portal to portal from City Hall: 1 Hr. min)	$50.00 per hour	$5,000.00 Security	Building
Excavating & Grading ≥ 50 cubic yards, up to 400 cubic yds	$125.00	Security $500.00	Building
Excavating & Grading ≥ 400 cubic yards/acre of site area	$500.00	$500.00 fee escrow. Plus Security as Determined by the Planning Department	Engineering
False Alarms (12 Month Period)* *(*1-3 no charge)*			Fire
Residential			Fire
4-6 False Alarms	$110.00		Fire
In Excess of 6 False Alarms	$185.00		Fire
Commercial			Fire
4-6 False Alarms	$315.00		Fire
In Excess of 6 False Alarms	$520.00		Fire
Flood Plain District Delineation	$500.00		Planning
Interim Use Permit (IUP)			
Fee	$1,050.00	$2,500.00 Escrow	Planning
Renewal	$300.00		Planning
Liquor License			Licensing
Club On-Sale Intoxicating	$100.00		Licensing

THE CITY OF LAKE ELMO

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
On-Sale Intoxicating	$1,500.00		Licensing
Off-Sale Intoxicating	$200.00		Licensing
Off-Sale Non-Intoxicating	$150.00		Licensing
On-Sale Intoxicating- 2nd Building	$750.00		Licensing
On-Sale Non-Intoxicating	$100.00		Licensing
Investigation	$350.00		Licensing
On-Sale Sunday Intoxicating	$200.00		Licensing
Temporary Intoxicating	$25.00		Licensing
Wine	$300.00		Licensing
Lot Line Adjustment	$325.00	None	Planning
Massage Therapy Premises License			Licensing
Application Fee	$100.00	Fee includes one Therapist	Licensing
Investigation Fee	$100.00		Licensing
Massage Therapy Practitioner License			Licensing
Application Fee	$50.00		Licensing
Investigation Fee	$25.00		Licensing
Massage Therapy Premises License Renewal	$50.00	Fee includes one Therapist	Licensing
Massage Therapy Practitioner License Renewal	$25.00		Licensing
Massage Therapy License Amendment	$25.00		Licensing
Minor Subdivision	$525.00	$1,000.00 escrow	Planning
Park Dedication			Planning
Residential - Up to three lots	$3,600.00 per lot	Four or more lots per §153.14	Planning
Commercial	$4,500.00 per acre		Planning
Parking Lots			Planning
Commercial	$200.00	$500 Fee Escrow. Plus Security as Determined by the Planning Department	Planning
Platting			
Sketch Plan Review (Subdivision)	$500.00	$3,500.00 Fee Escrow	Planning
Preliminary Plat (Subdivision)	$1,850.00	$10,000.00 Fee Escrow	Planning
Final Plat (Subdivision)	$1,250.00	$8,000.00 Fee Escrow	Planning
Planned Unit Development			
General Concept Plan	$1,250.00	$7,500 Fee Escrow (Waive Subdivision Escrow)	Planning
Development Stage Plan	$1,850.00	$10,000 Fee Escrow (Waive Subdivision Escrow)	Planning

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
Final Plan	$1,250.00	$8,000 Fee Escrow (Waive Subdivision Escrow)	Planning
		(City will retain escrows to reimburse review costs for each stage plan of development)	
Private Roads (Permitted only in AG zone)	$150.00		Planning
Restrictive Soils and Wetland Restoration Protection and Preservation Permit	$800.00		Planning
Returned Check (NSF)	$25.00		Administration
Right-of-way Permit			
annual Registration	$200.00	$5,000 Security	Engineering
Excavation Permit	$275.00 + $.60/foot		Engineering
Joint Trench Permit (per lot per utility)	$275.00 + $.60/foot		Engineering
Obstruction Permit	$275.00		Engineering
Small Wireless Permit Fee	$275.00		Engineering
Permit Extension	$100.00		Engineering
Delay Penalty (per calendar day)	$25.00		Engineering
SAC Charge (City) (Sewer Availability Charge)	$3,000.00	Per REC Unit: collected at time of plat for new lot. This fee may be deferred through special assessment for parcels with existing structures.	Engineering
SAC Charge (Met Council) (Sewer Availability Charge)	$2,485.00	Per REC Unit: $2,485.00 to Met Council at time of connection.	Engineering
Sewer Connection Charge	$1,000.00	Per REC Unit collected at time of plat for new lot. This fee may be deferred through special assessment for parcels with existing structures.	Engineering
Sewer Lateral Benefit Charge	$11,000.00	Per REC Unit connecting to a Trunk Sewer Main and that has never been assessed	Engineering
Sewer Rate	$4.50/1,000 Gal		Administration
201 Off-Site Maintenance Fee	$75.00/unit/quarter		Administration
Real Estate Searches	$15.00/Search	For special assessment or utility search	Administration
Signs - Permanent	$180.00		Planning
Signs - Temporary	$75.00		Planning
Temporary Renewal	$25.00		Planning
Re-inspection Fee	$25.00		Planning
Special Event Permit	$75.00	City must be listed as additional insured	Planning
Surface Water			Administration
Residential	$50.00		Administration
Non-Residential (Commercial etc.)	$50.00	Utility rate factor per code	Administration
Review Fee	$125.00	$75 Review/$50 Storm Water Fund	Administration

THE CITY OF LAKE ELMO

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
Vacations (Streets or Easements)			Planning
Easements	$515.00	$500.00 Fee Escrow	Planning
Streets	$515.00	$500.00 Fee Escrow	Planning
Variance	$750.00	$500.00 Fee Escrow	Planning
Shoreland Variance	$1,500.00	$500.00 Fee Escrow	Planning
Water Availability Charge (WAC)	$3,000.00	Per REC Unit; collected at time of plat for new lot. This fee may be deferred through special assessment for parcels with existing structures.	Engineering
Water Connection Charge	$1,000.00	Per REC Unit, collected at time of plat for new lot. This fee may be deferred through special assessment for parcels with existing structures.	Administration
Water Equipment/Set up			Administration
Meter (3/4" or less)	$350.00	Additional fees apply to larger sized meters	Administration
Driveway Curb Stop Lid	$100.00		Administration
Disconnect Service	$80.00		Administration
Reconnect Service	$80.00		Administration
Water Lateral Benefit Charge	$5,800.00	Per REC Unit connecting to a Trunk Water Main and that has never been assessed	Engineering
Water Usage			Administration
Residential - Quarterly Rate	$20.00 Base		Administration
Residential - Plus Rate per 1,000 Gallons			Administration
Plus Rate for 0-15,000 Gallons	$2.00		Administration
Plus Rate for 15,001-30,000 Gallons	$2.40		Administration
Plus Rate for 30,001-50,000 Gallons	$2.88		Administration
Plus Rate for 50,001-80,000 Gallons	$3.46		Administration
Plus Rate for 80,001 + Gallons	$4.15		Administration
Water Usage			Administration
Commercial - Quarterly Rate	$25.00 Base		Administration
Commercial - Plus Rate Per 1,000 Gallons			Administration
Plus Rate for 0 - 15,000 Gallons	$3.11		Administration
Plus Rate for 15,001 - 30,000 Gallons	$3.26		Administration
Plus Rate for 30,001 - 50,000 Gallon	$3.77		Administration

THE CITY OF LAKE ELMO

City of Lake Elmo Fee Schedule 2017

APPLICATION/FEE/PERMIT TYPE	2017 FEE	ESCROW OR ADDITIONAL CHARGE	DEPARTMENT
Plus Rate for 50,001 - 80,000 Gallons	$5.00		Administration
Plus Rate for 80,001 + Gallons	$6.63		Administration
Water Usage		For metered non-irrigation (domestic) consumption	Administration
Hotel / Motel - Quarterly Rate	$25.00 Base		Administration
Hotel / Motel - Plus Rate Per 1,000 Gallons			Administration
Plus Rate for 0 -30,000 Gallons	$3.11		Administration
Plus Rate for 30,001 - 50,000 Gallons	$3.26		Administration
Plus Rate for 50,001 + Gallons	$4.00		Administration
Water Usage Delinquent Accounts			Administration
Regular	6% per quarter	Plus $25.00 or 8%, whichever is greater, if certified to County for collection with taxes	Administration
Storm Water	10% per year	Plus $25.00 or 8%, whichever is greater, if certified to County for collection with taxes	Administration
Bulk Water Purchase			Administration
Water from Hydrant	$100.00 minumum	Plus $3.26/additional 1,000 gallons	Administration
Sod Installation (New Construction)	$100.00 minumum	Plus $3.26 per 1,000 gallons. Good for up to 45 days from sod install. Residents must contact the City in advance.	Administration
Swimming Pool Fill	$100.00 minumum	Plus $3.26 per 1,000 gallons. Good for up to 45 days from sod ins	Administration
Wind Generator	$850.00	$2,000.00 Fee Escrow	Planning
Wireless Communication Permit	$500.00	$6,000.00 Fee Escrow	Planning
Zoning Amendment (Text or Map)	$1,245.00	$2,500.00 Escrow	Planning
Zoning Certification Letter	$25.00		Planning
Zoning Permit - Certificate of Zoning Compliance			Planning
Accessory Structures < 200 SF	$75.00		Planning
Fence (less than 6')	$75.00		Planning
Other	$75.00		
Definition of Terms			
Fee Escrow: *City will maintain a fee escrow to cover all City review costs. Application fees include all professional fees and expenses incurred by the City.*			
Security: *City will retain a security escrow to ensure completion of work as directed by the approved permit/application and compliance with the State Building Code and the City of Lake Elmo Municipal Code.*			
Approved by CC 7.18.17; effective 7.19.17			

Appendix 10

§ 50.40 WATER USE RESTRICTIONS.

(A) *Emergency authority.* To protect the health and safety of the consumers, as well as the general welfare, the Mayor or City Council may impose emergency regulations pertaining to city water use. Whenever the city shall determine that a critical water deficiency prevails, it may limit the times and hours during which water may be used from the city water system for lawn and garden sprinkling, irrigation, car washing, air conditioning, and other nonessential uses. It is unlawful for any water consumer to cause or permit water to be used in violation of such determination after public announcement thereof has been made through publication or by posting in the City Hall and city website specifically indicating the restrictions thereof.

(1) The Mayor or City Council may declare a critical water deficiency to prevail within the city whenever it finds and determines that the ordinary demands and requirements of water consumers cannot be satisfied without depleting the water supply of the city to the extent that there would be insufficient water for human consumption, sanitation, and fire protection.

(2) The Mayor or City Council shall thereupon enact such regulations and restrictions on the delivery of water and the consumption within the city to conserve the water supply for the greatest public benefit with particular regard to domestic use, sanitation, and fire protection.

(3) When the Governor of the State of Minnesota declares a critical water deficiency, the Mayor or City Council will enact and enforce water conservation restrictions in accordance with M.S. § 103G.291.

(4) Water use regulations and restrictions may include the right to deny applications for new or additional service connections, and provisions for their enforcement by discontinuing service to customers willfully violating the regulations and restrictions.

(B) *Permanent water use restrictions.* To encourage water conservation and allow flexibility in the city's water system in meeting peak demands, and to reduce the required water supply and storage capacity requirements allowing for a lower cost water system, certain limitations must be placed on the city's water supply.

(1) *Odd/even sprinkling ban.* Property owners having even numbered postal addresses may water, sprinkle, or irrigate their lawns only on even numbered days, and property owners having odd numbered postal addresses may water, sprinkle, or irrigate their lawns only on odd numbered days.

(2) *Time of day sprinkling ban.* All property owners are prohibited from watering, sprinkling, or irrigating their lawns between the hours of 10:00 a.m. and 5:00 p.m. daily.

(3) *Exceptions.* The permanent water use restrictions do not apply in the following situations.

(a) Private wells.

(b) Recently established lawns if permission is granted through a watering restriction waiver form, allowing daily watering for up to 30 days after installation. Watering must still adhere to the restricted hours for the time of day sprinkling ban. New sod or seeded lawns or other landscaping requiring watering, sprinkling, or irrigation, shall not be installed during a water shortage emergency.

(c) Attended hand watering of plants, shrubs, trees, and gardens.

(C) *Lawn watering, sprinkling, and irrigation.* All lawn sprinkler systems and irrigation systems connected to the municipal water system, whether such systems are aboveground or underground, shall require a permit for connection and shall be installed in accordance with the Minnesota State Plumbing Code. To conserve water, all lawn sprinkler systems and irrigation systems which are automatic or are equipped to operate automatically and which are connected to the municipal water system, shall be equipped with a rain-detection device such to prevent the system from operating when it rains (per M.S. § 103G.298). All lawn sprinkler systems and irrigation systems connected to the municipal water system shall be constructed and operated to prevent water waste resulting from inefficient landscape irrigation by prohibiting runoff, low head drainage, over spray, or other similar conditions where water flows onto adjacent property, non-irrigated areas, walks, roadways, or structures.

(D) *Enforcement.* Failure to comply with restrictions or prohibitions imposed under this section shall result in a surcharge for water service for each violation in an amount determined by resolution of the City Council, which shall be added to the water bill for the property on which such violation occurs. Each day of violation shall be deemed a separate violation. Continued violation shall be cause for discontinuing water service.
(Ord. 08-018, passed 11-4-2009)

A. Landscaping Standards

1. A landscape plan for the entire site is required and shall consist of at least 10 trees per building site; and trees shall not be not less than 1.5 inch in caliper measured at 54 inches above grade level.
2. Boulevard landscaping is required along all streets to consist of at least 1 tree per every 30 feet or placed in clusters at the same ratio.

B. Impervious Surface Standards

The maximum impervious surface allowable within an open space planned unit development shall be 20% of the land area not dedicated as preserved open space subject to the following:

1. Impervious surfaces created by roads, trails, and other planned impervious improvements shall count against the maximum allowed impervious coverage.
2. Remaining allowed impervious surface acreage may be distributed between the planned building sites, and maximums for each lot shall be clearly documented within the overlay district ordinance governing the development.
3. On individual lots, areas covered by pervious pavers or comparable systems may receive a 25% credit against the lot's hardcover if the system is installed consistent with the *City of Lake Elmo Engineering Standards Manual*, and adequate storm water mitigation measures (as may be necessary) are installed to mitigate potential runoff created by the additional coverage above the allowed impervious surface threshold. All such credits shall be at the discretion of the City Engineer.

Tree Requirements-

A. *Landscaping of Setback Areas.* All required setbacks not occupied by buildings, parking, paths or plazas shall be landscaped with turf grass, native grass, trees, shrubs, vines, perennial flowering plants, and surrounding pervious ground cover.

1. A minimum of one (1) tree shall be planted for every fifty (50) feet of street frontage, lake shore or stream frontage, or fraction thereof.

   a. Trees adjacent to streets shall be planted within the front yard and may be arranged in a cluster or placed at regular intervals to best complement existing landscape design patterns in the area.

   b. Salt tolerance and root structure should be considered when selecting tree species adjacent to streets, sidewalks and parking areas.

   c. Where property abuts a lake or stream, trees shall be planted at intervals of no more than fifty (50) feet along the shoreline, except where natural vegetation is sufficient to meet this requirement.

2. **In addition to the requirements of C.1 above, a minimum of five (5) trees shall be planted for every one (1) acre of land that is developed or disturbed by development activity. Such trees may be used for parking lot landscaping or screening as specified in subsections D and E below.**

Impervious Surface -

Rural Districts	**RT**	**A**	**RR**	**RS**	**RE**
Maximum Impervious Coverage	-	-	-	25%	15%

Urban Residential	***GCC***	***LDR***	***MDR***	***HDR***
Maximum Impervious Coverage	30%	40%	50%	75%

Village mixed use	V-LDR	VMX
Maximum Impervious Coverage		
Residential Lots	35%	75%
Other	-	No Limit

Public Facility

Maximum Parcel Area	Buffer Width (Feet)	Maximum Impervious Site Coverage
0 to 5 acres	50	39.5%
5.1 to 10 acres	100	38%
10.1 to 20 acres	150	35%

Appendix 11

Establish a Water level monitoring plan – February 2018

Update Capital Improvement Plan – June 2018

Explore Cooperative Agreements for Emergency Services – March 2018

Revisit Water Rate Structure – annually

Update Ordinances and Regulations – as needed

Appendix 12

City of Lake Elmo Website

http://www.lakeelmo.org/

Attachment 5
City of Lake Elmo
Emergency Telephone List

Emergency Response Team	Name	Work Telephone	Alternate Telephone
Emergency Response Lead	Rob Weldon	651-747-3941	715-222-5557
Alternate Emergency Response Lead	Jamie Colemer	651-747-3945	651-248-1688
Water Operator	Jim Sachs	651-747-3942	651-248-8468
Alternate Water Operator	Mike Coleman		651-491-8561
Public Communications	Kristina Handt	651-747-3905	

State and Local Emergency Response Contacts	Name	Work Telephone	Alternate Telephone
State Incident Duty Officer	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
County Emergency Director		651-430-7938	651-439-9381
National Guard	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
Mayor/Board Chair	Mike Pearson	651-748-9955	651-775-3724
Fire Chief	Greg Malmquist	651-770-5006	651-775-1137
Sheriff		911	651-439-9381
Police Chief		911	
Ambulance			
Hospital			
Doctor or Medical Facility			

State and Local Agencies	Name	Work Telephone	Alternate Telephone
MDH District Engineer	Lucas Martin	651-201-4144	
MDH	Drinking Water Protection	651-201-4700	
State Testing Laboratory	Minnesota Duty Officer	800/422-0798 Out State	651-649-5451 Metro
MPCA		651-296-6300	
DNR Area Hydrologist	John Freitag	651-201-4669	
County Water Planner			

Utilities	Name	Work Telephone	Alternate Telephone
Electric Company	Xcel Energy	1-800-895-1999	
Gas Company	Xcel Energy	1-800-895-1999	
Telephone Company			
Gopher State One Call	Utility Locations	800-252-1166	651-454-0002
Highway Department	Washington County PW	651-430-4300	651-439-9381

Mutual Aid Agreements	Name	Work Telephone	Alternate Telephone
Neighboring Water System	City of Oakdale	651-730-2740	651-755-4422
Emergency Water Connection	City of Oakdale	651-730-2740	651-755-4422
Materials			

Technical/Contracted Services/Supplies	Name	Work Telephone	Alternate Telephone
MRWA Technical Services	MN Rural Water Association	800-367-6792	
Well Driller/Repair	McCarthy Well	952-854-5333	
Pump Repair	McCarthy Well	952-854-5333	
Electrician	Mercury Electric	651-464-1660	
Plumber	Miller Excavating	651-439-1637	651-269-8176
Backhoe	Miller Excavating	651-439-1637	651-269-8176
Chemical Feed	Hawkins Chemical	651-730-1115	612-804-5427

Meter Repair	Core & Main	715-386-6010	
Generator	Kodiak Power Systems		
Valves	Core & Main	715-386-6010	
Pipe & Fittings	Core & Main	715-386-6010	
Water Storage			
Laboratory	Tri-City Lab	952-563-8777	
Engineering firm	FOCUS Engineering	651-300-4264	

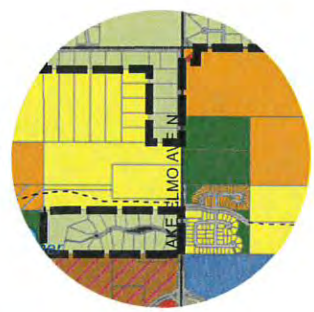
Communications	**Name**	**Work Telephone**	**Alternate Telephone**
News Paper	Stillwater Gazette	651-439-3130	
Radio Station			
School Superintendent	School District of Stillwater	651-351-8340	
Property & Casualty Insurance	League of Minnesota Cities	651-281-1200	

Critical Water Users	**Name**	**Work Telephone**	**Alternate Telephone**
Hospital Critical Use:			
Nursing Home Critical Use:			
Public Shelter Critical Use:			

DRAFT Chapter 11: Implementation

Bringing the Plan to Fruition



THE CITY OF LAKE ELMO


BUDGET

INTRODUCTION

An important component of this Comprehensive Plan Update process is to identify implementation strategies and priorities that will work towards bringing this Plan to fruition. This chapter provides a set of implementation strategies that are specific to the chapters, goals and strategies of each component contained within this Plan.

One of the last major public engagement efforts of this planning process was a city-wide Open House to present the draft Plan, and to solicit feedback specific to implementation chapter development. Over 150 residents and stakeholders attended the event and nearly 100 people responded to the Implementation Survey at the Open House or online. Once tabulated, trends regarding implementation priorities were identified, and were then used to help inform the implementation strategies contained within this chapter. A summary of the most agreed to, and highest priority implementation strategies as identified within the survey include:

- *General Comprehensive Plan Statement:* Overwhelmingly people responded that they rely on the Comprehensive Plan to understand what is happening in the City and that the City should follow its Plan. Further respondents felt that the City should put the work and financial resources into developing appropriate ordinances and policies to implement the Plan. Ordinances should be clear, easy to understand, and reliable.
- *Land Use:* The majority of respondents prioritized the development of zoning districts that support new Future Land Use designations contained within this Plan as the most important implementation step, and identified the top priority as creating zoning that supports the new mixed-use areas. With respect to the character of commercial areas, respondents were fairly consistent in their desire to promote low-intensity users that keep traffic calm. Further, respondents were uninterested in developing a regional destination for commercial and business park users, and instead prioritized creating opportunities for businesses and users that would support existing Lake Elmo neighborhoods and residents. From a residential perspective, respondents were focused on creating policies and ordinances that would support the protection, restoration and integration of existing natural resources into new neighborhoods and developing areas in the community.

- *Balanced Development and Growth:* Respondents were split as to whether the City should take a more proactive approach to economic development in the community. Many felt that the City's leaders and staff should be proactive to identify the types of growth and development it wants and may even go as far as supporting that effort with financial resources. Financial commitments aside, overwhelmingly people felt that the City should at a minimum be prepared to respond to development pressure through establishing appropriate zoning, design guideline and policies that support the desired development and growth patterns in the community. Additionally, respondents felt like it was important to create a more streamlined, easy to understand development review process, and to make sure details such as architecture/design standards, setbacks and landscape requirements were established within ordinances to reduce ambiguity.

- *Housing:* Opinions on the top priorities related to housing were more distributed than any other question, and there was less consensus on who and what types of housing would be most needed through this planning period. Generally, people continue to see the owner-occupied single-family detached housing type as important to the future of the community. However, a significant number of people also identified the need for owner-occupied town homes and condominiums in the City. With respect to demographic trends, people felt that the future needs in the community would continue to he households with young children, and empty-nesters looking to downsize but also recognized that there may be other demographics that may lack options within the community.

- *Parks, Trails and Open Space (PTOS):* Respondents generally agreed on their top priorities for the PTOS system; they prioritized the desire to create more local trail connections into Lake Elmo Regional Park (north and west), to improve and restore the quality of natural resources (lakes, wetland, woodlands, etc.) in the community, and finally identified the desire to make sure new developments (residential and commercial) are required to incorporate a public trail or sidewalk in development plans that provide connections to the larger city-wide planned trail network.

- *Transportation:* People generally rely on the City's existing roadway network as the primary mode of transportation and identified their top priority as maintenance and management of the existing roadway system. Ranked closely behind, respondents were interested in creating more dedicated bike lanes and pedestrian safety improvements on local roadways.

In addition to the top priorities identified through the Implementation Survey, the Advisory Panel has also discussed priorities for implementing this Comprehensive Plan throughout this planning process. A summary of the top priorities that have been discussed by the Advisory Panel over the last year include the following:

- Create zoning districts that support a balanced land use plan and provide opportunities for housing diversity including single-family, townhome and multi-family products within the developing areas of the community.
- Create opportunities for young people to come back to the community in their early adult years. This likely will include some market rate renter-occupied product (apartment, townhome, etc.), that could not only provide options for young professionals but seniors looking to downsize.
- Allow enough flexibility within this Plan and supporting implementation ordinances and policies to have the latitude to respond to market fluctuations and demands.
- Integrate and weave parks, trails, open spaces and natural resources into every development – rural or urbanizing. Create a green network that is an amenity, and accessible, to all residents.
- Create bikeways and pedestrian connections on major roadways to creare a more hospitable network.
- Work with the County to see if there is an opportunity to provide non-motorized trail access/connections into the Lake Elmo Park Reserve, particularly from the north and west sides of the park.

Guided by the priorities identified from the Advisory Panel, and the Implementation Survey the following implementation chapter was developed. This chapter is not intended to identify every planning or policy effort needed to implement this Comprehensive Plan, but instead is intended to provide a road-map of major initiatives that may require time, resources, and additional study to make sure the City prioritizes certain efforts at it continues to grow and evolve.

IMPLEMENTATION STRATEGIES

The following strategies are organized by Plan chapter. In some cases some of the implementation strategies will perform 'double-duty' that is to say, there may be an implementation strategy identified that would assist with implementation of the goals and strategies of the Land Use chapter and the Housing Chapter. In those cases, the implementation strategy is listed with the Plan chapter that the implementation strategy most directly supports.

Chapter 3: Land Use

The following implementation steps and strategies are identified to support the City's Future Land Use Plan and the corresponding goals and strategies identified within Chapter 2 of this Plan.

1. Create two new zoning designations that support the Mixed-Use Business Park and Mixed-Use Commercial land use designations. The process to prepare the new zoning districts will be led by the Planning Commission and may involve a subcommittee to develop the ordinances. This process should be initiated immediately upon adoption of this Comprehensive Plan and should be completed within nine (9) months. Each zoning district may address and include standards such as:
   - Massing and architecture
   - Setbacks
   - Height restrictions
   - Site design/landscape standards
   - Permitted, conditionally permitted, and not permitted uses
   - Mix of uses
   - PUD process
2. Establish whether each parcel is required to be planned for mix of uses, or if a master planned approach with ghost platting and tracking/monitoring is more desirable
3. Establish a staff and policymaker process and/or create and adopt a formal policy that defines how mixed-use development projects will be tracked for compliance with this Plan. The process must identify how the City will track the mix of land uses and provide a minimum of 50-percent of the land area within the designations for residential uses at densities that meet minimum thresholds as identified within this Plan. Tracking may include, but is not limited to, the following examples:

- Require developers to 'ghost' plat and file the concept plan as an official document to establish land use mix consistent with this Plan. Create a database or inventory (e.g. Excel) to track residential units and associated density, and acreages associated with each use. This inventory should be considered and used during the development review process.

- Create a ordinance and process reference sheet for developers and land owners that describes the mix of uses and process (PUD or otherwise) to ensure compliance with the ordinance.

4. The City may consider using a consultant to assist with developing a master plan for the Mixed-Use Commercial and Mixed-Use Business Park designations that can be used to inform the development of the zoning district requirements and the process to track development within these designations.

5. Create a new zoning district to support the Village High Density Residential (V-HDR) land use designation. This zoning district should be based on other Village residential zoning districts but will be refined and updated to reflect the increased density range identified within this Plan.

7. The City will review and revise, as necessary, current zoning district regulations for consistency with the residential density ranges contained within this document. The review, and any changes, will be completed within nine (9) months of adoption of this Plan. 7

Chapter 4: Balanced Development and Growth

The following implementation steps and strategies are identified to support the City's Balanced Development and Growth Chapter and the corresponding goals and strategies identified within Chapter 2 of this Plan.

1. This City will prioritize and establish a cost for each of the zoning ordinance updates and budget appropriately to complete these updates within their next Capital Improvement Plan process. Some of these initiatives will likely be staff-led to be cost-effective while others may involve a focus group and/or consultant involvement. The City acknowledges that to effectively manage growth and development, the creation of clear, concise and easy to understand ordinances is integral to the implementation of this Plan.

2. The City will create three Overlay Districts for the Village Planning Area to support this Plan. The Overlay Districts will provide additional detail regarding the vision, plan, and specific standards that are unique and tailored to the specific overlay district. For example, the Old Village District overlay will focus on preservation of the integrity of Main Street and existing building patterns and uses within the District. This is unique to the Old Village Overlay District. The process will determine what characteristics and qualities are
8 unique to each Overlay District, and a specific Zoning Overlay District will be added to the Zoning Ordinance and identified on the City's official Zoning Map. This process will include the Planning Commission and may include a subcommittee to prepare the criteria for each Overlay District. The Overlay Districts will be established and created within nine (9) months of adoption of this Plan.

3. The City will review and update its Open Space Development ordinance to focus on building the greenway network through connected conservation areas, public trails, and other natural resources.

4. The City will explore options to be cautiously proactive about the types of economic development it would like to see in its growth areas. To determine the appropriate level of involvement or engagement by policy makers, a task force, subcommittee, or sraff review process may be initiated to establish an economic development and/or competitiveness plan.

5. The Phasing and/or Staging Plan identified within the Land Use chapter, will serve as the foundation for development review and the approval process so that municipal utilities and infrastructure are contiguous and cost-effective.

6. The City will continue to prioritize identification of a solution to the current water supply issues related to the 3M contamination, and current freeze on water appropriation permits from the MnDNR. The City acknowledges that part of implementing a balanced growth plan is the ability to provide municipal services, and at this time there are obstacles that extend well beyond the City's borders and in some cases, beyond its control.

Chapter 5: Housing

The City's implementation program for the Housing chapter is contained within Chapter 5 as required by the Metropolitan Council.

Chapter 6: Parks, Trails and Open Space

The following implementation steps and strategies are identified to support the City's Parks, Trails, and Open Space Chapter and the corresponding goals and strategies identified within Chapter 2 of this Plan.

1. The City will continue discussions with Washington County Parks to identify opportunities for improved trail connections into the Lake Elmo Regional Park Reserve, particularly from the north and west side.

2. The City is open to participating on a task force or working group with the County to plan for future connections into the Lake Elmo Regional Park Reserve.

3. The City will continue to require park dedication as established within the City's Ordinance, and will focus its priority on improving trail (bikeway and pedestrian) connections and providing open space/park access to new neighborhoods.

4. The Park Commission will be involved in initial stages of any development review and process and will provide recommendations regarding planned public trails, parks or other open spaces as identified within this Plan. The Park Commission will provide a written recommendation to the Planning Commission detailing how a proposed development plan is consistent, or inconsistent with this Plan and detailing what modifications are recommended, if any, for a project to be consistent with this Plan.

5. An update to the City's Park System Plan originally adopted in 2008 and incorporated as part of the 2030 Comprehensive Plan should be completed to reflect recent changes due to development, and to incorporate the Goals and Strategies of this Plan.

6. The City will prepare an update to the City's Trail System Plan originally adopted in 2005 and incorporated as part of the 2030 Comprehensive Plan, to reflect recent changes due to development, and to incorporate the Goals and Strategies of this Comprehensive Plan. The Trail System Plan should also include maps that identify existing trails, ownership (private or public), as well as planned trail routes and connections throughout existing and new developments.

7. The City will explore opportunities, either by ordinance, or through the development review process to support and enhance the Green Network through the continued enforcement of the park dedication ordinance.

8. The City will review existing ordinances and policies to identify opportunities to include standards that support the objectives of the Green Network and Resilient Infrastructure as described within this Plan.

Chapter 7: Transportation

The following implementation steps and strategies are identified to support the City's Transportation Chapter and the corresponding goals and strategies identified within Chapter 2 of this Plan.

1. The City will continue to work cooperatively with surrounding Cities, Washington County, the Minnesota Department of Transportation, and other government agencies in development of a transportation network consistent with the goals and strategies of this Plan.

2. The City will require developers to provide roadways, trails, and appropriate right-of-way consistent with the goals and strategies of this Plan. For example, the City has identified the continuation of the Minor Collector roadway (5th Street) to extend eastward to Manning Avenue as development progresses.

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3. The City will participate in coalitions and multi-jurisdictional efforts for improvements to the transportation network that coincide with the overall goals of the City. This could include corridor studies/groups, transit oversight panels, and/or construction projects.

4. The City will continue to improve the transportation network to reflect all modes of travel, and will identify opportunities as development occurs to complete the bikeway and trail systems identified within this Plan or through future planning efforts.

5. The City will continue to work with MnDOT and Washington County on the TH 36 South Frontage Road Study to plan to provide safe and adequate access and connectivity to TH 36 for Lake Elmo residents, while minimizing traffic by-passing through the City.

6. The City will continue to support improvements that will maintain the rural character of Lake Elmo Avenue, in particular along the eastern shoreline of Lake Elmo.

7. The City will continue to incorporate the goals and strategies contained within this Plan into the Capital Improvement Plan process.

8. Capital Improvement Plan (CIP). The CIP is the financial planning mechanism used by the City to plan for long-term expenditures. Each year the CIP is revised and updated to reflect the City's priorities, and the CIP is used to aid in the annual budgeting process. Expenditures are made in accordance with the annual established and adopted budget for the following year. The transportation improvements will continue to be a priority within the CIP, and projects will be identified to implement and support this Comprehensive Plan.

Chapter 8: Surface Water

The following implementation steps and strategies are identified to support the City's Surface Water Chapter and the corresponding infrastructure goals and strategies identified within Chapter 2 of this Plan.

1. The City adopts and incorporates by reference the Watershed District's Water Management Plans, standards, and rules into this Plan and as a part of the City's permitting and development review process. The Watershed Districts will continue to enforce surface water regulations and permitting within the City within their geographic areas. The City will coordinate its review of development proposals with the Watershed Districts and will manage land use to support protection of surface and ground waters through its Zoning and Subdivision Ordinance.

2. The City will update its Local Surface Water Management Plan (LSWMP) by the end of 2019 consistent with the timeline adopted in the 2009 LSWMP. The City understands that its LSWMP must be consistent with each Watershed District's Water Management Plans.

   - The City understands that the Valley Branch Watershed District, Browns Creek Watershed District and South Washington Watershed District have prepared drainage models for portions of the City that indicate path and low direction, but not all modeling work has been complete. The City will rely on each watershed district completing this work and will update its LSWMP as information and data become available.

   - The City will prepare its LSWMP update and submit a copy of it to each of the Watershed Districts for review, comment and approval once complete.

3. City Process. The City of Lake Elmo reviews proposed development per its Subdivision Ordinance. Design must be in compliance with Engineering Design Standards. An approved Watershed District permit is required prior to final plat acceptance. WCA approval of any wetland impact must be provided by the designated LGU for the Watershed District. Any impacts to public waters must be reviewed by the DNR. An NPDES Permit must be received from the MPCA when applicable. An approved SWPPP must be provided for all subdivisions. No building permit is issued until the following has been completed:

   - The City will support the Watershed Districts' implementation of their standards for management of water quantity and quality, including control of peak runoff, volume control, infiltration and filtration, wetland quality, and best management practices to control Total Suspended Solids (TSS), Total Phosphorus (TP), and runoff from development or redevelopment within the City.

4. The Watershed Districts will continue to play the primary role in reviewing storm water plans for development applications within the City, and the City will condition any development approvals on demonstrated compliance with the Watershed District Rules. The

City will direct applicants to submit completed permit applications of any development proposals at time of City application, and will work cooperatively with the Watershed Districts through the review and approval process.

5. The City will continue to work with each Watershed District on refinement of coordination of permit and development application review processes and timelines.

6. The City will update its ordinances to be consistent Watershed plans, standards and rules, and with NPDES construction storm water permit requirements for erosion and sediment control if necessary.

7. The City will cooperate with the Watershed Districts to address concerns related to impaired waters and, as the Watershed Districts complete TMDL studies, will manage land use to avoid impacts to water resources within the City.

8. The City will continue to implement the City's MS4 Permit and SWPPP requirements.

9. Funding Mechanisms. The City will continue to use general fund revenues and storm water utility funds to fund improvements when needed to address water quality and quantity concerns and maintain City-owned storm water management facilities. The
12 City's commitments to system maintenance are described in detail in its MS4 permit and SWPPP. The City requires that developers finance the improvements that are required with new development and redevelopment to ensure that private developments meet City and watershed requirements.

10. Capital Improvement Plan (CIP). The City's CIP will incorporate specific implementation strategies for surface water management as part of the budgeting process.

11. The City's inspection and maintenance program and pollution prevention/good housekeeping is completed under the MS4 Permit and documented per the SWPPP.

12. The City will continue to implement the strategies and recommendations as needed from the Old Village Area Regional Stormwater Management Study that was completed by SEH, in May 2015, to continne to address and mitigate the Old Village Area flooding problems and to protect resources in the Down's Lake Watershed and downstream.

13. City Ordinances. The City's adopted ordinances that provide standards and regulations to manage water resources include the following:

    a. Chapter 53 Storm water Management Utility
    b. Chapter 91 Forests and Trees
    c. Chapter 150 Illicit Discharge and Connection
    d. Chapter 152 Flood Plain Management
    e. Chapter 153 Subdivision Regulations
    f. Chapter 154 Zoning Code

Chapter 9: Wastewater Services

The following implementation steps and strategies are identified to support the City's Wastewater Services Chapter and the corresponding goals and strategies identified within Chapter 2 of this Plan.

1. The City will review and update its Comprehensive Sanitary Sewer System Plan based on the Land Use and Zoning adopted in this Plan to ensure system capacity is available for each service area, including an updated Sanitary Sewer Capital Improvement Plan.

2. The City will work with the Metropolitan Council Environmental Services (MCES) to further understand the downstream capacity limitations and planned improvements required for the City's Oakdale interceptor connection and/or WONE interceptor connection; and will coordinate planned improvements with MCES.

3. The City will provide new sanitary sewer extensions consistent with the sanitary sewer staging plan and within the general time frames established as part of this Plan, when possihle, and as market conditions warrant.

4. The City will continue to operate and maintain the City-owned 201 Community wastewater systems and will develop a system replacement plan.

5. The City will continue to support the MPCA and County's oversight, monitoring, permitting and enforcement of their respective ISTS rules and regulations within the City.

Chapter 10: Water Supply

The following implementation steps and strategies are identified to support the City's Water Supply System needs and the corresponding goals and strategies identified within Chapter 2 of this Plan.

1. The City will work expeditiously with the MDH, MnDNR and other agencies with regulatory authority of the City's Municipal Water Supply to identify a solution to the closure and decommissioning of Water Supply Well #1 and to implement a new water supply well to meet the existing and growing water customer base.

2. The City will work to implement a new water storage facility to serve the growing water system demands int he low pressure zone (Village area south of the UPRR and southeastern parts of the City) and to replace the aging Water Tower No.1.

3. The City will review and update its Comprehensive Water System plan based on the Land Use adopted by this Plan to ensure system capacity is available for each service area, including an updated Water System Capital Improvement Plan.

4. The City will continne to work with the MDH to monitor the groundwater contamination plumes and contamination impacts to Lake Elmo properties and will develop a mitigation plan for extending the City's water supply to replace private wells whenever feasible.

5. The City will work to identify appropriate funding resources, including the recent 3M Settlement Fund and Closed Landfill Fund, to implement City water supply extensions to replace private wells, and to address short and long-term public water supply system improvements.

6. Continue to monitor the potential future use of Well No. 3 and Well No. 1 by providing water treatment, but plan for the abandonment of these wells when they are deemed no longer needed. Abandonment is important to protect against groundwater contamination at the well locations.

7. Negotiate a long-term Agreement with the City of Oakdale for a water system interconnect between the two Cities for standby emergency water supply use.

8. Maintain the City's Water Supply Plan consistent with the MnDNR water supply plan template and continue to provide necessary reporting through the MnDNR Permit and Reporting System (MPARS). Continue to incrementally review the Water Supply Plan to ensure it is consistent with continuing development activities and demands.

9. Implement water conservation measures as identified in the City's Water Supply Plan.

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THE CITY OF LAKE ELMO

STAFF REPORT

DATE: 5/30/2018
BUSINESS
ITEM #: 5a
MOTION

TO: Planning Commission

FROM: Emily Becker, Planning Director

AGENDA ITEM: Self-Service Storage

REVIEWED BY: Ben Prchal, City Planner

BACKGROUND:

The Council directed Staff at its workshop on May 8, 2018 to discuss with the Planning Commission self-service storage as a use within the Commercial and Business Park zoning districts.

ISSUE BEFORE COMMISSION:

Should self-service storage be removed as an allowed use within the Business Park and Commercial zoning districts?

PROPOSAL DETAILS/ANALYSIS:

What's currently in the City Code Regarding Self-Service Storage?

Self-service storage is currently a conditional use within the Business Park and Commercial zoning districts. There are a number of standards for this use including the requirement that no commercial transactions shall be permitted other than the rental or sale of storage units; no more than one (1) unit shall be accessed directly from the public street; and that site design shall accommodate a logical and safe vehicle and pedestrian circulation pattern. Additionally, the parking requirements mandate that one parking space per 300 square feet of office or sales area be provided with this use.

Self-service storage is also an interim use within the Rural Development Transitional and Agricultural zoning districts. There are a number of standards for this use including that the property must be at least forty acres in size, be limited to 4% of the gross lot area, and must not generate more than three trips per day. This allowed use within these zoning districts is less impactful, as its limited to a small portion of the property, and are mostly within areas that are not prime commercial areas (i.e. along I-94). Development of land located within a Rural Development Transitional-zoned area on which a self-service storage facility was located would require the discontinuation of the self-service storage facility.

What's in the City Currently for Self-Service Storage?

There are at least two self-service storage facilities within the City – one on Hudson Blvd N (Commercial Zoning) and one on 15th St N (Agricultural zoning).

Staff Analysis.

- *Consistency with the Comprehensive Plan*
    - *Self-Service Storage within the Commercial Land Use Designation*. According to the 2030 Comprehensive Plan, Commercial land use designation is "…intended to accommodate a wide range and scale of commercial uses (such as retail, service, entertainment, and office) throughout the City's planned urban centers. Commercial uses can range from small neighborhood convenience nodes, to community retail areas along major roadways…" According to the 2040 Draft Comprehensive Plan, Commercial land use "includes areas that are used for retail business and are primarily located within MUSA boundaries of the City." Services are appropriate now for the proposed Mixed-Use Commercial area, not sole commercial areas.
        - *Staff Comment*. Self-service storage is a service use, and so it is appropriate according to the current Comprehensive Plan. According to the 2040 Draft Plan, however, it would not be an appropriate use, as it is not retail. It would be better suited for the new Mixed-Use Commercial land use designation.
    - *Self-Service Storage within the Business Park Land Use Designation*. The 2030 Comprehensive Plan states that the Business Park land use category is "intended to encourage the creation of significant employment centers that accommodate a diverse mix of office and light industrial uses and jobs. Specific desired attributes of this land use include a diversity of jobs, high development densities and jobs per acre, high quality site and building architectural design, and increased tax revenues for the community. Office, office showroom/warehousing, research and development services, light and high-tech electronic manufacturing and assembly, and medical laboratories are typical uses appropriate for this land use category…" The Draft 2040 Comprehensive Plan indicates that the Business Park land use category "provides for a wide variety of professional businesses such as medical and research facilities, offices and corporate headquarters. Uses specifically excluded from existing business park areas include warehousing, manufacturing, distribution, assembly and truck terminals." As such, self-service storage would not be an appropriate use within this district.
        - *Staff Comment*. Because self-service storage does not generally create a high number of jobs per acre, it may not be an appropriate use within the Business Park zoning district according to both the current and draft Comprehensive Plan.

FISCAL IMPACT:

Removing self-service storage as an allowed use may create opportunity for businesses that generate a significant number of jobs and provide a better tax base to come in.

OPTIONS:

The Commission may wish to:

- Recommend making amendments to the Zoning Code, removing self-service storage as a conditional use within the Commercial and Business Park zoning districts or just one of these districts.
- Do not recommend making amendments to the Zoning Code, removing self-service storage as a conditional use within the Commercial and Business Park zoning districts.
- Recommend additional standards be created for self-service storage districts.

ATTACHMENTS:

- None