THE CITY OF LAKE ELMO

STAFF REPORT

DATE: 3/4/25
REGULAR

TO:	Lake Elmo City Council
FROM:	Nathan Fuerst, ACIP, Consulting Planner
AGENDA ITEM:	Review of Irrigation Alternatives for Oak Land Middle School Site
REVIEWED BY:	Jason Stopa, Community Development Director

CORE STRATEGIES:

☐ Vibrant, inclusive, connected community
☐ Responsive, transparent, adaptive governance
☐ Managed Growth
☐ Efficient, reliable, innovative services
☐ Balanced Finances now and future
☒ Resilient Infrastructure

BACKGROUND:
The Lake Elmo City Council conditionally approved a minor subdivision, conditional use permit, and variances for the Oak Land Middle School project by Stillwater Area Public Schools (hereafter "School District") on October 1, 2024. As part of the City Council's review and discussion, the Council determined that it desired more information on the alternatives for irrigation on the Oak Land Middle School Site. It revised Resolution 2024-106, conditionally approving the CUP, to include a 10th condition requiring an assessment of irrigation alternatives for the site prior to final construction plan approval.

The School District provided a memo dated November 4, 2024, which provided some basic analysis but lacked certain details on implementation of the irrigation options considered by the School District including an estimate of rough costs for the options. City Staff have met with the School District's team and requested an update to the 11/4/24 memo be made to provide additional detail. The School District's revised memo was provided to the City on 2/28/25 and is appended to this memo.

Final construction plans were submitted by the School District's team on February 13, 2025 for the Oak Land Middle School site are currently under City review. Staff are seeking to understand if the City Council feels that enough information has been provided School District's updated memo, and if not, what additional information is desired by the Council.

ISSUE BEFORE COUNCIL:
Does the City Council accept the revised Irrigation Alternatives Memo from Stillwater Area Public Schools regarding the Oak Land Middle School Property?

PROPOSAL DETAILS/ANALYSIS:

Current Oak Land Middle School Irrigation:
The School District currently irrigates the Oak Land Middle School property by drawing from its well which was first constructed in 1966. The area currently irrigated on the site is limited to the sports fields.

A figure has been provided by the school district indicated which areas on the property are irrigated during the growing season.

Irrigation Alternatives Identified:
The 11/4/24 Irrigation Alternatives memo provided a basic assessment of the following alternatives for irrigation on site:

1. **Private well** – The school could continue to use its private well, however, the School District has indicated that this well is at the end of its useful life. Therefore, the School District would need to construct a new well for the purpose of continued irrigation of its property.
2. **Stormwater Reuse** – This would involve retrofitting the existing and proposed stormwater treatment systems. Currently, the school district uses infiltration basins which would be supplemented with underground systems with the new school addition. To facilitate reuse, the School District would need to reroute stormwater to a new storage tank with integrated pumping and mainline improvements to serve the existing irrigation.
3. **Rose Lake** – The school could construct a system to utilize water from the nearby Rose Lake. New irrigation improvements would be required in order to gather and then treat the water from this source prior to irrigating with it.
4. **Municipal Water Supply –** The School District would utilize its planned connection to the City's water supply by connecting the school building, and therefore irrigation system, to municipal water.

The School District has identified the connection to the Municipal water supply as its strong preference. This is due to the cost of either replacing its existing well or constructing the systems needed to reuse stormwater or pull water from Rose Lake. The School District has indicated that there are health concerns for stormwater reuse and pumping water from Rose Lake.

The School District submitted a memo on February 28, 2025, so an analysis was not possible in this report. A verbal update and review will be provided by staff at the City Council's March 4, 2025 meeting.

Irrigation Reuse Requirements and Implementation in Lake Elmo:
The City of Lake Elmo City Code does not require stormwater reuse for irrigation. However the City does allow for a density bonus when single family residential developments incorporate stormwater reuse into development plans. Over the last several years, the City has also seen stormwater reuse count towards Valley Branch Watershed District (VBWD) permitting requirements.

As a result of focus on stormwater reuse in new development, the City of Lake Elmo has seen a number of new residential and commercial developments incorporate these systems into their design. Several recent examples include the Northstar and Wildflower residential developments, along with the Roers Lake Elmo Multifamily and Bridgewater Village multifamily and commercial developments.

Over the past several years, the City of Lake Elmo has discussed whether it should require stormwater reuse. This issue is more complex than simply adding a new standard to the City's ordinance. If the City chooses to revise its ordinances to require Stormwater Reuse, staff would need time to consider how this could be implemented the best. Factors for consideration include, irrigable area, impervious area, soils on a property, and other site specific issues along with considerations for the many different forms of development.

Currently, staff are not aware of any municipalities in the Metro area that have this requirement. One reason is that there are likely to be certain properties or sites where stormwater reuse is not feasible or practical. One recent example is the At Home Townhomes project which did not use wet ponds, making stormwater reuse infeasible.

Incorporating stormwater reuse is even more difficult for site expansions and could prove challenging depending on the amount of retrofitting required to a site. It is easiest to incorporate stormwater reuse

systems in new developments with the benefit of being able to account for needs such as wet pond size and location, along with areas for irrigation system pumps and mainlines.

FISCAL IMPACT:

Requiring stormwater reuse systems would come at a cost to developers and to the City. New development that may not otherwise include the systems will incur added design costs in addition to the materials needed for infrastructure like pumps and mainlines to connect throughout a project. It is possible that this requirement could deter certain types of new or re-development projects. Down the road, private property owners or HOA's will be required to keep these systems operational. With a new code requirement, there could be instances where the City needs to conduct enforcement leading to use of city staff time and resources.

OPTIONS:

Relative to the School District's Irrigation Alternatives memo, there are two options:

1. Require amendment to the School District's Irrigation Alternatives memo.
2. Accept the Irrigation Alternatives memo as revised.

RECOMMENDATION:

Staff recommend that the City Council discuss any concerns with the information provided by the Stillwater Area School District in its memo evaluating irrigation alternatives for the Oak Land Middle School site. If additional information is needed, the Council should provide direction.

ATTACHMENTS:

- Resolution 2024-106 – CUP approval for Oak Land Middle School Expansion
- Oak Land Middle School Site Plan
- Larson Engineering Memo received February 28, 2025

CITY OF LAKE ELMO
WASHINGTON COUNTY, MINNESOTA

RESOLUTION NO. 2024-106

A RESOLUTION APPROVING A CONDITIONAL USE PERMIT TO ALLOW EXPANSION OF AN EXISTING PUBLIC SCHOOL IN THE PUBLIC FACILITIES DISTRICT

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

WHEREAS, Stillwater Area Schools, ISD 834, (the "Applicant"), owner of the property located at 820 Manning Avenue N PID# 36.029.21.11.0002 and 36.029.21.11.0003, Lake Elmo, MN 55042 (the "Property") has submitted an application to the City of Lake Elmo (the "City") for Conditional Use Permit the expansion of Oak Land Middle School; and

WHEREAS, notice has been published, mailed, and posted pursuant to the Lake Elmo Zoning Code, Section 105.12.250; and

WHEREAS, the Lake Elmo Planning Commission held a public hearing on said matter on September 9, 2024; and

WHEREAS, the Lake Elmo Planning Commission submitted its report and recommendation concerning the Conditional Use Permit request to the City Council as part of a Staff Memorandum dated October 1, 2024; and

WHEREAS, the City Council considered said matter at its October 1, 2024 meeting.

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

FINDINGS

1) That the procedures for obtaining said Conditional Use Permit (CUP) are found in the Lake Elmo Zoning Ordinance, Section 105.12.290.

2) That all the submission requirements of said Section 105.12.290 have been met by the Applicant.

3) That the proposed Conditional Use Permit is to allow the expansion of Oak Land Middle School as more fully described in application materials submitted to the City.

4) That the proposed Conditional Use Permit will be located on property to be legally described as found in Exhibit A to this Resolution.

5) That a public school is designated as a Conditional Use within the PF – Public Facilities Zoning District in Section 105.12.970 of the Zoning Ordinance; and

6) That the proposed use will not be detrimental to or endanger the public health, safety, comfort, convenience or general welfare of the neighborhood or the city.

7) That the proposed use conforms to the City of Lake Elmo Comprehensive Plan.

8) That the proposed use is compatible with the existing neighborhood.

9) That the proposed use meets all specific development standards for such use listed in Article 7 of the Zoning Ordinance.

10) That the proposed use will be designed, constructed, operated and maintained so as to be compatible in appearance with the existing or intended character of the general vicinity and will not change the essential character of that area.

11) That the proposed use will not be hazardous or create a nuisance as defined under this Chapter to existing or future neighboring uses.

12) That the proposed use will be served adequately by essential public facilities and services, including streets, police and fire protection, drainage structures, refuse disposal, water and sewer systems and schools or will be served adequately by such facilities and services provided by the persons or agencies responsible for the establishment of the proposed use.

13) That the proposed use will not create excessive additional requirements at public cost for public facilities and services and will not be detrimental to the economic welfare of the community.

14) That the proposed use will not involve uses, activities, processes, materials, equipment and conditions of operation that will be detrimental to any persons, property or the general welfare because of excessive production of traffic, noise, smoke, fumes, glare or odors.

15) That vehicular approaches to the property, where present, will not create traffic congestion or interfere with traffic on surrounding public thoroughfares.

16) That the proposed use will not result in the destruction, loss or damage of a natural or scenic feature of major importance.

CONCLUSIONS AND DECISION

Based on the foregoing, the Applicants' application for a Conditional Use Permit is granted subject to the following conditions:

1. The Applicant must enter into a Site Improvement Agreement, in the City's Standard Form, prior to issuance of a notice to proceed or any building permit for work on site.

2. Prior to the City signing or approving recording of the Final Plat or Site Improvement Agreement, the Applicant shall fully address all comments in the following review memos, or any subsequently revised memo, to the satisfaction of the City:
    a. City Engineer's memo dated August 26, 2024,
    b. City Landscape Architect's memo dated August 27, 2024,
    c. City Fire Chief's memo dated August 26, 2024.
    d. City Attorney's Plat Opinion.

3. The Applicant must incorporate operational improvements on site to eliminate queuing of traffic accessing the site from Manning Avenue.

4. The Conditional Use Permit approval is contingent upon the Applicant agreeing to allow the southern secondary school access to Manning Avenue to be relocated further south when the future neighborhood collector roadway is needed to serve this future development area.

5. Upon substantial completion of the project, as defined in the required site improvement agreement, the school building must be connected to water and sewer.

6. The applicant must provide plans for the water and sewer connection to the satisfaction of the City Engineer, Public Works Director, and Fire Chief prior to the release of the building permit.

7. Water and Sewer Area Charges, and other fees as applicable, must be paid prior to issuance of a building permit.

8. All city, state, or other necessary permits must be obtained prior to the release of the building permit.

9. Substantial construction must take place within 12 months of the date on which the conditional use permit was granted, and the Applicant must otherwise comply with provisions of Section 105.12.290 Conditional Use Permits.

10. Prior to approval of the final construction plans, the Applicant must complete an assessment of irrigation alternatives for the site.

Passed and duly adopted this 1st day of October, 2024 by the City Council of the City of Lake Elmo, Minnesota.

Mayor Charles Cadenhead

ATTEST:

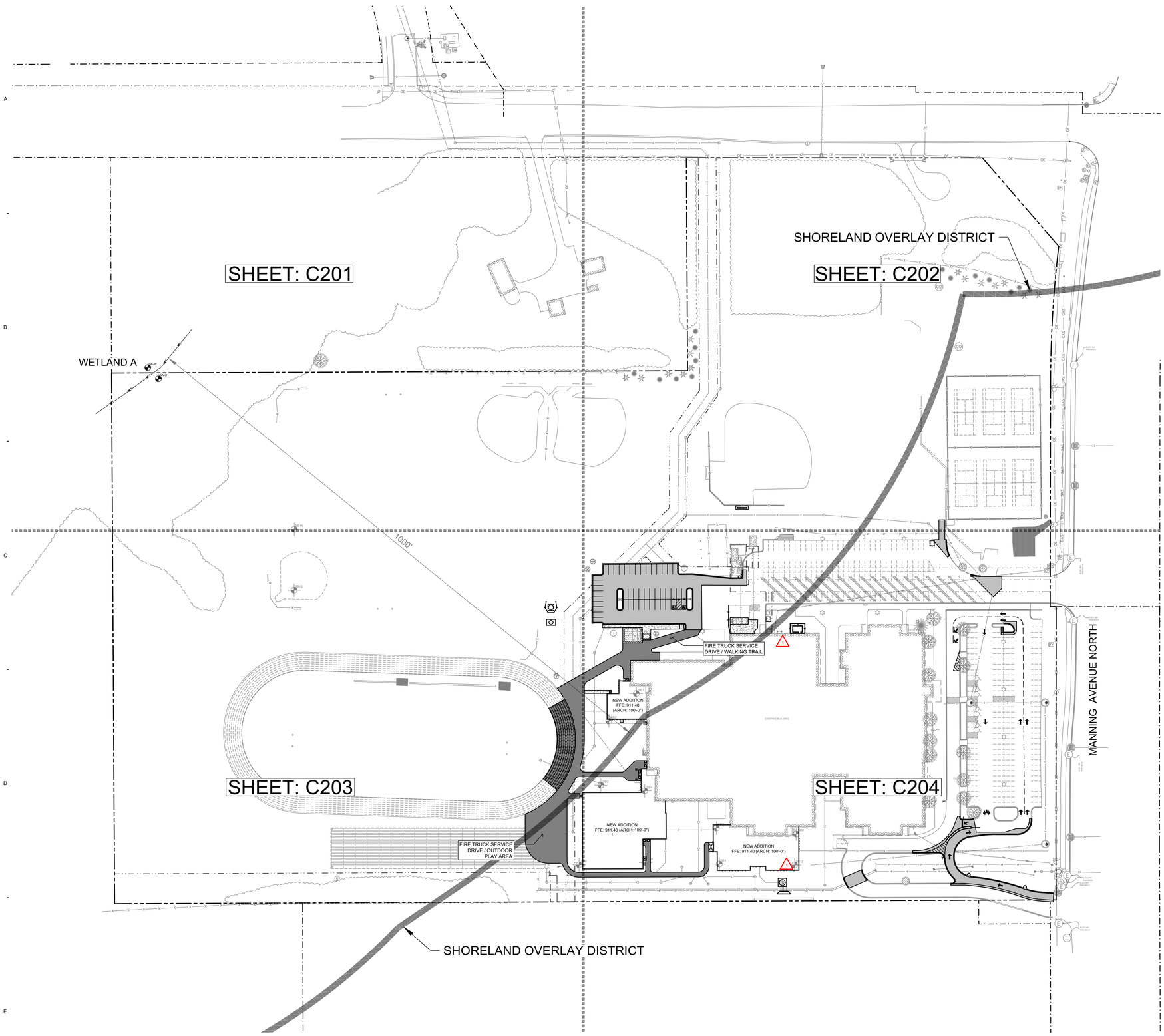
Julie Johnson, City Clerk

RESOLUTION 2024-106
Exhibit A
Legal Description of Subject Property

Old Legal Descriptions:
PARCEL A:
The following parts of the North Half of the Northeast Quarter (N1/2 of NE1/4) of Section Thirty-six (36), Township Twenty-nine (29) North, Range Twenty-one (21) West described as follows: The East 666 feet of the said North Half of the Northeast Quarter and the West 234.9 feet of the East 900.0 feet of the South 891.8 feet, subject to public roadways along the North and East side thereof and containing 25 acres more or less together with a perpetual easement for utility purposes including but not limited to underground gas lines, electrical transmission lines, and drainage, said easement tract being the south 50 feet of the West 1,571.1 feet of the East 2,472.5 feet of the said North Half of the Northeast Qurter (N1/2 of NE1/4) of Section Thirty-six (36). (Description per Warranty Deed Doc. No. 212313)

PARCEL B:
All that part of the North Half of the Northeast Quarter (N1/2 of NE1/4) of Section Thirty-six (36), Township Twenty-nine (29) North, Range Twenty-one (21) West, described as follows: The West 732.68 feet of the East 1633.58 feet of the South 891.8 feet containing 15 acres more or less. (Description per Warranty Deed Doc. No. 218479)

New Legal Descriptions:
Lot 1, Block 1, Oak-Land Middle School Addition



SYMBOL LEGEND

- PROPOSED BITUMINOUS PAVEMENT, SEE DETAIL 1/C700
- PROPOSED TRAILS/FIRE LANE BITUMINOUS PAVEMENT, SEE DETAIL 2/C700
- PROPOSED TRACK BITUMINOUS PAVEMENT, SEE DETAIL 3/C700
- PROPOSED CONCRETE PAVEMENT, SEE DETAIL 4/C700
- PROPOSED HEAVY-DUTY CONCRETE PAVEMENT, SEE DETAIL 5/C700
- NEW STOOP, SEE STRL/ARCH
- SB1 — SOIL BORING MARKER
- PAVEMENT MARKINGS -VEHICLE STALLS/ARROWS/CROSSWALKS -BUS STALLS/NUMBERING
- PROPERTY LINE
- EASEMENT LINE
- RIGHT-OF-WAY LINE

NOTE: THE CONCRETE JOINTS ARE SHOWN ONLY FOR GENERAL REFERENCE TO SIGNIFY LIGHT DUTY CONCRETE PAVEMENT. ACTUAL JOINTS SHALL BE CONSTRUCTED PER PROJECT SPECIFICATIONS.

PROJECT AREA CALCULATIONS

TOTAL SITE AREA:	1,619,971 SF	(37.19 AC)	100%
IMPERVIOUS AREAS:			
PROPOSED IMPERVIOUS AREAS:			
SCHOOL ADDITIONS	30,267 SF	(0.69 AC)	1.87%
SIDEWALK/BIT. TRAILS	23,034 SF	(0.53 AC)	1.42%
PARKING/ROADWAYS	29,043 SF	(0.67 AC)	1.79%
TRACK	4,462 SF	(0.10 AC)	0.27%
EXISTING IMPERVIOUS AREAS:			
SCHOOL	135,372 SF	(3.11 AC)	8.35%
SIDEWALK/BIT. TRAILS	21,864 SF	(0.50 AC)	1.35%
PARKING/ROADWAYS	114,535 SF	(2.63 AC)	7.07%
SPORTFIELDS/TENNIS COURTS/TRACK	120,827 SF	(2.77 AC)	7.46%
TOTAL SITE IMPERVIOUS	479,404 SF	(11.01 AC)	29.59%
OPEN SPACE:			
REMAINING OPEN SPACE	1,140,567 SF	(26.18 AC)	70.41%
IMPERVIOUS WITHIN SHORELAND OVERLAY ZONE:			
SHORELAND OVERLAY AREA	1,122,127 SF	(25.76 AC)	100.00%
IMPERVIOUS AREA WITHIN SHORELAND OVERLAY	147,391 SF	(3.38 AC)	13.14%

NORTH

0 40 80 160

OAK-LAND MIDDLE SCHOOL 2025-26 ADDITION AND RENOVATION

820 Manning Ave N,
Lake Elmo, MN 55042

Independent School District #834
1875 Greeley Street South
Stillwater, MN 55082

WOLD ARCHITECTS AND ENGINEERS
332 Minnesota Street, Suite W2000
St. Paul, Minnesota 55101
woldae.com | 651 227 7773

Larson Engineering, Inc.
3524 Labore Road
White Bear Lake, MN 55110
651.481.9120 (f) 651.481.9201
www.larsonengr.com

I hereby certify that this plan, specifications or report was prepared by me or under my direct supervision and that I am a duly licensed Professional Engineer under the laws of the state of Minnesota.

Greg A. Buchal, P.E.

Date: 11.12.24 Reg. No.: 23793

Revisions		
Description	Date	Num
ADDENDUM #3	DECEMBER 3, 2024	1
CITY SUBMITTAL	FEBRUARY 13, 2025	

Comm: 12246044
Date: 11-12-2024
Drawn: MTH
Check: NJN

SITE PLAN - OVERALL

C200

Larson Engineering, Inc.
3524 Labore Road
White Bear Lake, MN 55110-5126
651.481.9120 Fax: 651.481.9201
www.larsonengr.com

Larson

MEMORANDUM

To: Nathan Fuerst, City Administrator, City of Lake Elmo

From: Greg Buchal, PE – Larson Engineering, Inc.

Date: February 27, 2025

Project: 12246044

Subject: Additional Submittal to City of Lake Elmo on Behalf of Independent School District #834 for the Oak-Land Middle School 2025 – 2026 Additions & Renovations project, located at 820 Manning Avenue North. (PID# 36.029.21.11.0002 and 36.029.21.11.0003)

Oak-Land Middle School - Additional Analysis of Irrigation Alternatives

The Conditional Use Permit application was submitted and approved by the City Council on October 1, 2024. As one of the conditions of approval for the CUP, the School District was to provide a list of alternative methods to supply water for irrigating a portion of the property. This information was provided in November of 2024, and since then additional backup and elaboration of these methods was requested. The information below is a response to this request and no revision to the approved Conditional Use Permit is being requested. For context, the Conditional Use Permit complies with the current ordinances and the scope of irrigation is to only irrigate those areas currently being irrigated with no expansion planned.

The City Planner has requested that additional information and analysis be provided for three items; irrigation of the athletic fields utilizing well water; irrigation of the athletic fields utilizing water re-use from storage tanks; and irrigation of the athletic fields utilizing water re-use from Lake Rose. Another option being considered by the School District is to not irrigate any of the fields.

As indicated in the previous Memorandum to the City of Lake Elmo in November of 2024, the School District has made connecting to municipal water a high priority for the Oak-Land Middle School, due to potential future health and safety concerns, and ongoing maintenance costs related to having well-water at the school. This current building addition project provides the opportunity to improve that infrastructure at the school.

With a new municipal water service to the school building, the existing irrigation system for the athletic fields could be utilized and very little improvements, modifications, or costs would be incurred, since the existing connection for the irrigation water remains within the school building. Rain sensors would be added to eliminate irrigation operation when rain events have provided adequate water to the athletic fields. This is the School District's preference and they understand that irrigation restrictions could occur in times of drought and would abide by all City of Lake Elmo related ordinances regarding water use for the athletic field irrigation.

Site Data

The athletic fields that are currently irrigated by the School District are located on the northern side of the school property and within the existing athletic track. The total area of these athletic fields is about 297,000 square feet or 6.8 acres (see attached aerial photograph of the Oak-Land Middle School site).

Current water use for irrigation of the athletic fields is about 15,980 gallons (2,136 cf) per day (based upon well data averaging monthly use quantities). The well was constructed in 1966 and has experienced more frequent repairs and maintenance over the past 10 years. The current well is 315 feet deep and the well is permitted through the Department of Natural Resources (DNR) for use of up to 4.3 million gallons per year.

Irrigation Using Well Water

The first alternative reviewed is using well water to irrigate the athletic fields. The current location of the existing well conflicts with the proposed improvements at the site that are a part of the current building addition and renovation project. This and in consideration of the current age and condition of the well, a new well would be required at the site. The DNR has indicated that typically a new well to replace an existing well would be permitted as long as the water use did not exceed that of the existing well. However, the DNR indicated this could not be assured in this situation with the regional water issues. A Preliminary Well Construction Assessment Application would be required by the DNR to evaluate the impacts of the well.

Assuming a new well of similar size, depth, and capacity was allowed for irrigation of the athletic fields, well contractors have provided costs of $160,000 to install a new well. In addition to the well costs, associated costs for related electrical for power to the new location and modifications to the existing irrigation system would add additional costs of about $45,000, making the overall cost for this approach to be about $205,000 (not including maintenance and operation costs).

However, as indicated previously the School District's desire was to not use well water due to potential future health risks. The Minnesota Department of Health (MNDH) when contacted also mentioned concerns about potential health risks related to PFAS – Polyfluoroalkyl substances. This contamination is a concern in the east metro area based upon the MNDH (see attached PFAS Contamination Map). Review of Metropolitan Council PFAS maps indicates areas close to the Oak-Land Middle School that have PFAS contamination.

Irrigation Using Water Re-Use with Underground Storage Tanks

Another alternative reviewed is re-using water stored within new underground storage tanks for irrigation of the athletic fields. Permitting of re-use systems falls under several jurisdictions such as the MNDH, Minnesota Pollution Control Agency (MPCA), DNR, Minnesota Plumbing Code, and the Cities where the systems are located. This permitting could complicate the process and design considerations of the systems. However, the MPCA and the City of Lake Elmo do have guidelines for water re-use and for purposes of this review, we followed those general guidelines.

The basic components of the water re-use system consist of the water source (storage tank), a pump or pumps to convey water through the system to the irrigation system, and filtering and treatment of the water before re-use in the irrigation system (see City of Lake Elmo Standard Drawing C-02). MPCA and City guidelines recommend filtering sediments and particulates from the water and treating the water with UV light and chlorination to address health and safety concerns.

The difficulty with this type of system at this school site is the feasibly of collecting and storing enough water for irrigation use. Roof water is typically the best location to collect re-use water from since this source would not have significant amounts of salts, sediments, grass clipping, etc. But much of the existing roof water at this site discharges on to the ground and various locations around the building and is difficult to centralize and collect. With the current building project, much of the new run-off and roof water is collected and will be infiltrated into the ground in accordance with Valley Branch Watershed District (VBWD) storm water treatment requirements. Incorporating a water re-use system would require additional catch basin structures and piping to direct water to the underground storage tank rather than to the current treatment system.

To provide one inch of water over the athletic field areas would require a tank of about 32,000 cubic feet or approximately 239,000 gallons. A typical 2-year rain event would provide about 19,000 cubic feet (142,000 gallons) of water. Significant rain events would be required to fill the storage tank and the irrigation system would likely need to be supplemented with another source of water, such as municipal water. Historical data indicates that the average weekly rainfall would produce about 0.88 inches per week or 85,000 gallons per week for the drainage area to the tank. See attached Appendix A for a summary of the costs for this water re-use system.

Irrigation Using Water from Rose Lake

The third alternative reviewed is using water from Rose Lake for irrigation of the athletic fields. Drawing water from Rose Lake would require permitting through the DNR, VBWD, and may not be allowed. Assuming water can be taken from Rose Lake, the approach would be very similar to that described above using underground storage tanks but using the water "stored" in Rose Lake instead of underground storage tanks. The primary differences in this situation are additional piping, pumps, and filtering to get water from Lake Rose to the treatment/re-use system, but the underground tanks would not be needed. All of the treatment components would be the same. However, runoff to Rose Lake could introduce salts and other contaminants not anticipated in roof water. Rose Lake has the potential for PFAS contamination such that there are potential health concerns with this source of water, and the potential for contamination of the soil from the irrigation water. See attached Appendix B for a summary of the costs for this water re-use system.

No Irrigation

Another option being considered by the School District is to remove all irrigation from the school site. Much of the site is currently not irrigated. Obviously, irrigation helps keep natural grass fields more playable and resilient, and therefore more usable for school and community use.

Summary

While there are several options for how the fields at Oak-Land Middle School could be irrigated, the current plan is to leave the existing irrigation system connected to the building water system. With the connection of municipal water, the irrigation would then be supplied by the municipal water. This has been the plan for the entire planning process with City.

At the request of the City, the School District has studied other options and their additional costs for implementation.

1. Irrigate with City water (additional project cost $0)
2. Irrigate with a new well system (additional project cost $205,000)
3. Irrigate with captured rainwater (additional project cost $313,400)
4. Irrigate with water from Rose Lake (additional project cost $212,8500)
5. Discontinue irrigation (additional project cost $0)

The School District is recommending that their project continue with irrigating the fields with City water and that they would comply with City ordinances regarding the use of the irrigation system just like other properties within the City.

Appendix A
Water Re-Use with Underground Storage Tanks

Pump & Intake Components

- Pump & Motor, VMS, 10HP-208-230V/3Ph
- Pump Discharge Header 100HP
- Flow Meters
- Pressure Relief Valves
- Discharge Terminations
- Discharge Manifolds
- Inlet Drop Pipes
- Intake Manifolds
- Float Kits (3" HDPE Pipe)

Treatment Systems & Components

- UV Systems
- Discharge Filters
- Self-Cleaning Intake Screen

Control Panel & Components

- Control System
- Touch Screen Displays
- Surge Protection
- Optical Devices
- Electrical Enclosure (with cooling and heating)
- VFD's
- Composite Enclosure
- Formed Steel Base
- Electrical Service

Storage & Distribution Components

- 6" PVC Sch. 40 Pipe (200 LF)
- Storage Tank (32,000 CF / 239,360 Gallons)
- Reducers
- Gate valves

Total Cost: ***$313,400.00***

Appendix B
Irrigation Using Water from Rose Lake

Pump & Intake Components

- Pump & Motor, VMS, 10HP-208-230V/3Ph
- Pump Discharge Header 100HP
- Flow Meters
- Pressure Relief Valves
- Discharge Terminations
- Discharge Manifolds
- Inlet Drop Pipes
- Intake Manifolds
- Float Kits (3" HDPE Pipe)

Treatment Systems & Components

- UV Systems
- Discharge Filters
- Self-Cleaning Intake Screen

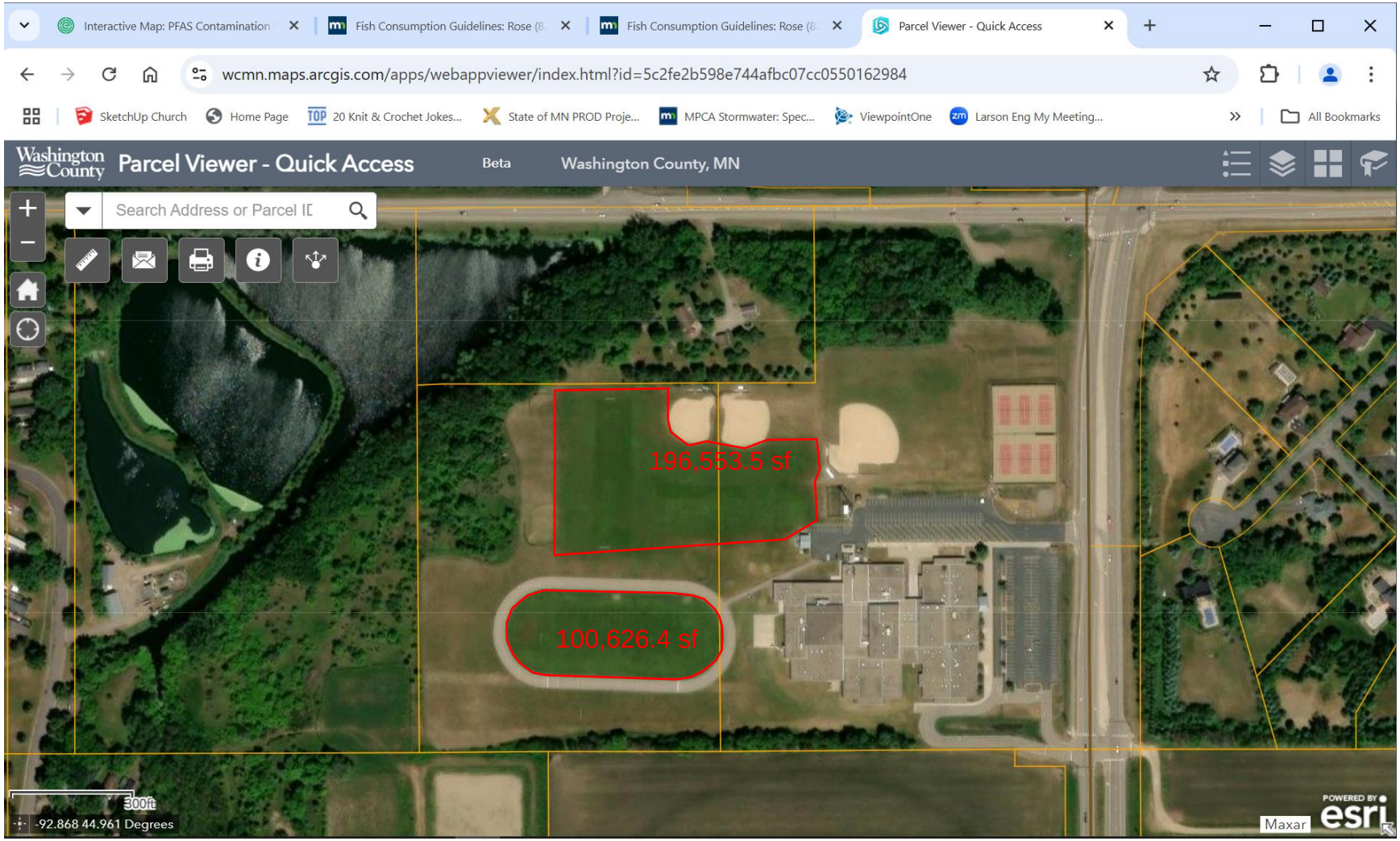
Control Panel & Components

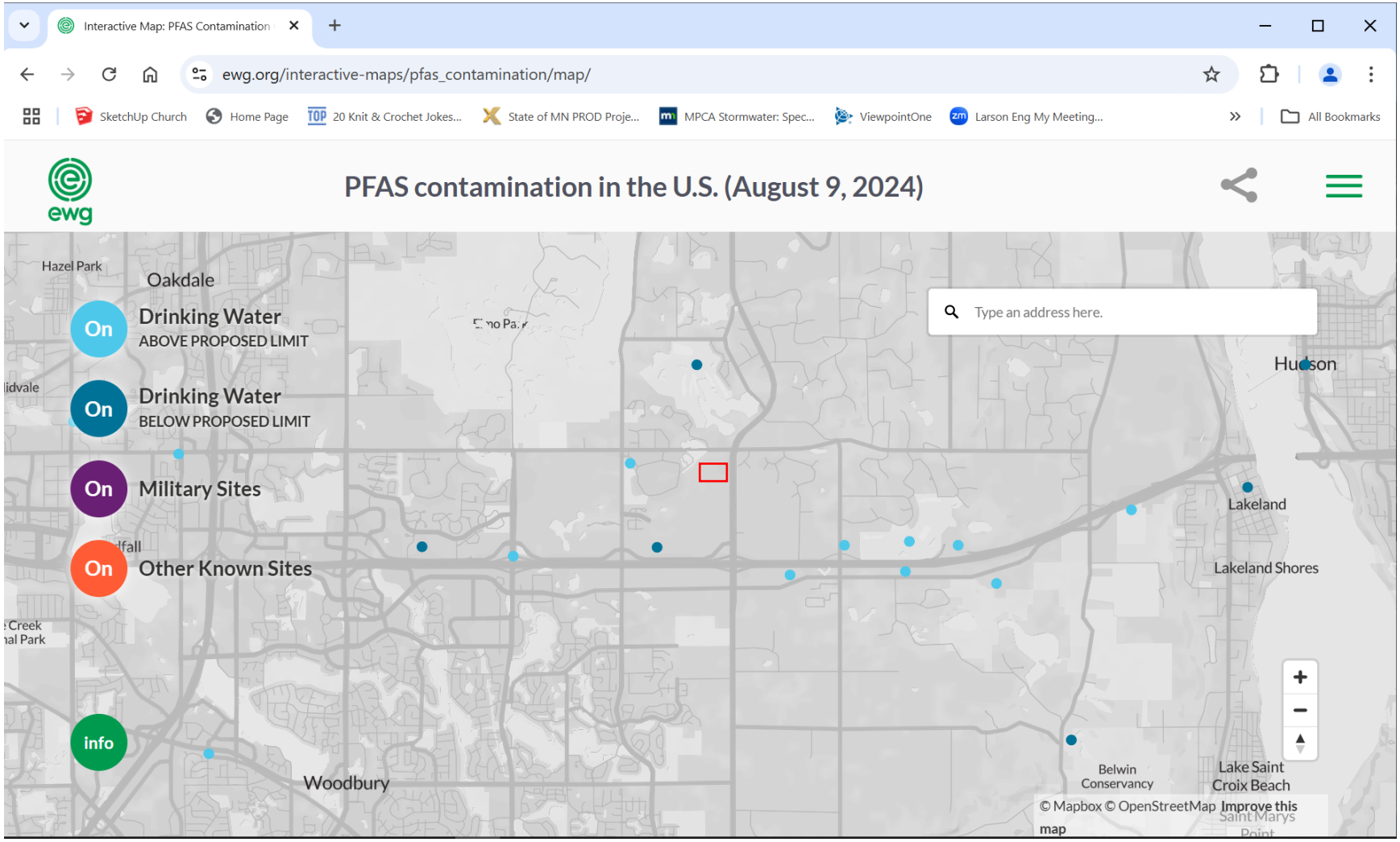
- Control System
- Touch Screen Displays
- Surge Protection
- Optical Devices
- Electrical Enclosure (with cooling and heating)
- VFD's
- Composite Enclosure
- Formed Steel Base
- Electrical Service

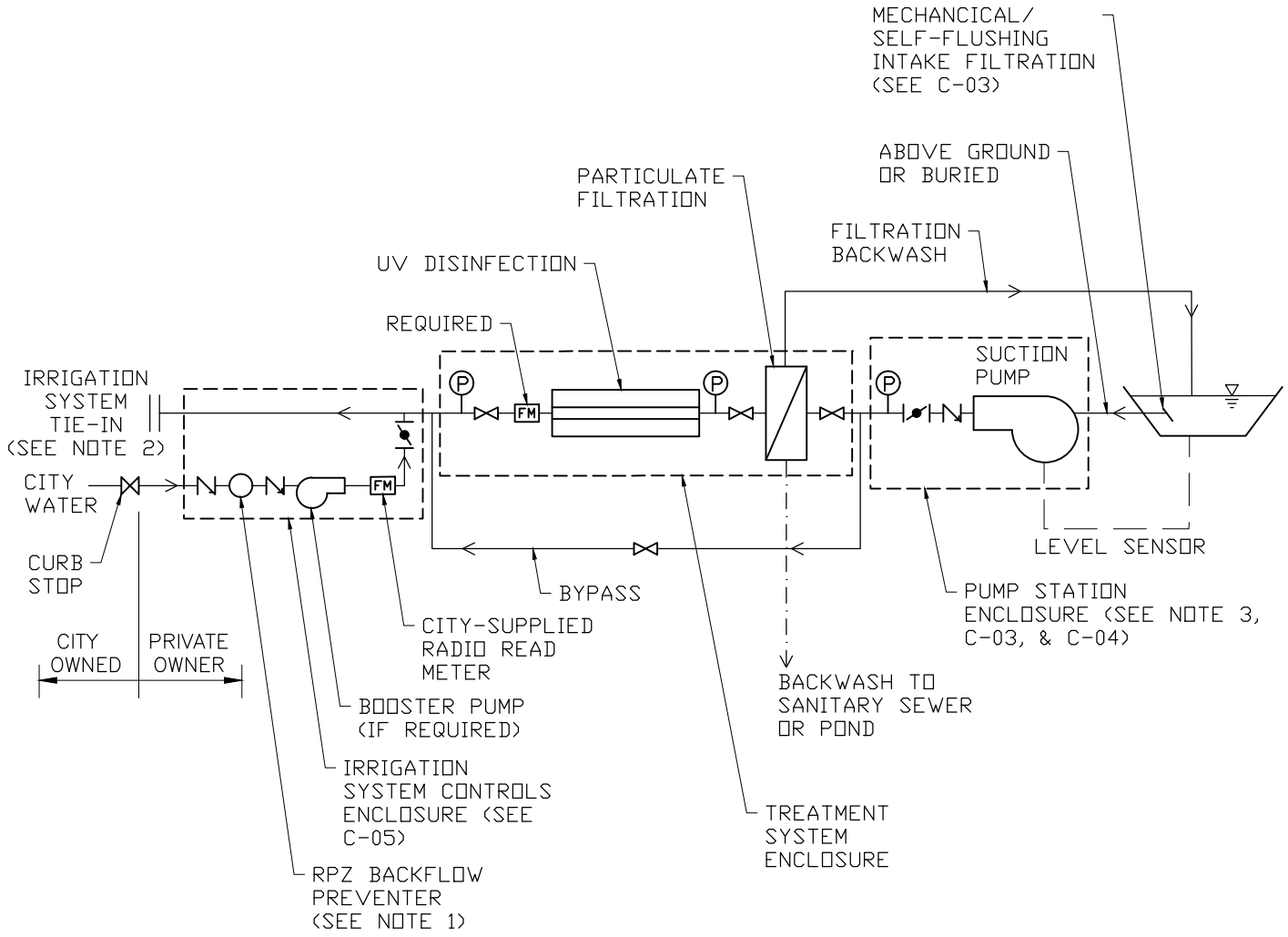
Storage & Distribution Components

- 6" PVC Sch. 40 Pipe (600 LF)
- Reducers
- Gate valves

Total Cost: ***$212,850.00***


Interactive Map: PFAS Contamination
Fish Consumption Guidelines: Rose (8
Fish Consumption Guidelines: Rose (8
Parcel Viewer - Quick Access
wcmn.maps.arcgis.com/apps/webappviewer/index.html?id=5c2fe2b598e744afbc07cc0550162984
SketchUp Church
Home Page
20 Knit & Crochet Jokes...
State of MN PROD Proje...
MPCA Stormwater: Spec...
ViewpointOne
Larson Eng My Meeting...
All Bookmarks
Washington County
Parcel Viewer - Quick Access
Beta
Washington County, MN
Search Address or Parcel ID
196,553.5 sf
100,626.4 sf
300ft
-92.868 44.961 Degrees
Maxar
POWERED BY esri


Interactive Map: PFAS Contamination
ewg.org/interactive-maps/pfas_contamination/map/
SketchUp Church
Home Page
20 Knit & Crochet Jokes...
State of MN PROD Proje...
MPCA Stormwater: Spec...
ViewpointOne
Larson Eng My Meeting...
All Bookmarks
ewg
PFAS contamination in the U.S. (August 9, 2024)
Hazel Park
Oakdale
On
Drinking Water
ABOVE PROPOSED LIMIT
On
Drinking Water
BELOW PROPOSED LIMIT
On
Military Sites
On
Other Known Sites
info
Type an address here.
Hudson
Lakeland
Lakeland Shores
Woodbury
Belwin Conservancy
Lake Saint Croix Beach
© Mapbox © OpenStreetMap Improve this map



NOTES:

1. BACKFLOW PREVENTION TO MEET MINNESOTA DEPARTMENT OF HEALTH REQUIREMENTS.
2. NON-CLOGGING SPRINKLER HEADS RECOMMENDED.
3. PUMP CAN BE LOCATED WITHIN TREATMENT SYSTEM ENCLOSURE IF SUCTION LIFT ALLOWS.

LEGEND

- CHECK VALVE
- ISOLATION VALVE
- PRESSURE GAUGE
- FM FLOW METER
- BUTTERFLY VALVE

POTENTIAL/FUTURE WATER REUSE PROCESS FLOW DIAGRAM (TREATMENT)

JANUARY 2022

THE CITY OF LAKE ELMO

CITY OF LAKE ELMO

STANDARD DRAWING NO.

C-02

LAKE ELMO